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Contents

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Original Research Article

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Comparative Study of Thyroidectomy Wound Closure using Subcuticular Suture Versus Steri-strips in Jharkhand Population

Alok Kumar[1], Sunil Kumar[2]

[1]Associate Professor, Department of ENT, Phulo Jhano Medical College, Dumka, Jharkhand, [2]Assistant Professor, Department of Surgery, Phulo Jhano Medical College Dumka, Jharkhand.

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Abstract

Background: Thyroidectomy wound infections and wound related issues are important source of morbidity because of local inflammatory responses like erythematic, cellulitis, and superficial wound infection.

Method: 30 patients wound were closed by sub-cuticular suture and 30 patients by steristrips followed by Thyroidectomy. Verbal analogue scale and visual analogue scale at different intervals were compared. Moreover cosmetic visual analogue was also compared after 6th week of the surgery.

Results: Verbal analogue after 48 hours and visual analogue after 48 hours had significant p value ($p<0.001$) with steri-strips had excellent results of 93.3% and 6.6% of Good results versus sub-cuticular suture had 80% excellent and 20% good cosmetic appearance.

Conclusion: Steri-strips sutures were better in both visual, Verbal and cosmetic analogue and reduce the stay in hospital as compared to sub-cuticular suture technique.

Keywords: Visual analogue, verbal analogue, local inflammation, Cellulitis, erythema, cosmetic analogue

Introduction

Thyroidectomy wound infections and wound related issues are an important source of morbidity for the patients. They are associated with significantly increased length of stay and contribute to increased hospital costs. The traditional method of skin closure following Thyroidectomy incision involves absorbable sub-cuticular sutures. This results in local inflammatory response, which leads to erythema infections[(1)(2)]. Steri-strip skin closure Techniques have the potential to minimise the inflammation, oedema, erythema and the pain associated with this response. Previously to assess wound healing of endoscopic saphenous vein sites following coronary artery bypass graft (CABG) surgery by Steri-strip technique is used in Thyroidectomy wound closure.

The steri-strip surgical skin closure system consists of polyurethane pads and polymeric strips coated with a non latex pressure sensitive, hypoallergenic skin adhesive[(3)]. The combinations of adhesive pads and filament straps results in maximum adhesiveness, allowing for easier skin approximation and minimises the chance for wound dehiscence[(4)]. Hence attempt was made to evaluate and compare the both techniques.

Corresponding Author: Sunil Kumar, Assistant Professor, Department of Surgery, Phulo Jhano Medical College Dumka, Jharkhand.

Cell No: +91 7004061838

E-mail: prinshu297@gmail.com

Material and Method

60 (sixty) patients aged 20 to 60 years regularly visited to Phulo Jhano Medical College, Dumka, Jharkhand-814101 were studies.

Inclusive Criteria: Age above 18 years and below 65 years patients having benign lesions. Who have given their consent in writing were selected for study.

Exclusion Criteria: patients below 18 years and above 65 years patients having malignancy of thyroid, previous neck irradiations and type-II DM were excluded from studies.

Method: Patients undergoing thyroidectomy were randomised to had their wounds closed by subcuticular suture or steristrips skin closure technique. Post operative pain is assessed by verbal response and visual analogue scale for three consecutive post-operative periods, after 48 hours and after 7 days and cosmetic visual analogue scale was noted after 6 weeks.

Duration of study was January 2021 to February 2023.

Statistical analysis: Visual analogue scale and verbal analogue scale of both patients at different intervals were compared and significant results were noted. The statistical analysis was carried out in SPSS software. The ratio of male and female were 1:2.

Table 1: Comparison of verbal analogue scale for Neck Mobility in both groups

Neck mobility	Group	Number	Mean value (±SD)	t test	p value
After 48 hours	Steristrips	30	0.16 (±0.26)	3.52	P<0.001
	Sub-cuticular	30	0.42 (±0.31)		
Neck mobility after 7 days	Steristrips	30	0.04 (± 0.12)	0	P<0.001
	Sub-cuticular	30	0.04 (± 0.12)		

Table 2: Comparative study of visual analogue for Neck mobility (after 48 hours and after 7 days)

Neck mobility	Group	Number	Mean value (±SD)	t test	p value
After 48 hours	Steristrips	30	0.53 (±0.20	2.08	P<0.002
	Sub-cuticular	30	0.70 (±0.40)		
Neck mobility after 7 days	Steristrips	30	0.04 (± 0.15)	0	P<0.001
	Sub-cuticular	30	0.04 (± 0.15)		

Table 3: Visual analogue scale for cosmetic appearance (after six weeks)

	Steristrips	Sub-cuticular	Total
Excellent	28 (93.3%)	24 (80%)	52 (86.6%)
Good	2 (6.6%)	6 (20%)	8 (13.3%)
Total	30 (100%)	30 (100%)	60 (99.9%)

Observation and Results

Table-1: Comparison of verbal analogue scale for Neck mobility in both groups:

- Neck mobility After 48 hours: Steristrips. Mean value 0.16 (± 0.26) & in subcuticular mean value 0.42 (± 0.31), t test was 3.52 and p<0.001

- Neck mobility after 7 days – The mean values are same in both groups analogue for Neck mobility after 48 hours and after 7 days.

Table-2: Comparative study of visual analogue for Neck mobility after 48 hours and 7 days - Steristrips 0.53 (± 0.20), in sub-cuticular 0.70 (± 0.40), t test was 2.08 and p<0.002

Table-3: Visual analogue scale for cosmetic appearance (after six weeks) –

- steristrips Method 28 (93.3%) excellent and 2 (6.6%) had good appearance
- sub-cuticular had 24 (80%) excellent and 6 (20%) had good appearance.

Discussion

Present comparative study of thyroidectomy wounds closure by sub-cuticular suture versus steristrip in Jharkhand population. In the comparison of verbal analogue scale for Neck mobility after 48 hours of thyroidectomy – 0.16 (± 0.26) in steristrips, 0.42 (± 0.310) in sub-cuticular suture, t test was 3.52 and p value is highly significant (p<0.001) and Mean values of steristrips and subcuticular were same after 7th days of thyroidectomy (Table-1). In comparison of visual analogue for neck mobility after 48 hours – 0.53 (± 0.20) in steristrips, 0.70 (±0.40) in sub-cuticular suture, t test was 2.08 and p<0.002 (p value was highly significant). After 7th days of surgery, the mean value of both steristrips and subcuticular remained same (Table-2). The visual analogue scale for cosmetic appearance after six weeks steristrips had 28 (93.3%) excellent and 2 (6.6%) Good but subcuticular had 24 (80%) excellent, 6 (20%) good results (Table-3). These findings are more or less in agreement with previous studies [5][6][7].

Steri-strips closure are proposed alternative method for thyroidectomy wound closure because they can be applied rapidly, are inexpensive, painless; optimize cosmesis and limit the chance of infection. The study sought to determine whether these potential advantages could be realized in clinical practice in a prospectively randomised study comparing steristrip to a traditional subcuticular running absorbable sutures [8].

When using steri-strip technique additional time is spent insuring that the skin is dry with no active bleeding and accurate apposition of skin edge is achieved. For this technique additional time is necessary to ensure that the strips will not separate prematurely. Steri-strips had favourable impact on inflammatory changes, oedema and erythema [9]. In sub-cuticular sutures had significant inflammatory changes with oedema and erythema and more tissue damage as compared to steri-strips [10].

As thyroid gland is very vascular structure needs general anaesthesia for thyroidoetomy. Skin closure is last step of any surgery where much time should not be spent so as to avoid unnecessary exposure of anaesthetic risk to the patient [11]. The ultimate responsibilities for the choice of best cosmetic acceptability of scar and neck mobility are the important outcomes after collar line incision for the neck surgery. Needles present in sutures make the surgeon and assistant susceptible to a needle prick injuries. The use of sutures leave suture marks perpendicular to the line of incision. These disadvantages are avoided by using steristrip technique.

Summary and Conclusion

In the present study of surgical closure Steristrips technique is safe and effective method for closing thyroidectomy wound. In the final analysis the choice of wound closure material will depend on the surgeon's preference. There were no considerable difference in post operative neck mobility on comparing subcuticular suture and Steristrips technique. However this study shows that, steristrips can be removed more quickly causes less discomfort than removal of sutures. Steristrips technique had excellent cosmetic advantage.

Limitation of Study – Owing to tertiary location of research centre, small number of patients, lack of latest techniques, we have limited findings and results.

- This research paper was approved by Ethical committee of Phulo Jhano Medical College hospital Dumka, Jharkhand-814101
- No Conflict of Interest
- Self Funding

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Original Research Article

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Determinants of Postgraduate Medical Education Regarding Speciality and Place among North Indian Graduates: A Cross Sectional Study

Aman Dev Singh[1], Simmi Oberoi[2], Rohit Batish[3], Muskan Chopra[4]

[1]Assistant Professor, [2]Professor, [3]Senior Resident, [4]MBBS Student, Government Medical College, Patiala.

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Abstract

Background: Medical undergraduates are a vital source of the country's physicians. Their preference for medical specialties helps allocate the workforce among various medical specialties. The options for medical career specialties have increased, parallel to expanding knowledge in different fields. Given the vast opportunities to choose from, the factors influencing the choices of medical interns in our country need to be better understood.

Objectives: This study was conducted to know what factors influence the interns to choose the place to pursue postgraduation.

Methods: This cross-sectional study was conducted from July 2022 to August 2022 at GMC Patiala. Out of the 203 interns of the MBBS batch 2017 batch, 199 were interviewed using an online google form.

Results: Out of the 199 participants, 73.8% of students wanted to pursue postgraduation in India. General Medicine (77.4%) was the most preferred branch. Almost half (47.7%) of students chose the specialty during their internship. Most participants (82%) with a family income of fewer than ten lakhs preferred to pursue Postgraduation in India.

Conclusions: Participants favored clinical medicine branches, with General Medicine being the most popular. Family income, rather than marks, influenced the decision to pursue postgraduate studies abroad or in India. The main reason for studying abroad was better education and a higher standard of living. At the same time, some students preferred to stay close to home and study in India for postgraduate studies for the sake of family and familiar surroundings.

Keywords: *Medical Education, Postgraduation, USMLE, NEET-PG, PLAB*

Introduction

Pressure on human resources has increased globally for many demographic and epidemiological reasons. As a result, there has been a rapid international efflux of health workers, mainly from developing nations to the more developed nations, a phenomenon referred to as "brain drain"[1]. Medical undergraduates are a crucial source of the country's physicians, and their preference for medical specialties helps in workforce allocation among various medical specialties. Determining which factors lead these graduates to select their areas of specialization is vital in achieving a proportionate distribution of doctors among all specialties[2]. The medical specialties selected by medical graduates as their careers are an essential determinant of the future placement of doctors in different specialties. It is critical for planning the workforce of healthcare services[3].

Corresponding Author: Rohit Batish, Senior Resident, Government Medical College, Patiala.

E-mail: rosain.batish@gmail.com

Despite being a core component of medical workforce planning and development, what prompts medical students and graduates to choose their specialty needs to be better understood[4]. Medical graduates go through clinical rotations in different medical specialties for a defined period as hospital interns to learn and acquire basic professional skills under the guidance of their senior teachers. Hence facilitating their decision to choose the branch to specialize in[5]. The options for medical career specialties have increased, parallel to expanding knowledge in different fields. Given the vast opportunities, the factors influencing the choices of medical interns in our country need to be better understood[6]. There is an urgent need to figure out the factors that motivate students to opt for a specific specialty of their choice so that a balance can be maintained among medical doctors among various specialties[7].

With this background in mind, we carried out this study to assess the factors influencing the choice of postgraduation and the place of doing postgraduation among interns in a medical school in North India.

Material and Methods

STUDY DESIGN – This was a cross-sectional observational study.

STUDY SETTING – The study was done at Government Medical College, Patiala (North India), from July-August 2022.

STUDY PARTICIPANTS – All interns of MBBS batch 2017 were included in this study who gave consent to participate in the study.

STUDY VARIABLES – An online google form was administered to students, which consisted of – Informed Consent, Demography, Education, Career Choice, and Choice of Specialty. (SUPPLEMENTAL TABLE 1).

SAMPLE SIZE – 203 students were administered a questionnaire, of which 199 responses were achieved.

Statistical Methods

Data were collected and entered into Microsoft Excel. Data were cleaned, and descriptive statistics were applied.

Findings

Out of the n=199 participants, 110 were female, and 89 were male. 147 (73.8%) (FIGURE 1) students wanted to pursue postgraduation in India, whereas 52 (26.1%) wanted to pursue postgraduation abroad (FIGURE 2). General Medicine (77.3%) was the most preferred choice of specialty, and the least favored was Anatomy (6%) (Table 1). Interest in the specialty (92%) was an essential factor in choosing the same, the least essential factor being family members in the same specialty (21.6%). (FIGURE 3). Having family in India (56.3%) (FIGURE 2) was the most sought reason for staying in India for postgraduation. In contrast, higher education and a better standard of living (both 25%) were the most common reasons for going abroad to postgraduation (FIGURE 1).

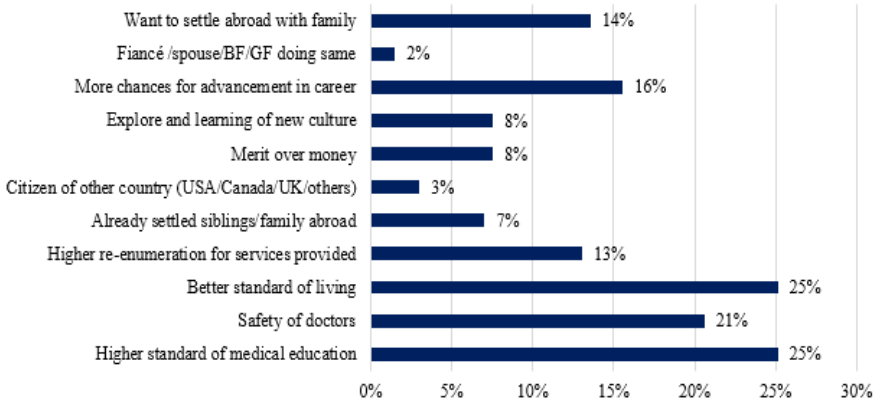

Figure 1: Reason for Choosing Foreign PG

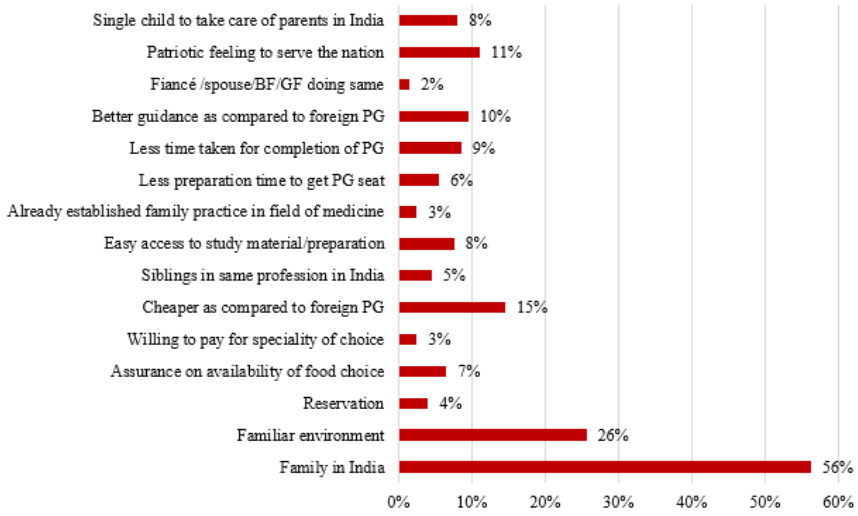

Figure 2: Reason for Choosing Indian PG

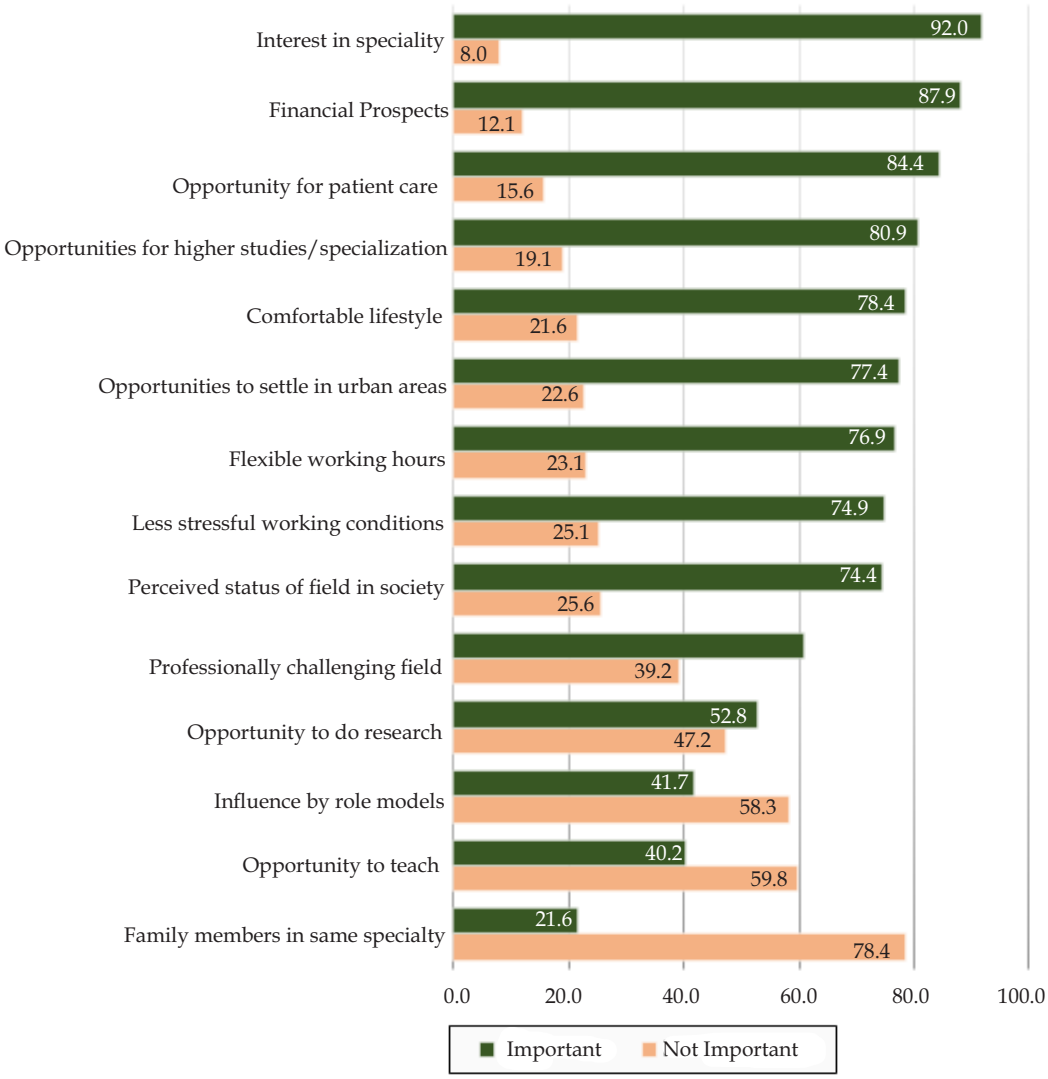

Figure 3: Distribution of Participants as per their perceptions about reasons for choosing the speciality [n = 199].

Discussion

General medicine was the most preferred specialty (77.3%) in our study, comparable to the study done by Smitha Bhat et al. and also Sharma et al., where internal medicine was the most preferred specialty. Clinical branches held the top spot amongst students due to reasons such as interest in the specialty, more avenues for super specialization, financial safety, perception of the said field in society, and desire to open their setup. However, with an increasing private medical colleges and clinical management seats, there is serious doubt about the quality of medical graduates produced. Many medical colleges may need more resources; thus, becoming a good clinician becomes doubtful [8, 9]. Anatomy (6%) was the least preferred branch in our study, comparable to the study by Bagga et al. Primary specialties are least chosen by students when deciding on the choice of future specialties mainly because they do not want to teach, have limited avenues for further studies, and have less financial security than clinical specialties. This trend can be disturbing since it will lead to an acute shortage of teachers in primary specialties, and medical colleges will be left in need of these teachers. They can also result in hiring non-specialist teachers at these [10]. When asked about their reason for choosing a particular specialty, 91.9% said that interest in a specialty was the main reason which is similar to a study done by Chawla et al. in which out of 280 students, 68.5% had an interest in a specialty as main reason[11]. This can be due to some personal experience/ influence in a career or can be due to an individual liking a particular specialty. They also considered financial aspects, the opportunity for patient care and higher studies, and a comfortable lifestyle, including flexible working hours and less stressful conditions, as other factors while preferring a particular specialty.

Gender-wise specialty preference revealed that the most preferred branch by both males and females was General medicine (34.7% and 42.7%, respectively), followed by Orthopedics in males (29.6%) and Dermatology (40.7%) in females (TABLE 2). However, it was inconsistent with a study by Bagga et al., in which Orthopedics and Surgery were the most preferred among males and Obs & Gynae followed by Pediatrics in females. It could be because this study was done in a different time setting and a separate geographical area and environment, which influenced their choice-making [10]. The least preferred branch by both male and female were Anatomy in our study, which is consistent with the study done by Anand et al., which reaffirms the fact that students do not prefer basic branches of medicine for reasons mentioned earlier [6].

Concerning the place of doing postgraduation majority of the students, 73.8%, wanted to pursue NEET PG in India. Having a family in India was the most common reason for seeking postgraduation in India, indicating that the human need for affection, love and emotional support plays a pivotal role. It confirms that 'money is not everything.' Only 23.6% of students chose to pursue a specialty abroad, with the most important reason being the higher standard of medical education abroad, which is consistent with the finding of Chawla et al. wherein also majority preferred to stay in India as compared to abroad. [11.]

When family income was compared with the choice of postgraduation, those with a gain of more than ten lakhs, 49% wanted to pursue postgraduation in India. In contrast, 51% wanted to do postgraduation abroad, and for those with income less than ten lakhs, 18% wanted to do postgraduation abroad and 82% to do postgraduation in India. The chi-square test with Yates correction yielded a p-value <0.00001, which is significant (TABLE 2). Those with more financial stability are more likely to go abroad as they have more spending power to afford the cost of studying in a foreign country, contrary to those with less income, possibly by taking loans/ borrowing money.

Out of 19 with an aggregate of more than 70% (first division), 36.8% were willing to go abroad for postgraduation, while 63.2% wanted to pursue postgraduation in India via NEET-PG. Similarly, of those 180 with an aggregate of less than 70% (second division), 25% and 75% wanted to pursue postgraduation from abroad and in India, respectively. A chi-square test was applied, and a p-value of 0.263824 which is not significant, a p of <0.5 (TABLE 3)

Table 1: Distribution of participants according to their preference to the subjects [n=199]

SUBJECT	Female	Male	Total
Medicine	85 (42.7)	69 (34.7)	154 (77.4)
Dermatology	81 (40.7)	56 (28.1)	137 (68.8)
Radiodiagnosis	61 (30.7)	55 (27.6)	116 (58.3)
Surgery	60 (30.2)	54 (27.1)	114 (57.3)
Pediatrics	61 (30.7)	36 (18.1)	97 (48.7)
Emergency Medicine	58 (29.1)	28 (14.1)	86 (43.2)
Ortho	25 (12.6)	59 (29.6)	84 (42.2)
Ophthalmology	37 (18.6)	31 (15.6)	68 (34.2)
Anesthesia	43 (21.6)	24 (12.1)	67 (33.7)
Obstetrics and Gynecology	58 (29.1)	7 (3.5)	65 (32.7)
Pulmonary TB	35 (17.6)	28 (14.1)	63 (31.7)
Radiation Oncology	39 (19.6)	17 (8.5)	56 (28.1)
ENT	36 (18.1)	18 (9)	54 (27.1)
Sports Medicine	15 (7.5)	18 (9)	33 (16.6)
Community Medicine	22 (11.1)	10 (5)	32 (16.1)
Nuclear Medicine	16 (8)	14 (7)	30 (15.1)
Pathology	19 (9.5)	11 (5.5)	30 (15.1)
Forensic Medicine and Toxicology	16 (8)	13 (6.5)	29 (14.6)
Rehabilitation Medicine	19 (9.5)	6 (3)	25 (12.6)
Tropical Medicine	15 (7.5)	8 (4)	23 (11.6)
6 Month USG	11 (5.5)	9 (4.5)	20 (10.1)
Pharmacology	15 (7.5)	5 (2.5)	20 (10.1)
Physiology	12 (6)	8 (4)	20 (10.1)
Transfusion Medicine	11 (5.5)	7 (3.5)	18 (9)
Biochemistry	10 (5)	4 (2)	14 (7)
Microbiology	9 (4.5)	4 (2)	13 (6.5)
Anatomy	8 (4)	4 (2)	12 (6)

* Multiple Choice

Table 2: Distribution of the participants as per Annual Family Income viz-a-viz Postgraduation [n=199]

FAMILY ANNUAL INCOME	FOREIGN PGS n (%)	NEET-PG AND OTHERS n (%)	TOTAL n (%)
Above 10 Lakh	25 (51)	24 (49)	49 (100)
Less than 10 Lakhs	27 (18)	123 (82)	150 (100)
Total	52 (26.1)	147 (73.9)	199 (100)

The chi-square statistic is 20.8634. The *p*-value is < 0.00001. **Significant** at $p < .05$.

The chi-square statistic with Yates correction is 19.1878. The *p*-value is < 0.00001. Significant at $p < .05$.

TABLE 3: Distribution of the participants according to the Percentage scored in MBBS viz-a-viz Postgraduation [n=199]

Percentage Marks	Foreign PGS n (%)	Neet-Pg And Others n (%)	Total n (%)
70% and above	7 (36.8)	12 (63.2)	19 (100)
70% and below	45 (25)	135 (75)	180 (100)
Total	52 (26.1)	147 (73.9)	199 (100)

The chi-square statistic is 1.2486. The *p*-value is .263824. ***Not* significant** at $p < .05$.

Conclusion

Most participants preferred clinical medicine branches, with General medicine being the most desired, followed by Dermatology. Participants with an annual family income of more than ten lakhs preferred pursuing postgraduation abroad, and marks were not a significant factor in deciding. Reportedly, the primary factor for opting for a foreign PG was better education and a better standard of living. At the same time, some students preferred to pursue postgraduation in India to stay close to their families and the environment they were used to.

Conflict of Interest: No conflict of interest.

Source of Funding: No funding required.

Ethical Clearance: The study was granted permission by Institutional Ethics Committee vide letter no- Trg.9(310)2022/24741-42 dated – 27.07.22 (SUPPLEMENTAL FILE 2).

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Case Report

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Severe Leptospirosis With non-Oliguric Renal Failure With 'Myocarditis' Mimicking Acute Coronary Syndrome: A Rare Presentation From Northern India

Amit Kumar[1], Majaz Ahmad[2], Desai Vishal Jakshibhai[3]

[1]Senior Resident, Department of Medicine, Pt. BD Sharma Pgims Rohtak, [2]Resident, Department of Medicine, Pgims Rohtak, [3]Resident, Department of Medicine, SGT Hospital, Gurugram.

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Abstract

Leptospirosis is a globally distributed zoonosis with a broad clinical spectrum. Thisthe disease mostly affects liver and kidney tissues. Other organs can be affected by leptospirosis-induced vasculitis. In addition, cardiac manifestations are common, and the presence of transient ECG abnormalities can be found in 50-60 % of the patients(1). Early diagnosis and adequate supportive therapy are crucial for the appropriate management of symptoms. In this article, we present a case of leptospirosis with myocarditis with hypokalemia and non-oliguric acute renal failure. All clinical findings gradually regressed after treatment.

Keywords: Leptospirosis, Myocarditis, Nonoliguric renal failure.

Introduction

Leptospirosis is one of the most common and important zoonotic infections worldwide. Leptospirosis generally presents with features of bacterial infection in the acute phase followed by multi-organ complications and may be complicated by jaundice and renal failure, pulmonary hemorrhage, acute respiratory distress syndrome, myocarditis, rhabdomyolysis, and uveitis. Myocarditis and acute pancreatitis are very rare manifestations of leptospirosis. In this article, we present a case of leptospirosis with myocarditis with hypokalemia and non-oliguric acute renal failure.[1]

Case Report

A 45-year female patient, with a known case of seizure disorder for 1o years, on tablet sodium valproate 500 mg BD, presented in a medical emergency with chief complaints of chest pain associated with shortness of breath. The patient gave a history that she had a fever which appeared 10 days before the present episode. The fever was continuous without any associated chills and rigors but was accompanied by generalized body aches including retro-orbital pain. The fever lasted for 6 days and the patient was febrile for last4days before the above-mentioned presentation. The current complaint of chest pain was acute in onset, in the left side of the chest, non-radiating, aggravating on exertion, and associated with difficulty in breathing. There was no history of cough, expectoration, trauma to the chest, nausea vomiting. No history or decreased urination. On examination, she was mildly tachypneic (Respiratory rate: 22) with oxygen saturation of 98% at room air and blood pressure of 140/86, pulse rate -86/minute regular rhythm. On examination, she had bilateral equal air entry with a clear chest.

Corresponding Author: Amit Kumar, Senior Resident, Department Of Medicine - Pt. BD Sharma Pgims Rohtak.

E-mail: Amitgaider390@Gmail.Com

Her cardiac, and abdominal examination were also normal. Her CNS examination was normal with no focal neurological deficit.

Investigations done in emergency revealed electrocardiography showing generalized T wave inversions with normal sinus rhythm (with normal QTc interval). In light of generalized T wave inversion, a bedside 2D echo was done in which there were no regional/global/valvular or pericardial abnormalities. Her complete hemogram revealed Hb -11.3, TLC-13000/mm^3, and a platelet count of 3.1lakhs. The urine examination revealed hematuria (RBCs-10-12) along with mild proteinuria (2+). Blood biochemistry revealed blood urea-177 mg/dl, serum creatinine 7.0 mg/dL with serum sodium-130mEq/L, and potassium-2.8mEq/L. Her LFT was within normal limits and her creatinine kinase was found to be elevated. Her chest radiography was within normal limits and also her USG abdomen revealed no abnormality her bilateral kidney size and echo texture were normal.24-hour urinary protein test revealed 1.3 g/day of proteinuria.

In the background of pyrexia rapid test for dengue and malaria were done and was found to be negative. Serology for scrub typhus and rickettsia was also negative. But her IgM leptospirosis was found to be positive by ELISA. ANA and viral serology (HIV/HBsAg/HCV) were negative. Based on the clinical profile and positive report for leptospirosis, the patient was hospitalized. The patient had high blood urea with raised serum creatinine with low potassium and adequate urine output and thus she was diagnosed with a case of Leptospirosis with acute myocarditis with acute non-oliguric hypokalemic renal failure. The patient was given the antibiotic Tab Azithromycin along with supportive care and vital monitoring.

The patient's symptoms gradually improved and her renal parameters returned to normal by the 5th day of hospitalization. Her ECG changes of T wave inversion also reverted within one week of the hospital stay. Her Creatine kinase also returned to normal range. The patient was discharged in an asymptomatic state after having recovered from acute illness.

Table 1: Laboratory parameters of our reported case with leptospirosis

Test	Parameters at admission	Parameters at discharge	Reference value
Haemoglobin (g/dL)	11.3	9.0	12.9-15.9
Leucocytes (cells x10^9/L)	13000	6900	3.7-10.1
Platelets (cells x10^9/L)	310	210	155-366
Urea (mg/dL)	177	36	10-50
Creatinine (mg/dL)	8.0	2.3	0.7-1.3
K^+ (mEq/L)	3.6	4.6	3.5-5.5
Na^+ (mEq/L)	143	136	135-155
Uric acid (mg/dL)	6.1	5.6	3-7
Total bilirubin (mg/dL)	0.58	0.4	0.2-0.8
Direct bilirubin (mg/dL)	0.2	0.1	0-0.2
Aspartate aminotransferase (IU/L)	23	16	0-40
Alanine aminotransferase (IU/L)	37	12	0-40
Total protein (g/dL)	7.6	7.2	6-8
Albumins (g/dL)	4.3	3.2	3.5-5 .2
PT/INR	14/1.04		11-13.5/0.8-1.1
CPK total (IU/L)	346		0-170
CRP mg/L	21		<5.0
Urinary Albumin	2+	1+	negative
Urinary RBCs/hpf	10-12	3-4	0-2
Urine for dysmorphic RBCs	negative		negative
Urine for myoglobin	negative		negative
24 hr urinary protein (g/day)	1.2 g		0.04-0.15

Discussion

Leptospirosis, essentially a zoonotic disease that is bacterial in origin, is caused by pathogenic strains of Leptospira and is prevalent worldwide. Human infection occurs by direct contact or with exposure to soil or water contaminated by the urine of the reservoir hosts like cattle, dogs, pigs, and rodents Outbreaks of leptospirosis have been increasing in India for the past three decades. The positivity rate for the disease is notable in the southern part of India at 25.6%, followed by 8.3%, 3.5%, 3.1%, and 3.3% in northern, western, eastern and central India, respectively, where heavy monsoon, animal rearing practices, unplanned urbanization and agrarian way of life predispose to this infection.[2]

More than ten genetic types of Leptospira cause disease in humans. Both wild and domestic animals can spread the disease, most commonly rodents. The bacteria can spread through contact with animal urine, water, or soil contaminated with animal urine, coming into contact with breaks in the skin, eyes, nose, and mouth. In our country, farmers, people working in cleaning sewage, and low socioeconomic strata with poor sanitation are at high risk. It is a biphasic illness. Acute phase (first week of illness), clinical features include abrupt onset of fever, rigors, myalgias (especially in the calves and lower back), and headache; these symptoms occur in 75 to 100 percent of patients. Approximately half of the patients experience nausea, vomiting, and diarrhea, and non-productive cough occurs in 25 to 35 percent of cases. Less common symptoms include arthralgias, bone pain, sore throat, and abdominal pain. Acalculous cholecystitis and pancreatitis have been described in children.[3]

In some around 20%, symptoms resume after one to three days, initiating the immune phase of the disease, which last for 4 to 30 days. "Immune" phase (delayed phase of illness), the second phase thus can be complicated by acute renal failure, jaundice, myocarditis, pulmonary hemorrhage, meningitis, uveitis, and optic neuritis. IgM antibodies are commonly found in that phase, and the severity of leptospirosis is associated with the intensity of the humoral immune response of the host. Serological tests are used most frequently for the diagnosis of leptospirosis. MAT is still the golden standard in the diagnosis of leptospirosis. In our case, diagnosis of leptospirosis was established with positive serology and IgM ELISA test for Leptospira.

Although cardiac involvement is common in leptospirosis but severe cardiac dysfunction is rare. Myocarditis usually occurs during the 5–7th day of leptospiral infection. This coincides with the 'immunogenic' phase of the disease. A study done by TRIVEDI et al in India in 2003 revealed that the incidence of cardiac involvement in leptospirosis in India is 56% and out of these 52%patients had ECG changes. ECG changes in leptospirosis may present as sinus tachycardia to relative Bradycardia, bundle branch block, low voltage QRS complex, Intraventricular conduction defects, atrial fibrillation,1st and 3rddegree A-V block, and nonspecific ventricular repolarization. Pathogenesis of myocarditis and ECG changes is still not clear. The ECG Changes may be the result of electrolyte abnormalities associated with leptospiroses like hypokalemia or hyperkalemia, hypocalcemia, or hypomagnesemia. These ECG changes are associated with lower potassium levels, decreased platelet counts, and transaminitis with raised bilirubin

Myocarditis involvement in leptospirosis is the result of the complex intersection between host immunity and organism. Systemic vasculitis has been postulated to be one of the mechanisms of organ dysfunction in leptospirosis. Widespread activation of the immune system may result in sepsis-like syndrome which may result in direct myocardial involvement or it may be a result of systemic vasculitis caused by leptospirosis. Autopsy study in these patients shows mononuclear infiltration in the epicardium, interstitial myocarditis with pericardial effusion, and coronary arteritis.CK-MB levels may be elevated in the patient but it does not appear as a reliable marker for cardiac involvement. So is with elevated troponin level as there is no pathological or prognostic significance associated. Echocardiography is also not a reliable tool for determining early involvement. For the treatment part, the role of immunomodulatory therapy in myocarditis of any cause is inconclusive. Methylprednisolone although showing some mortality benefit in the presence of less severe leptospirosis failed to improve survival in leptospirosis with MODS.[4]

Conclusion

Most cases of leptospirosis are mild and resolve spontaneously. Early initiation of antimicrobial therapy may prevent some patients from progressing to severe disease. Empirical treatment should be as soon as the diagnosis of leptospirosis is suspected. it is shown in two open-label studies that ceftriaxone, cefotaxime, or doxycycline is a satisfactory alternative to penicillin for the treatment of severe leptospirosis. Aggressive fluid and electrolyte therapy requires in nonoliguric renal dysfunction patients to prevent dehydration and precipitation of oliguric renal failure. Peritoneal dialysis or hemodialysis should be provided to patients with oliguric renal failure. There is no specific treatment identified for myocarditis in leptospirosis. To prevent the precipitation of arrhythmia electrolyte abnormalities should be corrected as soon as possible. Although vasculitis is the main pathogenesis in cardiac involvement studies showed that there is no role of corticosteroids and immunomodulators in management. Our patient was treated with a tablet of azithromycin 500 mg OD, an injection of ceftriaxone 1 gm BD, and IV fluids with supportive care. Because the clinical features and diagnostic findings of leptospirosis are not specific, a high index of suspicion must be maintained for the diagnosis. Early clinical suspicion and laboratory confirmation of leptospirosis are essential since delayed diagnosis may increase mortality.

In conclusion, leptospirosis should be considered as a preliminary diagnosis in our country during the tropical fever season and a person's belonging from high risk in the community. We recommend starting empiric treatment before confirmation of laboratory tests in patients with suspected Leptospirosis to prevent them from landing into severe leptospirosis and thus decrease the mortality associated with it.

Informed Consent: written informed consent was taken from patients.

Ethical Approval: ethical committee approval was not required from the committee as per protocol for case reports.

Source of Funding: funding source was self

Conflict of Interest: there was no conflict of interest

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Original Research

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Prevalence & Reasons of Substance Abuse among Adolescent boys of an Underserved Rural Community of Southern Haryana: A Preliminary Study

Anil Kumar[1], Pawan Goel[2], Neeraj Gour[3], Abhishek Singh[4]

[1]Post Graduate Student, [2],[3]Professor, [4]Associate Professor, Department of Community Medicine, SHKM Government Medical College, Nuh, Haryana.

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Abstract

Background: Early initiation of substance abuse is usually associated with a poor prognosis and a more serious impact on health, education, familial, or social relationships. Substance abuse may lead to behavioural problems, relationship difficulties and may cause disruption in studies, and even dropping out of school. This study aims to assess prevalence & reasons of substance abuse among adolescent boys (15-19 years) in rural areas of district Nuh.

Materials and Methods: Adolescent boys in the age group of 15 -19 years formed the study population. House-to-house survey was conducted in all the selected villages for data collection. A complete line listing of male adolescents (15-19 years) was done in each village. Then study subjects were chosen by simple random sampling. A total of 300 respondent eligible study subjects were interviewed to collect information.

Results: The prevalence of substance abuse among study subjects was found to be 42%. Tobacco abuse was 36.0% (n=108, both smokeless and smoked), followed by alcohol 2.33% (n=07), opioids & pharmaceutical products 1.33% each (n=4). Of total 126, substance abuser, 77.7% (n=98) have friends who were indulge in substance abuse. Other major reasons for substance abuse were to cheer-up (38.1%), and peer pressure (35.7%). 19.8% subjects started abusing substance after drop in their academic performance.

Conclusion: The burden of substance abuse was 42.0% among study subjects. It's an alarming situation considering rural area. As the findings pertain to adolescent boys in the age group of 15 -19 years, preventive strategies need to be strengthened so as to curb this problem before it shows its deleterious effects in later phase of life.

Keywords: burden, substance abuse, India, rural

Introduction

Substance abuse is defined by World Health Organization (WHO) as "persistent or sporadic drug use inconsistent with or unrelated to acceptable medical practice'' Abuse has also been defined as a nonmedical or unsanctioned pattern of use, irrespective of consequences. [1,2] Substance abuse is a growing problem in India. After alcohol (14.6%), cannabis (2.8%), opioids (2.1%), and cocaine (0.10%) are the next commonly used substances. India is the second-largest consumer after China, of tobacco products in the world.[3]

Tobacco use is more prevalent in a rural area as compared to an urban area. It is estimated that about

Corresponding Author: Anil Kumar, Post Graduate student, Department of Community Medicine, SHKM Government Medical College, Nuh, Haryana.

Mobile No: 7988028343

E-mail: abhishekparleg@gmail.com

5,500 adolescents initiate tobacco consumption every day in India.[4] Early initiation of substance abuse is usually associated with a poor prognosis and a more serious impact on health, education, familial, or social relationships. Substance abuse may lead to behavioral problems, relationship difficulties and may cause disruption in studies, and even dropping out of school.

Due to the paucity of primary data regarding substance abuse in adolescents in Nuh district of Haryana it is important to examine the epidemiological aspects of adolescent substance abuse in these rural geographical areas. This study aims to assess prevalence & reasons of substance abuse among adolescent boys (15-19 years) in rural areas of district Nuh.

Material and Methods

The present study was cross-sectional in design, conducted at department of Community Medicine of a tertiary care teaching institute situated in Nuh region of Haryana state during 2021-22. Adolescent boys in the age group of 15 -19 years formed the study population. Adolescent boys and their parents/ guardian (if needed) willing to give written informed consent and adolescent boys below 18 years of age willing to give written assent were included in the study.

Data was collected using a modified version of schedule used in a nation-wide study commissioned by NCPCR (National Commission for Protection of Child Rights) in collaboration with National Drug Dependence Treatment Centre (NDDTC) of AIIMS, New Delhi, that examined the pattern, profile and correlates of substance abuse among Indian children. [5]

House-to-house survey was conducted in all the selected villages for data collection. A complete line listing of male adolescents (15-19 years) was done in each village. Then study subjects were chosen by simple random sampling. A total of 300 respondent eligible study subjects were interviewed to collect information.

The investigation was started after receiving ethical approval from the institute. The data collected was coded appropriately on MS Excel spreadsheet. Data was checked for any potential errors. Statistical software was used for analyzing the data.

Findings

Of the total 300 study subjects, 42% (n=126), were substance abuser thus the prevalence of substance abuse among study subjects was found to be 42%. (Table 1)

Table 1: Distribution of burden of substance abuse (n=300)

Study subjects	Frequency	Percentage (%)
Substance abuser	126	42.0%
Non-abuser	174	58.0%
Total	300	100.0%

Of total 126 substance abuse, tobacco abuse was 36.0% (n=108, both smokeless and smoked), followed by alcohol 2.33% (n=07), opioids & pharmaceutical products 1.33% each (n=4). Volatile substance abuse was reported by only one study subject. (Table 2)

Table 2: Distribution of different type of substance abuse.

Substance abused	Frequency	Percentage (%)
Tobacco (smokeless and smoked)	108	36.0
Alcohol	07	2.33
Opioids	04	1.33
Pharmaceutical products	04	1.33
Cannabis	02	0.66
Volatile substance	01	0.25
Total	126	42.0

Of total 126, substance abuser, 77.7% (n=98) have friends who were indulge in substance abuse. Other major reasons for substance abuse were to cheer-up (38.1%), and peer pressure (35.7%). 19.8% subjects started abusing substance after drop in their academic performance. (Table 3)

Table 3: Reasons of substance abuse as perceived by study subjects (n=126)*

Reason for substance abuse		Frequency	Percentage (%)
1	To forget worries	15	11.9%
2	Cheer-up	48	38.1%
3	Relax	21	16.6%

Continue.....

4	Peer pressure	45	35.7%
5	Others	6	4.7%
6	Drop in academic performance	25	19.8%
7	Close friend indulged in substance abuse	98	77.7%

*Multiple responses permitted

Discussion

In this study, of the total 300 study subjects, 42% (n=126), were substance abuser thus the prevalence of substance abuse among study subjects was found to be 42%. Results of our study are in concordance with another study done by *Prashant et.al.*[6] who reported burden of substance abuse of 32.7% in Andhra Pradesh. The burden of substance abuse in our study was lower than that reported by *Sharma et al.* [7], who observed that substance abuse was 65.5 %, This could be due to the reason that in our study we included only male study subjects. A similar study on substance abuse from Punjab, observed that prevalence of substance abuse among study group was 65.5% and most common substance abused was alcohol (41.8%), followed by tobacco (21.3%). A high prevalence of heroin abusers was noted among study subjects (20.8%). The prevalence of nonalcohol and nontobacco substance abuse was 34.8%.[8]

In this study, of total 126 substance abuse, tobacco abuse was 36.0% (n=108, both smokeless and smoked), followed by alcohol 2.33% (n=07), opioids & pharmaceutical products 1.33% each (n=4). Volatile substance abuse was reported by only one study subject. Our findings are in cohort with study by *Kokiwar et al*.[6] he observed that the most common forms of tobacco consumed were khaini,gutkha and tobacco chewing. Another study by *Ahmad et al*.[9] is also reported the same pattern of tobacco abuse ie 71.1% of teenagers used smokeless tobacco, of which 72.2% ingested gutkha, 18.9 % used pan zarda, and 5.4 % consumed both gul and khaini. These findings are in concordance with our observations. There could be several reasons for the high prevalence of tobacco use among adolescents. Both smoked and smokeless tobacco products are easily available to community, and their use is socially acceptable.[10] Another study by project UDAYA is also in concordance with our observations, after tobacco and alcohol abuse, only 1% of older boys (15-19 years) in Bihar and UP reported use of brown sugar (a heroin product) cocaine, ganja, charas and bhaang. [11]

In contrast to our findings, *Randhawa et al*. [12] observed that Heroin was the most commonly (67.6 %) misused substance. 15.1% were addicted to opiates, 8.49% were alcoholics, 7.55% abusers were addicted to poppy husk (bhukki), and 1.24% abuser were addicted to cannabis. The majority of drug abusers, or 51.66 %, admitted to abusing drugs using the injecting method, whereas 32.61 % of users abused drugs through the oral route, and 15.63 % of users abused drugs through the sniffing method.

In this study, of total 126, substance abuser, 77.7% (n=98) have friends who were indulge in substance abuse. Other major reasons for substance abuse were to cheer-up (38.1%), and peer pressure (35.7%). 19.8% subjects started abusing substance after drop in their academic performance. In concordance with our findings another study by *Jasani et.al.* [13] and *Pawar and Mehendale* [14] observed that most common reason for initiation of substance abuse was peer pressure, followed by pleasure, and tension. Similar result was observed in the study done in Andhra Pradesh. It shows that the important reasons for initiation of substance use were peer pressure (52.9%) in a significantly higher number of substance users, followed by the reason of enjoyment (21.1%).

Conclusion

The burden of substance abuse was 42.0% among study subjects. Its an alarming situation considering rural area. As the findings pertain to adolescent boys in the age group of 15 -19 years, preventive strategies need to be strengthened so as to curb this problem before it shows its deleterious effects in later phase of life.

Conflict of Interest: Nil

Source of funding: Self

Declaration of Ethical clearance: Taken from ethical committee of institute

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Original Article

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Cytological Analysis of Thyroid lesions According to the Bethesda System for Reporting Thyroid Cytology and their Correlation with Histopathology: A Prospective Study

Aruna Kumari Pagalla[1], Lalitha Pragna Merla[2], Prashanth Gunde[3], Manoj Gunde[4]

[1]Assosciate Prof, [2]Resident, Dept of Pathology, Chalmeda Anand Rao Institute Of Medical Sciences, Telangana, India, [3]Prof & HOD, Dept of Surgery, Chalmeda Anand Rao institute of Medical Sciences, Telangana, India, [4]Assistant Prof, Dept of ENT, Chalmeda anand rao institute of medical sciences, Telangana, India.

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Abstract

Introduction: Fine-needle aspiration cytology (FNAC) has a crucial role in differentiating between non-neoplastic and neoplastic lesions of the thyroid. It is a quick outpatient department (OPD) procedure. It greatly affects the treatment decision. The current study was done to evaluate the role of FNAC as a diagnostic tool in thyroid lesions and establish a clinico-cytological and histological correlation.

Aim: To study efficacy of Bethesda system for reporting (TBSRTC) FNAC of thyroid in view of offering guidance for patient management, for review of distribution of diagnostic categories and correlation with histopathology.

Materials and Methods: It is a prospective study of thyroid lesions carried out at the Department of Pathology, CAIMS, Karimnagar over a period of 3 years (January 2020 to January 2023) A total of 303 patients of neck swelling (thyroid), with satisfactory cases on 290 patients in cytology were undertaken for histopathology. Their clinico-cytological, biochemical, and histological correlation was done only in 133 patients only. Their statistical analysis was done.

Results: Majority of cases were non neoplastic. The accuracy of cytodiagnosis was 89.3% and overall malignancy rate on histopathology was 16% (37 cases).

Conclusion: FNAC of lesions in thyroid gland has a high accuracy in differentiating between malignant and benign lesions. It is safe cost effective, minimally invasive, and OPD procedure. Using FNAC as the first line of investigation which streamline the reporting terminologies and the number of surgeries on thyroid lesion has reduced greatly.

Keywords: Fine needle aspiration cytology, goiter, Hashimoto's thyroiditis, FA (follicular adenoma), PTC (papillary thyroid carcinoma), medullary carcinoma.

Introduction

Incidence of clinically apparent thyroid swellings in general population is 4% - 5%[1]. Majority of these swellings are benign nature, in which goiter is most common. Thyroid fine-needle aspiration cytology (FNAC) was introduced in 1950

Corresponding Author: Aruna Kumari Pagalla, Assosciate Prof Dept Of Pathology, Chalmeda Anand Rao Institute Of Medical Sciences, Telangana, India.

E-mail: drarunagunde@gmail.com

and became popular worldwide in 1980[2]. Today it is a well-established technique for preoperative diagnosis of thyroid pathologies. Thyroid lesions may cause signs and symptoms of hypothyroidism or hyperthyroidism and also have malignant potential.[3] Therefore, accurate evaluation of thyroid lesions is difficult.

Various non-invasive methods used for diagnosis of thyroid lesions do not make a definitive diagnosis of malignant lesions. FNAC has now replaced many other tests which are used for pre-operative diagnosis of thyroid lesions. Now a days, most clinicians rely solely on FNAC for making a diagnosis of benign lesions. As a result, the incidence of malignancy in thyroidectomy patients has increased from 10% to 30-50% in recent years.[4] In spite of the first choice of investigation in thyroid lesions, it also has some limitations. The observed difficulties are largely linked to sampling methodology, aspiration expertise, sample adequacy, pathologist experience in analysing the aspirate, and overlapping cytological features between benign and malignant follicular neoplasms.[5,6]

FNAC is safe relatively simple and cost effective for evaluation of thyroid patients. This procedure provides a tool for detecting thyroid malignancies in an early stage, resulting in a better outcome of patients.

In this study effectiveness of FNAC is evaluated in the clinical management of thyroid disease and also to reduce the rate of surgery in benign cases.

Materials and Methods

This is a prospective study of thyroid lesions carried out at Department of Pathology and were taken from ENT, General surgery and Medicine OPD for FNAC. 303 FNACs were done during this period. Patients of all ages and both the sexes were included in the study. Out of 303, 290 patients are evaluated and histological correlation was available in 230 cases. A sample of histopathology was collected from our own surgical department as well as from the surgeries done outside. Methods used in this study included clinical presentation, thyroid function tests, FNAC, and histopathology. Signs and symptoms related to thyroid gland were solitary nodule, multinodular, and diffuse goiter. Signs of compression, hoarseness of voice, cough, pain, dysphagia, and symptoms related with hypo functioning or hyper functioning of thyroid gland. Thyroid function test was used to determine the level of free T3, T4 and free T4, and thyroid stimulating hormone.

All FNAC were done as the outpatient procedure; Ultrasound guided FNAC was also done whenever needed. Air dried smears were stained with May–Grunwald–Giemsa, and wet smears were stained with papanicolaou and hematoxylin and eosin stain. The results of FNAC were compared with histopathology in 230 cases. The cytological results were also correlated with clinical features and thyroid function tests. The statistical analysis included sensitivity, specificity, positive predictive value, negative predictive value, accuracy.

Ethical Approval:

This study was reviewed and approved by institute ethics committee, CAIMS, karimnagar. Informed consent was taken from all the Patients.

Results

FNAC performed in 303 patients of which 90.36% (253cases) were female, and 27 cases (9.64%) were male. So male: female ratio is 1:9.37. Most of the patients were in the age group of 21-50 (table 1). Most common presenting symptom was painless solitary nodule, diffuse nodular enlargement.

In the present study cases were categorized according to bethesda system of reporting thyroid cytology based on morphology divided into six categories.

Out of 290 cases 13 cases (4.29%) were category 1, 233 cases (80%) were category 2, 13 cases (4.4%) were category 3, 28 cases (9.6%) were category 4, 6 cases (1.7%) were category 5, 10 cases (3.4%) were in category 6 (Table 3).

Table 1: Age Distribution of Thyroid Patients.

Age Group in Years	Number of Patients	Percentage %
0-20	45	14.85 %
21-40	173	57 %
41-60	69	22.77 %
61-80	16	5.28 %
TOTAL	303	100 %

Table 2: Statistical Analysis (%)[21,22]

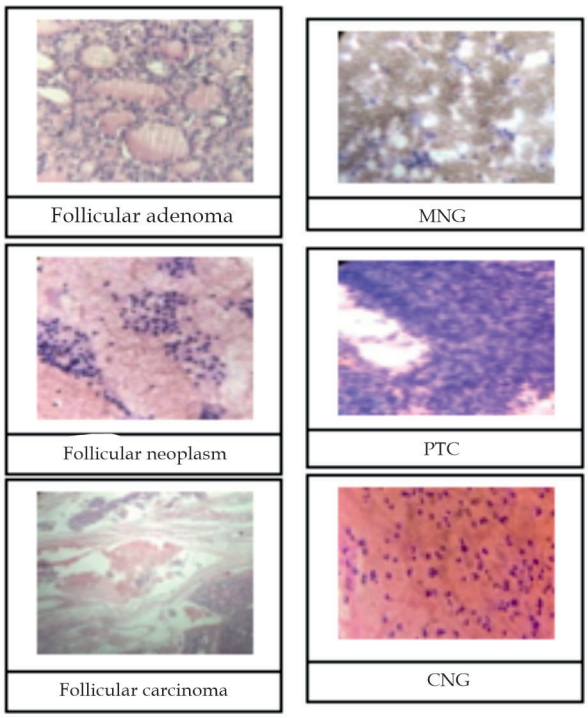
Sensitivity	79.30%
Specificity	100%
Positive Predictive Value	100%
Negative Predictive Value	17.81%
Accuracy	80.20%

Table 3: Distribution of Cases According to The Bethseda System of Reporting Thyroid Cytology.

Category	No of cases	%
Category 1	13	4.29 %
Category 2	233	80 %
Category 3	13	4.4 %
Category 4	28	9.6 %
Category 5	06	1.7 %
Category 6	10	3.4 %
Total	303	100

Table 4: Cases with Histopathology Correlation According to Bethesda System of Reporting Thyroid Lesions.

Category	Sub Category	No of Cases	Cytology diagnosis		Histopathology Diagnosis		Diagnosed	Not Correlated
			Benign	Malignant	Benign	Malignant		
1	ND	13 (4.3%)	0	0			Thyroglossal fistula, Parathyroid lesions,etc.,	
2	MNG HT FA with Cystic Degeneration PTC with Cystic Degeneration	180 (78.2%)	166 (92.2%)	10 (5.5%)	166 (92.2%)	10 (5.5 %)	FA	04 (2.2%)
3	AUS OR FLUS	13 (5.6%)	06 (46.15%)	03 (23%)	06 (46.1%)	03 (23 %)	MNG Lymphocytic Thyroiditis	04 (30.7%)
4	Benign Follicular Nodule	21 (9.1%)	11 (52.38%)	09 (42.85%)	11 (52.3%)	09 (42.8 %)	MNG with secondary changes on HPE	01 (4.76%)
5	Suspicious For Malignancy	6 (2.6%)	01 (20%)	05 (80%)	1 (16.6%)	5 (83.3 %)	FA	0
6	Malignancy	10 (10.43%)	0	10 (100%)	0	10 (100 %)		0
	Total	230	184 (80 %)	37 (16 %)	184 (80 %)	37 (16 %)		09 (3.9 %)



Category 1: Lesions are non-diagnostic and are not included in histopathological comparision. Out of 303 cases, 13 cases (4.3 %) were not correlated which were diagnosed as thyroglossal fistula, parathyroid lesion and MNG.

Category 2: Out of 180 (78.2 %) cases, 64 cases (75.29%) were benign and are correlated with histopathological diagnosis. 10 cases (5.5%) were malignant and are diagnosed as PTC, FVPTC. 4 cases (2.2%) were not correlated.

Category 3: Out of 13 (5.6 %) cases, 6 cases (46.1%) were benign and 3 cases (23%) were malignant, which were follicular carcinoma. 4 cases (30.76%) were diagnosed as MNG and lymphocytic thyroiditis.

Category 4: Out of 21 (9.1%) cases, 11 cases (53.26%) were benign (Benign follicular nodule) and 9 cases (42.85%) were malignant. 1 case (4.76%) is not correlated which was diagnosed as MNG with secondary changes on HPE.

Category 5: Out of 6 (4.34%) cases, 2 cases are (33.3%) benign (FA) and 4 cases (66.3%) were malignant (suspicious for follicular neoplasm) and all are correlated.

Category 6: Out of 10 cases (4.34%), all were malignant (PTC-6 cases 60%, FC-3 cases 30% and MC-1 cases 10%) and are correlated (table 4).

Discussion

Thyroid enlargement is the most frequent condition in India's sub-Himalayan region; FNAC has high patient acceptance and no side effects. It is an easy and low-cost effective test used in the diagnosis of the thyroid nodules.[5,7,8] FNAC of thyroid nodule has decreased the rate of thyroid surgery.[9]

The value of any test depends on its ability to detect the presence of disease (sensitivity) and to verify the absence of disease when it is not presence (specificity). The sensitivity of thyroid FNAC ranges from 92.24% to 98.08% and specificity ranges from 84.76% to 98.27%.[10,11] In our study, sensitivity was 79.30%, and specificity was 100%, which correlates with other studies.[12,14-19] This shows that FNAC is more sensitive. There as on for the wide range of sensitivity and specificity is the difference in the way of categorization of lesions by a different cytopathologist. Also, the perspective study on evaluation of malignancy rate of non-diagnostic category of Bethesda system for reporting thyroid in cytopathology can be considered[13]. Inadequate sample, inexperienced cytopathologists, and difficulty distinguishing between benign and malignant follicular lesions all reduce the efficiency of thyroid FNAC. Large areas of sclerotic, calcified, or cystic degeneration may result in inadequate sample.

The solitary thyroid nodule is less likely to be malignant. In our study, out of 230 patient's benign follicular nodule, 180 cases confirmed with cytodiagnosis, 10 cases differ which were papillary carcinoma on FNAC and 4 were not correlated and are diagnosed as follicular adenoma and adenomatous nodule on HPE which correlates with others studies.[13,14]

Most common age group in our study was the 21-50 years, with median age of 32., which is accordance to the study of Bukhari *et al*. and Khanzada *et al*. Most of the malignant patients presents after 5th decade of life. Medullary carcinoma which is usually seen in late ages, in this study, the age of medullary carcinoma was 39 years.

In our study, there was 253 (81%) female and 27 (19%) male, with a male to female ratio of 4.2 : 1 which correlates with the study of Sharma.[20] In this study, rate of false negative was 4.7% and false positive rate was 4.76% which was accordance with the study of Sharma.[20] In previous studies, false negative rate were reported between 1% and 7% and false positive rate 1-11%.[5,8,10] Wide range of false negative and false positive may be due to sampling error and cytological interpretation. False negative FNAC occurred in two cases. Both cases were diagnosed as adenomatoid goiter on histopathological examination both were confirmed as follicular carcinoma. False positive was only one case which was diagnosed as Hurthle cell neoplasm on cytology, but on histology it was confirmed as Hurthle cell change in hyperplastic goiter.

Comparative study with other authors with median age of 8 - 8.5 years in tabaqchali et al and in present study 10-12%, comparison of sex with tabaqchali et al is 1:82 and in present study 4.2: 1 male: female ratio.

Comparison with authors in Bethesda system is 4.3% in present study with category 1 and comparison with Vickie Y Jo et al [21] with 18.6% Yang et al 10.4% in category 2 present study 78.2% which in comparison with Vickie Y Jo et al [21] 59% Nayar and ivanovic [22] 64% in category 3 present study shows 5.6% which in comparison with Vickie Y Jo et al [21], Nayar and ivanovic[22] 3.4% and 4% respectively. In category 4 present study 9.1% which in comparison category al [21] 9.7% in category 5 is 4.34% and in category 6 in present study shows 2.6% in each which is in comparison with Vickie Y Jo et al [21], Yang et al [23], Nayar and ivanovic [21], Yassa et al [9] – 2.9%, 2.6% .5% and 5% respectively (table 2).

Conclusion

In our study cytology and histopathology correlation was highest in category 2. Our findings suggest that categorising thyroid lesions as atypical follicular lesions of unknown importance will be useful in triaging patients with thyroid nodules.

FNAC is a quick, easy, cost-effective, and minimally invasive diagnostic procedure used to screen patients with thyroid nodules prior to surgery. By adopting this method, unnecessary thyroid surgeries for benign lesions can be avoided. Classification of FNAs of thyroid lesions using the proposed standardised nomenclature produces similar results for the risk of malignancy as previously described. The associate risks found for atypical follicular lesion of undetermined significance (5.6%), suspicious for follicular neoplasm (9.1%) suspicious for malignancy (83.5%), confirmed the importance if these categories in a six-tier diagnostic system. The widespread use of new standardised diagnostic categories for reporting thyroid FNA results has the potential to improve interlaboratory agreement in thyroid lesion diagnosis and lead to more consistent management and approaches.

Conflicts of Interest: Nil

Funding: Nil

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Original Research Article

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Post Covid-19 Effect on Avascular Necrosis of Hip Joint

Ashok Kumar Jha[1], Vishal Sidhu[2]

[1]Associate Professor, [2]Assistant Professor, Department of Orthopaedics, Venkateshwara Institute of Medical Sciences, Gajraula.

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Abstract

Background and objectives: The exact course of Severe acute respiratory syndrome (SARS) -2(COVID-19) and its complications on multiorgan system are complex and still under studies. Musculoskeletal system has also been affected post covid in various forms. This study was taken up to analyse the effects of covid-19 disease on the hip bone and join tissue.

Materials and Methods: Retrospective analysis of ten patients was done who had been hospitalised with covid-19 infection and later complained of hip pain . They underwent MR imaging and were found to have degenerative changes characterizing with avascular necrosis (AVN) of head of femur .One of them had history of previous surgery of femur with PFN, doing well but developed AVN after COVID .

Results: Observation of this group showed a clear correlation among the history of COVID-19 disease in the patients, moderately severe symptoms, high levels of IgG antibodies, and the time of occurrence of joint changes. No other risk factors for AVN or autoimmune or degenerative diseases were found in the study group. The group of patients responded well to empirical treatment with anti-inflammatory drugs ans supportive therapy, which subsided acute inflammatory symptoms and pain in the joints.

Conclusions: It is concluded that there have been obvious musculoskeletal complications in covid patients including AVN which could be attributed to the high use steroids and microembolism leading to bone necrosis. Hence more studies and long follow-up is suggested.

Keywords: avascular necrosis bone, osteonecrosis, SARS-CoV-2 infections, corticosteroids

Introduction

The coronavirus 2 (SARS-CoV-2) (COVID-19) pandemic has stimulated an unprecedented response by the global scientific community to better understand the disease. However, many questions about SARS-CoV-2 remain unanswered. Various hypotheses have been formulated in regard to its pathogenetic mechanisms and treatment [1]. A plethora of reports on the long-term consequences of the infection, which also include the musculoskeletal system, have been published [2].

Systemic inflammation may play a role in the physiology of bone and joint tissue in COVID-19 patients. Cytokines that are induced by COVID-19 include CXCL10, IL-17, and TNF-alpha. They are responsible for reducing the proliferation and differentiation of osteoblasts.

Corresponding Author: Ashok Kumar Jha, Associate Professor, Department of Orthopaedics, Venkateshwara Institute Of Medical Sciences, Gajraula.

Mobile No.: 8057421180

E-mail: Aosp1011@Gmail.Com

Corticosteroids administered to most patients treated for COVID-19 in hospital also have an adverse effect on bone tissue [3,4].

In addition, single nucleotide polymorphisms in various genes encode for proinflammatory proteins, such as IL-1b, IL-6 and IL-8, which may affect biological activity and contribute to hypercoagulability in COVID-19 patients, thereby increasing the risk of bone necrosis [5]. The combination of hypercoagulability, leukocyte aggregation and vasculitis can impair blood flow in the blood vessels of the bone and contribute to the development of bone necrosis [5].

Material and Methods

After clearance from institutional review board of the institution, a retrospective analysis of a case series was taken up to study effects of covid-19 infectionon hip bone and tissues. Study group included the patients hospitalised during active covid disease from 2020-2022 and those who complained of hip disorders, selection was made based on inclusion and exclusion criteria.

Inclusion criteria: PCR indicating positive COVID-19 infection and joint pain during the course of the disease and follow up.

Exclusion criteria: prior injury to the affected joint, prior treatment with steroids, and patients with autoimmunity.

The study included a group of ten patients who developed pain and dysfunction around hip joint, were diagnosed as avascular bone necrosis in COVID-19 on MR images [6].

The criterion for classifying the severity of COVID-19 infection was defined according to a 4-point scale: mild, moderate, severe and critical (Table 1) [7]

Table 1: Characteristics of patients.

Patient No.	Age	Sex	Chronic Diseases	Severity of COVID-19	COVID-19 Therapy/Steroids
1	62	M	DM	severe	no
2	56	M	DM	mild	no
3	57	F	no	severe	yes
4	70	F	no	moderate	no
5	43	F	Hypertension	moderate	yes
6	54	M	Depression	moderate	yes
7	66	F	no	moderate	no
8	39	F	no	severe	yes
9	68	F	no	mild	no
10	24	M	no	moderate	no
mean SD	58.8 11.3				

The examined group of patients had not previously received any treatment for diseases of the musculoskeletal system (e.g., steroids), did not suffer from significant injuries or did not suffer from significant joint pain.

All the patients had a mean IgG and IgM COVID-19 antibody titer corresponding to the typical course of COVID-19 infection. Basic immunohistochemical tests were performed in all patients to rule out autoimmune diseases. HLA-B27 was negative in all patients. The examination of the synovial fluid in all patients revealed changes in the characteristics of aseptic arthritis.

The MRI consisted of (fat suppressed)-T2, pre- and postgadolinium T1-weighted imaging.

The MR images demonstrated bone lesions characteristic of AVN:

- T1 FSE: the initial specific findings are areas of low signal representing edema, which can be bordered by a hyperintense line, which represents blood products;

- T2 FR FSE: This may show a second hyperintense inner line between normal marrow and ischemic marrow. This appearance is highly specific for AVN of the hip and is known as the "double line sign".

Avascular bone necrosis was described using the Steinberg classification. The described changes also included subchondral infarctions with the involvement of articular cartilage (grade III) [8].

Statistical Analysis

Statistical analyses and data processing were performed using SAS/STAT version 14.3 (SAS Institute, Cary, North Carolina, USA) to determine the association between various comorbidities, ICU stay, mortality, and the orthopedic manifestations of COVID-19 patients. The frequencies of cohort demographics and descriptive statistics were calculated and analyzed using Pearson's chi squared test, the likelihood ratio, and the NPAR1WAY procedure (ANOVA) as appropriate. The critical value for significance was set at <0.05 for all statistical tests.

Results

The mean age of the patients was 61 years with six women and four men were included. Out of ten, 6 were right and 4 were left sided.

The course of infection was mild in three patients, moderate in five and severe in two patients. Four patients were treated with steroid therapy (6mg/day dexaven).

Clinical signs and symptoms of musculoskeletal occurred 7 to 22 days from onset of infection (mean 14 days) and appeared 5–10 days (mean 6 days) after the resolution of acute respiratory symptoms and elevated body temperature.

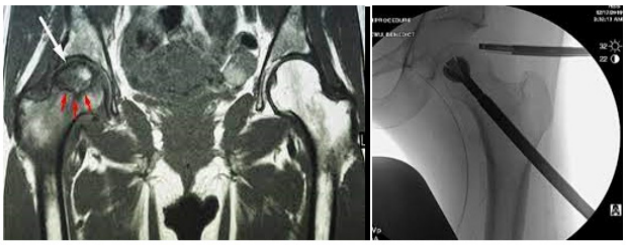
Patients were initially treated conservatively: non-steroidal anti-inflammatory drugs (NSAIDs), intra-articular steroid injections and therapeutic aspiration of the synovial fluid were implemented. There was no significant improvement.

Steroid therapy in mild doses was supplemented with an oral dose of dexamethasone 2 × 8 mg daily for a period of 2 weeks.

Finally, 3 out of 10 persons required arthroplasty and showed a good clinical outcome. Four patients underwent core-decompression surgery and improved One patient had chronic pain in the affected joint and is currently being treated conservatively; destruction of the joint surface was not shown in the control tests. In the remaining six people, there was no deviation in the control test follow up (Table 2).

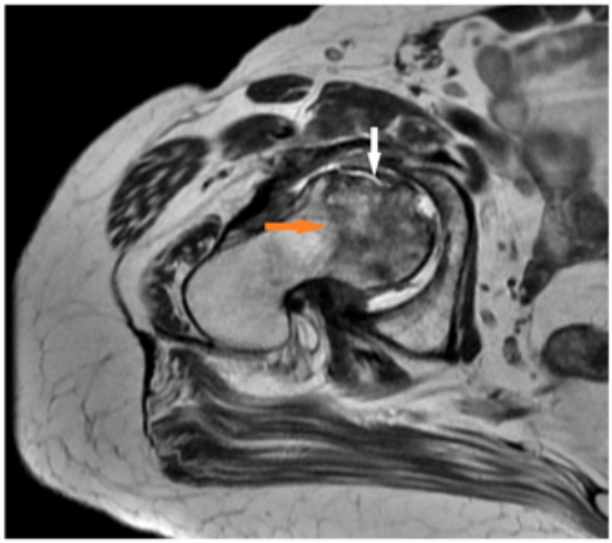
Table 2: Characteristics of joint lesions in patients with COVID-19.

No.	Joint	Time of Onset of Joint Symptoms from the Beginning of Infection	decompression	Steinberg Scale	Follow-Up (Months)	VAS Pain Initially	Pain Follow Up VAS
1	hip	11		4	10	8	2
2	Hip	10	Decompression	2	9	9	0
3	Hip	11	Decompression	2	7	6	0
4	Hip	7	Decompression	4	7	8	0
5	hip	21		2	8	7	1
6	Hip	17		3	10	8	0
7	Hip	14		2	8	8	1
8	Hip	14	Decompression	2	5	8	1
9	Hip	22		2	5	7	0
10	hip	17		4	4	8	0
mean		14		3	7	8	0,5



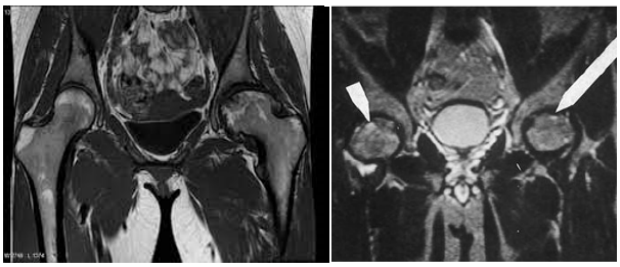
Case 1 (Patient No. 5)

Figure 1: A control magnetic resonance imaging was performed, which did not reveal any significant deviations from the norm



Case 2 (Patient No. 1)

Figure 2: Aseptic necrosis of the femoral head was visualized with the destruction of the articular surface and deformation of the femoral head



Case 3 (Patient No. 7)

Aseptic necrosis of the femoral head was visualized with the destruction of the articular surface and deformation of the femoral head

Figure 3: deformation of the femoral head figure: after HBOT

Discussion

Complications following COVID-19 infection are the focus of numerous clinical trials. Pathological changes following COVID-19 infection have also been described in the locomotor system. In our study, the formation of changes within the hip, with a background of AVN, was observed among the group of patients.

A similar etiology of vascular and embolic changes over the course of COVID-19 infection has also been described in organs outside of the respiratory system, such as multiorgan failure, acute cardiac injury, cerebrovascular diseases, acute kidney injury, liver dysfunction, and venous thrombosis [9]. Undoubtedly, exacerbation of underlying diseases by SARS-CoV-2 infection also tends to worsen bone metabolism [10].

ACE2 deficiency, caused by viral invasion, can lead to bone matrix degradation. Given that coronaviruses cause pneumonia and infection of the upper respiratory tract via ACE2 receptors in ATII cells, ACE2-dependent effects on bone tissue should also be noted. ACE2 is a potential factor that regulates bone biology during COVID-19 infection [11].

Bone complications from infections or treatments are likely to emerge in the next few months, similar to the SARS outbreak in 2002–2003. At that time, reports of joint pain, decreased bone mineral density (BMD), and necrosis of femurs and tibias could only be partially explained by high-dose steroid treatment. Another in vitro study showed that the specific SARS-CoV protein, 3a/X1, directly promotes osteoclastogenesis, thereby accelerating osteoclast differentiation from monocyte/macrophage precursors and increasing the expression of the NF-kB ligand receptor activator (RANKL) and inflammatory cytokines, such as TNF-α, which indirectly promote osteoclastogenesis[12].

This study observed people with symptoms of AVN after a history of COVID-19 without steroid therapy. The first symptoms appeared on average 14 days (range 7–22 days) after infection. Probably in our patient group, steroid therapy did not directly influence the development of AVN. One study reported that symptoms of AVN appeared 58 days (range 45–67 days) after infection with

COVID-19. However, the risk of AVN after steroid therapy ranges from 6 months to 1 year. There is a lack of consensus about the dose and duration of corticosteroid treatment as a risk factor for developing AVN. One prospective study found that the risk of AVN increases significantly with the dose of >20 mg/day. Our patients used 6 mg/day. COVID-19 disease appears to be an independent risk factor for AVN and possibly accelerates the risk of AVN after a history of COVID-19 treated with steroid therapy.

In the case of COVID-19, corticosteroids were primarily considered as a way to contain this "cytokine storm" and its aftermath: ARDS, disseminated intravascular coagulation, and shock. This usually occurs within the first 8–15 days of infection. Treatment with steroids is attempted, especially at the onset of dyspnea, or even earlier, to prevent the progression of the "cytokine storm". The anti-inflammatory properties of corticosteroids reduce systemic inflammation and exudates in the lung tissues, and prevent further diffuse alveolar damage, thereby improving hypoxia and minimizing the risk of respiratory failure. Most of the studies on the use of corticosteroids to treat COVID-19 have shown variable results, but this is mainly due to a marked heterogeneity in the research methodology.

In the examined group of patients, no risk of bone changes in relation to the general condition of the patient and the severity of the course of COVID-19 disease was observed. For four patients of our observed group, the occurrence of AVN, with the consequent destruction of the articular surface and permanent changes (joint damage), was observed. These patients were treated with core decompression in relation to their hip joints. In the remaining seven patients, complete remission of the changes was observed after the steroid drugs, without permanent sequelae. However, the long-term consequences of bone changes over the course of COVID-19 are not known, as our observation period did not exceed several months.

AVN is a known complication after steroid treatment of severe COVID-19 infections or in long COVID-19 infections. We described 10 cases who suffered from AVN shortly after a COVID-19 infection without prior steroid treatment. Apparently, COVID-19 infection alone may represent a risk factor for developing AVN. On average, AVN begins 2 weeks after COVID-19 onset in contrast to long COVID-19 late-onset AVN. However it may vary.

Conclusion

SAR-CoV-2 can affect bones presenting with symptoms 2–3 weeks after infection. This may resolve with medical management or result in end stage AVN that may responds well to core decompression or hip arthroplasty. After effects of covid-19 infection over this human body are complex including musculoskeletal system. Further, long term studies are suggested to have a better understanding of the disease.

Informed Consent: written informed consent was taken from patients.

Ethical Approval: ethical committee approval was taken from the Institutional Committee Of Ethics, VIMS (VIMSE/2022/11-93) .

Source of Funding: funding source was self

Conflict of Interest: there was no conflict of interest

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Original Research Article

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Evaluation of Pancytopenia in Adults

Ashutosh sanga[1], Manish Kumar Singh[2]

[1]Assistant Professor, Department of General Surgery, Venkateshwara Institute of Medical Sciences, Gajraula, [2]Assistant Professor, Department of Pathology, Venkateshwara Institute of Medical Sciences, Gajraula.

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Abstract

Introduction: Pancytopenia, simultaneous presence of anemia, leucopenia and thrombocytopenia, is a common clinical entity that we see in day to day practice Proper diagnostic evaluation requires detailed clinical history, physical examination and haematological assessment including careful peripheral blood smear examination and bone marrow evaluation.

Materials and Methods: A total of 80 adult patients with pancytopenia/bicytopenia presenting between January 2021 to January 2022 were included in the study. All patients underwent detailed clinical history and physical examination. Careful peripheral blood smear examination, CBC and bone marrow aspirate was done in all. Bone marrow biopsy was done wherever feasible.

Results: Megaloblastic anemia was the commonest cause of pancytopenia/bicytopenia making up 37.5% of all cases followed by erythroid hyperplasia (20%), aplastic anemia (10%). Haematological malignancies accounted for 23.75% cases of the total. Bone marrow biopsy aided in the diagnosis of 8 cases (6 cases of aplastic anemia and two cases of dry tap) while in others it was concordant with aspiration findings.

Conclusion: Bone marrow aspiration and biopsy are an important adjunct to peripheral smear examination for evaluation of cytopenias. Bone marrow trephine biopsy is helpful in cases of dry tap. We also conclude that there is high prevalence of megaloblastic anemia due to nutritional deficiency among young population. Hence, this age range should be the prime target for education regarding proper dietary habits, the remediation of which might reduce the clinical burden of megaloblastic anemia.

Keywords: Bone marrow aspiration, Megaloblastic anemia, Pancytopenia.

Introduction

Pancytopenia, simultaneous presence of anemia, leucopenia and thrombocytopenia, is a common clinical entity that we see in day to day practice. Pancytopenia in adult is defined as haemoglobin level < 13.5 g/dl in males and 11.5 g/dl in females; the leucocyte count < 4 x 109 /l; and the platelet count < 150 x 109 /l. [1] Bicytopenia is reduction in any of the two cell lines. The presenting symptoms are usually attributable to the anemia or the thrombocytopenia.[1] A reduction in cell numbers occurs because of increased destruction, reduced production, or increased pooling in the spleen or other organs. There

Corresponding Author: Manish Kumar Singh, Assistant Professor, Department of Pathology, Venkateshwara Institute of Medical Sciences, Gajraula.

Mobile No.: 9665289560

E-mail: manish.hathras@gmail.com

are various causes of pancytopenia including both neoplastic and non-neoplastic entities. Since most of the cases of pancytopenia are due to nutritional deficiencies, they are remediable and reversible. Hence, their diagnosis is of paramount importance. Proper diagnostic evaluation requires detailed clinical history, physical examination and haematological assessment including careful peripheral blood smear examination and bone marrow evaluation. This study was undertaken to evaluate pancytopenia/ bicytopenia in adult patients through haematological parameters and bone marrow studies.

Material and Methods

All adult patients presenting with pancytopenia/ bicytopenia to the Department of Pathology in a tertiary care centre of U.P., between January 2021 to January 2022, were selected for the study. Patients on myelotoxic chemotherapy, who were uncooperative or did not give consent and in whom bone marrow examination was contra-indicated were excluded from the study. Ninety-two patients presented to us with pancytopenia/bicytopenia out of which 12 had one or the other exclusion criteria. So, finally 80 patients were included in our study. Detailed clinical history regarding generalized weakness, fever, bleeding tendencies and other symptoms was taken. Examination was done and pallor, hepato-splenomegaly, lymphadenopathy, petechiae were assessed. Blood was withdrawn in EDTA for peripheral blood smear examination and CBC, Hb, TLC, DLC, PC, MCV, MCH & MCHC were studied. Bone marrow aspiration was done subsequently using 16G needle and smears fixed in methylene and stained with MGG. The smears were assessed under the following headings:

1. Cellularity

2. Myeloid to Erythroid ratio

3. Erythropoiesis

4. Myelopoiesis

5. Megakaryopoiesis

6. Lymphocytes and plasma cells

7. Hemoparasites Trephine biopsy of the bone marrow was carried out in the cases where it was required for diagnosis as in dry tap and in cases where consent was given by the patient.

A total of 22 patients underwent bone marrow trephine biopsy. Biopsy was done from the iliac crest; posterior approach was preferred. Biopsy sections were stained with haematoxylin & eosin. Reticulin and Perl's stain was done when indicated. Statistical analysis was done using single factor anova (analysis of variance) and p-value<0.01 was considered highly significant.

Results

Most of the patients were in the age group 18-40 years and maximum cases were in the age group 20-29 years (23.75%). Least occurrence was seen in 70-80 years (2.5%). The youngest patient was 18 years old and oldest was 78 years old. Most patients of megaloblastic anemia (53.3%) were in the age group of 18-29 years. The age distribution of the study showed that patients with pancytopenia usually present at a younger age in this geographical area. There was a male preponderance with fifty-three males and twenty-seven females. Male to female ratio was 1.94:1. The most common presenting feature was generalized weakness (68.75%) followed by fever (61.25%). The commonest physical sign was pallor (100%) followed by splenomegaly (43.75%). Other findings were hepatomegaly (20%), lymphadenopathy (12.5%) and bleeding tendencies (13.75%). The haemoglobin values ranged from 1.4 to 10.8 g/dl. Majority of patients (58.75%) had haemoglobin ranging from 4-7 g/dl followed by 1-4 g/dl (23.75%). 13.75% patients had haemoglobin values between 7-10 g/dl. Only 3.75% patients had haemoglobin above 10 g/dl. The leucocyte count ranged from 500 -1,73,000 cells/mm3. Majority of the patients (42%) had TLC values between 1000-2499 cells/mm3. 24% patients had TLC values between 2500-4000 cells/mm3. 33% patients had values more than 4000 cells/mm3. Only one case had TLC <1000 cells/mm3. The platelet count of patients ranged from10,000 to 2,80,000 cells/mm3. Most of the patients (57%) had their counts below 50,000 cells/ mm3. 28% cases had platelet count between 50,000-99,999 cells/mm3. 11% cases had platelet counts between 1,00,000-1,50,000 cells/mm3. Only three patients (4%) had platelet counts more than 1,50,000

cells/mm3. Platelet count higher than 50,000 cells/mm3 was not encountered in aplastic anemia cases. Macrocytosis was observed in majority of the cases (46%) with MCV greater than 101 fl. 39% patients had MCV within normal range while 15% cases had MCV below normal. In all patients of megaloblastic anemia (37.5%), MCV was above normal. 63% patients had MCH more than the upper limit of normal while 25% cases had MCH within normal range. 12% cases had below normal MCH. Most of the patients (43%) had MCHC more than upper limit of normal while 31% cases had MCHC within normal range. 26% cases had below normal MCHC. The most common finding on peripheral blood smear was anisocytosis seen in 94% cases followed by macrocytic blood picture (45%). Microcytosis was noticed in 10% cases while 28% cases showed normocytic picture. 17% cases had dimorphic picture and 30% had hyper-segmented neutrophils. Hypersegmented neutrophils were seen in 80% cases of megaloblastic anemia. Circulating blasts were seen in 18.75% cases, which included 9 cases of acute leukemias and 6 cases of CML in accelerated phase. Circulating immature cells, apart from blasts, (which included myelocytes, metamyelocytes and band forms) were seen in 8.75% cases (6 cases of CML in accelerated phase and 1 case of megaloblastic anemia). On bone marrow examination, Megaloblastic anemia was the commonest cause of pancytopenia/bicytopenia. It constituted 30 out of 80 cases, making up 37.5% of all cases. Next common findings were erythroid hyperplasia (20%) and aplastic anemia (10%). Chronic myelo-proliferative neoplasms, morphologically consistent with chronic myeloid leukemia in accelerated phase, constituted 7.5% of the total cases. There were 9 cases of acute leukemias (11.25%) which included 5 cases of AML (6.25%), 2 cases of ALL (2.5%) and 2 cases of AMML (2.5%). Other neoplastic conditions were CLL and multiple myeloma each constituting 2.5% of all cases. There were two cases of iron deficiency anemia (2.5%).Both the cases showed absent iron stores on Perl's stain.3 cases had normal morphology (3.75%) and two cases yielded dry tap on aspiration. Predominant PBS findings have been compared with diagnosis on bone marrow aspiration. Bone marrow biopsy was performed in 22 cases. 5 cases of megaloblastic anemia, 2 cases of erythroid hyperplasia, 2 cases of multiple myeloma, 1 case of CML, 3 cases of AML and 1 case of normal marrow where biopsy was performed, the diagnosis was found to be consistent with that of aspiration. Amongst 8 cases suspicious of aplastic anemia, biopsy was performed in 6 cases. In all these cases, biopsy confirmed the diagnosis of aplastic anemia. In two cases which yielded dry tap on aspiration, biopsy was performed and reticulin stain was done. In 1 case grade 2 and in other case grade 3 fibrosis was observed which confirmed the diagnosis of myelofibrosis. Hence, the cases in which biopsy was performed, it was found to be concordant with aspiration while in 8 cases (6 cases of aplastic anemia and two cases of dry tap) it aided in the diagnosis. The mean values of Hb, TLC and platelet count was compared between neoplastic and non-neoplastic conditions using single factor anova (analysis of variance). The mean Hb of neoplastic and non-neoplastic conditions was 6.27 g/dl and 5.17 g/dl respectively. The mean TLC of neoplastic and non-neoplastic conditions was 611,589.5/mm3 and 3073.7/mm3 while mean platelet count was 57,736.8/mm3 and 55, 967/mm3 respectively. The mean TLC value of neoplastic and non-neoplastic causes was found to be significantly different, the p-value being less than 0.01; while no statistical difference was noted between the mean values of Hb and platelet count. The mean values of Hb, TLC and platelet count was compared between megaloblastic anemia, erythoid hyperplasia, aplastic anemia and haematological malignancies using single factor anova. The mean values for haemoglobin and TLC of all the above listed conditions, showed significant difference when compared with each other, (p-value< 0.01%). Mean value of platelet count was not statistically significant between these conditions. Serum vitamin B12 and Folic acid levels were done in 19 out of 30 cases of megaloblastic anemia (11 cases were lost on follow up) by Chemiluminescent Immunoassay on Advia Centaur CP. The reference value for vitamin B12 was between 211-946 pg/ml. For folic acid assay, levels >5.38 ng/ml were considered normal, between 3.38-5.38 ng/ml were considered indeterminate and values between 0.35-3.37 ng/ml were considered deficient. All patients showed vitamin B12 levels less than 211 pg/ml. 5 cases showed normal folic acid levels(>5.38 ng/mg), 11 patients showed values between 3.38-5.38 ng/ml, while only two cases of

megaloblastic anemia showed folate level below 3.37 ng/ml. Hence, out of 19 cases of megaloblastic anemia evaluated serologically, 17 cases showed vitamin B12 deficiency and two cases showed combined vitamin B12 and folate deficiency.

Discussion

In our study of 80 cases, 52 cases (65%) presented with pancytopenia and 28 cases (35%) presented with bicytopenia. In our study, male to female ratio was 1.94: 1 and the age range was between 18-80 years. The most common age group was 20-29 years. 53.3% patients of megaloblastic anemia were in the age group 18-29 years. This highlights the high prevalence of nutritional deficiency in young population. Dietary restriction owing to low socio-economic status or consumption of nutrition-poor hostel food, dieting for weight loss or intake of supplements instead of proper food by gym goers seem the probable explanation for this finding. Chandra K et al[2] and Javalgi AP et al[3] also reported male predominance and similar age group in their studies. Desalphine M et al[4] observed male to female ratio of 1.8:1 and age range of 5-80 years. The findings of their studies are slightly different from our study, as they included pediatric patients in their study, while our study comprised of adult population only. The most common presenting feature in patients with pancytopenia/bicytopenia in our study was generalized weakness (68.75%) followed by fever (61.25%). Gayathri BN et al[5] and Thakkar BB et al[6] also observed generalised weakness as the most common presenting symptom in 100% & 97% cases respectively. The commonest physical sign was pallor seen in 100% cases. Khodke K et al,[7] Tilak V et al,[8] Ishtiaq O et al,[9] Gayathri BN et al,[5] Thakkar BB et al,[6] Chandra K et al also reported pallor in 100% of the cases, which is consistent with our finding. In our study, splenomegaly was seen in 43.75% cases. Kumar DB et al,[10] Chandra K et al and Sweta S et al[11] reported splenomegaly in 33.33%, 33.73% and 33% cases respectively. A slightly higher incidence of splenomegaly in our study could be because we encountered six patients of chronic myelo-proliferative neoplasm, morphologically consistent with chronic myeloid leukemia in accelerated phase, while CML cases were not reported in previous studies. Splenomegaly is a common finding in CML. The most common finding on peripheral blood smear was anisocytosis seen in 94% cases. Khodke K et al, Tilak V et al, Gayathri BN et al and Kumar DB et al also reported anisocytosis to be the commonest finding on peripheral blood smear, their values being 60%, 83.1%, 86.5% and 79.1% respectively. This is consistent with the finding in our study. Macrocytosis in our study was noted in 45% cases which is consistent with Sweta S et al and Ishtiaq O et al who reported macrocytosis in 49% and 55%cases respectively. Microcytosis was seen in 10% cases in our study. Ishtiaq O et al reported microcytic anemia in 12% cases, which is concordant with our study. Dimorphic blood picture was seen in 17% cases in our study. Gayathri BN et al reported dimorphic anemia in 37.5% cases which is slightly higher than in our study. In our study, 30% cases had hyper-segmented neutrophils. Khodke K et al and Ishtiaq O et al reported hypersegmented neutrophils in 40% and 36% cases respectively. Their findings are similar to the findings in our study. This could be because they also reported megaloblastic anemia as the commonest cause of pancytopenia/bicytopenia. Kumar DB et al, however, reported hypersegmented neutrophils in 14.58% cases which is lower than that in our study. This could be because they reported hypoplastic marrow as the commonest cause of pancytopenia. In a well preserved PBS, neutrophil hypersegmentation can be defined as the presence of neutrophils with six or more lobes or the presence of more than 3% of neutrophils with at least five lobes. However, apart from megaloblastic anemia, hypersegmented neutrophils are also seen in uremia, iron deficiency anemia, after cytotoxic chemotherapy especially with methotrexate.

The most common cause of pancytopenia/ bicytopenia in our study was megaloblastic anemia seen in 30 cases, making up 37.5% of all cases. This is consistent with the results of Khodke K et al, Tilak V et al, Ishtiaq O et al, Gayathri BN et al and Sweta S et al who also reported megaloblastic anemiaas the commonest cause of pancytopenia/bicytopenia in their studies. In our study, serum vitamin B12 and Folic acid levels were done in 19 out of 30 cases of megaloblastic anemia (11 cases were lost on follow up). Out of 19 cases, 17 cases showed vitamin B12 deficiency and two cases showed combined vitamin B12 and folate deficiency. Our findings are similar to the findings of a previous study done by Khanduri U

et al. In their study of 120 patients of megaloblastic anemia, who had assays done for cobalamin and folate, 65% had cobalamin deficiency, 6% had folate deficiency and 12% had combined deficiency.

Conclusion

We hereby conclude that bone marrow aspiration and biopsy are an important adjunct to peripheral smear examination for evaluation of cytopenias. Bone marrow aspirate is superior to study the morphology, however, a 'dry' or 'blood tap' is common in disorders causing pancytopenia. Hence, trephine biopsy is needed in these cases for diagnosis. Through our study, we also conclude that there is high prevalence of nutritional deficiency among young population and we have also listed the probable reasons for the same. Hence, this age range should be the prime target for education regarding proper dietary habits, the remediation of which might reduce the clinical burden of megaloblastic anemia.

Informed Consent: written informed consent was taken from patients .

Ethical Approval: ethical committee approval was taken from the Institutional Committee Of Ethics, VIMS (VIMSE/2022/12-99) .

Source of Funding: funding source was self

Conflict of Interest: there was no conflict of interest

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Original Article

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Hybrid Learning in Medical Curriculum: Perception of Medical Students of a Dedicated COVID Hospital in Eastern India

Adwitiya Das[1], Debopam Sil[2], Arya Saha[3], Ria Mukherjee[4]

[1]Assistant Professor, [2,3]MBBS student, [4]Senior Resident, Department of Community Medicine, Medical College, Kolkata.

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Abstract

Background: In recent years, hybrid education has transformed traditional education. This study aimed to examine students' perceptions of the quality of teaching-learning in the hybrid and offline modes of UG medical curriculum and to learn how MBBS students perceived the hybrid mode of education.

Methods: Using simple random sampling, an institution based descriptive cross-sectional study was carried out between November 2022 and January 2023 among 100 MBBS students at the Medical College, Kolkata. After receiving ethical approval, an online interview was carried out utilising a predesigned, pretested, semi-structured, and validated questionnaire via Google forms. Data analysed using MS Excel and SPSS version 25.0.

Results: 90% of students believe that traditional offline classes and online learning will coexist as a hybrid approach of instruction. Most students (63%) believed that hybrid programmes can make up for the shortcomings of completely online or offline courses.

Conclusion: The students felt that in the long run, the hybrid approach of teaching should be improved. They recommended making the online and offline modes more integrated, doing offline sessions to clarify questions about topics that were taught online, making the lectures more offline format-oriented, and finally, holding essential lessons offline.

Keywords: Traditional education, hybrid mode of learning, MBBS students, UG curriculum, Kolkata.

Introduction

The COVID-19 pandemic, which has, as of August 2022, resulted in more than 4.4 crore cases and 5.2 lakh deaths in India alone, has drastically changed our outlooks towards multiple facets of our once "normal" lives.[1,2] Among these, the approach to education, especially undergraduate medical education, has had to undergo several vital changes.[3,4]

Clinical exposure is key to any undergraduate medical education program. However, direct contact with patients could lead to widespread infection among the students, including long COVID and post-COVID symptoms, and further increase patient load, not to mention along with severe shortage of PPEs.[5,6,7] Delaying the academic curriculum could result in an acute shortage of medical interns, for the next few academic years. Graduating students early to

Corresponding Author: Ria Mukherjee, Senior Resident, Department of Community Medicine, Medical College, Kolkata.

Mobile No.: 7044935952

E-mail: xperi92ria@gmail.com

curb the deficit of physicians leads to inadequacy of assessment and a lack of prior training in handling emergencies and other complications. Regular offline classes could not be continued (further compounded by a nation-wide lockdown). Exclusive online teaching, while suitable for lectures, present some obvious difficulties with practical classes, tutorials and bedside clinics. Besides Medical students have had a mostly unfavourable opinion regarding it.[8]

Therefore, hybrid mode was chosen as an alternative. It aims to combine the features of both offline and online learning. A basic scheme of hybrid learning is described in the flowchart given below:-

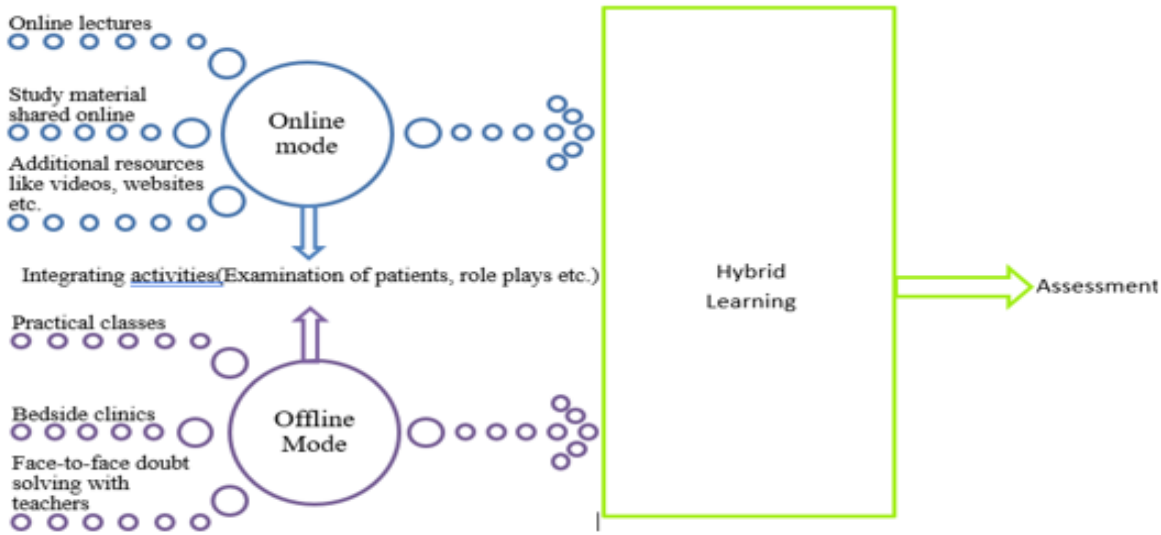

Fig 1: A schematic diagram of the hybrid approach of medical education

The National Medical Commission emphasizes on Competency-based Medical Education (CBME) requiring students to be proficient in communicating with patients and in their clinical skills, both of which are difficult to teach if the mode of teaching is exclusively online. [9-13] The *Module on Online Learning and Assessment 2020*, released by the NMC, recommends hybrid teaching for topics where mere online learning is insufficient for attaining the recommended levels of competency.[14]

Review of literature showed most of the pre-pandemic studies on hybrid medical teaching had been done in developed countries, with India making only minor contributions.[15] While there have been contributions in this field from India post-2019, the work that has been done mainly focuses on an educator-centric view of the subject, dealing with good online teaching practices, effectivity of E-Learning tools and performance of students in exams(assessed by the teachers, obviously). [16-18] However, there is a conspicuous absence of studies regarding how medical students, the chief beneficiaries of hybrid learning, have perceived this mode. While there is an abundance of studies regarding assessment of the performance of students, done by the educators, in hybrid mode of learning, there is a distinct lack of work on how students rate various aspects of the mode, including the efficacy of the educators. These are, therefore, the important gaps in existing knowledge.

The success of any venture greatly depends on the efficacy of the service-providers and the satisfaction of the consumers. Similarly, hybrid learning will be more effective when the perception of the medical students regarding its advantages and disadvantages compared to traditional offline learning (as perceived by the students) can be identified and any causes of dissatisfaction among the students can be solved. This is more important considering that hybrid learning can potentially replace exclusively offline learning in future and help broaden the learners' horizons beyond the textbook, laboratory and the ward(4).

With this background, the following study was conducted to find out the students' perception regarding quality of teaching-learning in offline and hybrid mode of UG Medical curriculum and the reasons (if any) for dissatisfaction regarding hybrid teaching.

Materials and Methods

A Descriptive epidemiological institution-based study was conducted among Undergraduate Medical students between November 2022 to January 2023 which included UG Medical students studying in 6th to 9th Semesters of MBBS curriculum in Medical College & Hospital, Kolkata.

Students not giving informed consent and on whom pre-test was conducted, was excluded from the study. Sample size was using Cochrane's formula, ,estimated prevalence, p was taken as 50%, q = (100-p) = 50% and absolute error d = 10%, the estimated minimum sample size calculated was 100. Simple random sampling was used using a sampling frame constituting total number students from 6th to 9th semesters of MBBS curriculum.

A predesigned, pretested and semi-structured, validated questionnaire was used for collection of data pertaining to experiences of Offline teaching-learning versus that of hybrid technique of the same. Online interview via Google forms. Data collected was kept confidential and subjects remained anonymous. 6 questions for obtaining socio-demographic data had been set in a short-answer question format (Part 1). 14 questions had been set in a 7-point Likert scale format (Part 2). 4 questions had been set in a yes/ no format, with a multiple choice question format if "yes" was chosen, besides allowing the subject to add any other points in brief. The last question was in a 4-option MCQ format with provision for adding further points.(Part 3)

Participation in the study was voluntary and refusal was considered non-punitive. Informed consent was taken from individuals for voluntary participation in the study.

Collected data were compiled in MS excel and analysed using Statistical Package for Social Sciences (SPSS) version 25.0. Mean and standard deviation was calculated for continuous variables and categorical variables was presented as percentage. Various graphs and diagrams were used to represent the result. The study took place only after obtaining necessary permissions from Institutional Ethics Committee, Medical College, Kolkata vide reference number MC/KOL/IEC/NON-SPON/1501/08/2022 dated 18/08/2022.

Results and Discussion

The mean age is 21.25 +/- 1.009 years, minimum being 19 years and maximum 24 years.

Table 1: Distribution of study participants according to demographic variables (n=100)

Variables	Category	Frequency	Percent
Professional Year of MBBS	3rd Prof Part 1	93	93.00
	3rd Prof Part 2	2	2.00
	2nd Prof	5	5.00
Gender	Male	79	79.00
	Female	21	21.00
Performance in last exam (in percentage obtained)	50-70	51	51.00
	Above 70	49	49.00

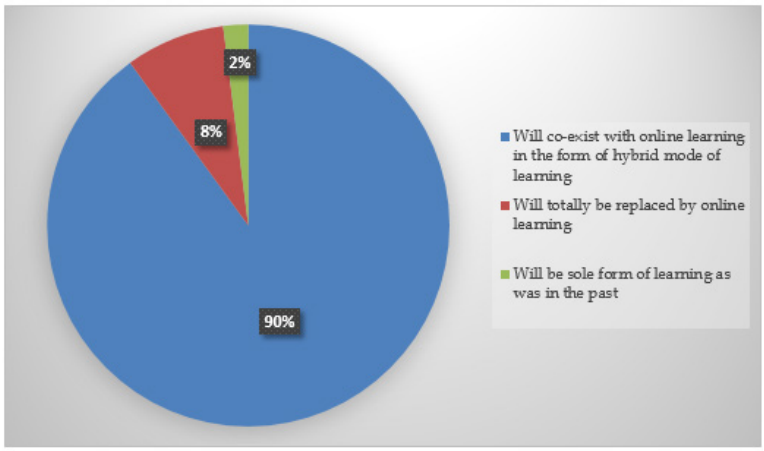

Figure 2: A pie-diagram showing opinion of students regarding relevance of conventional offline classes in the next 10 years(n=100)

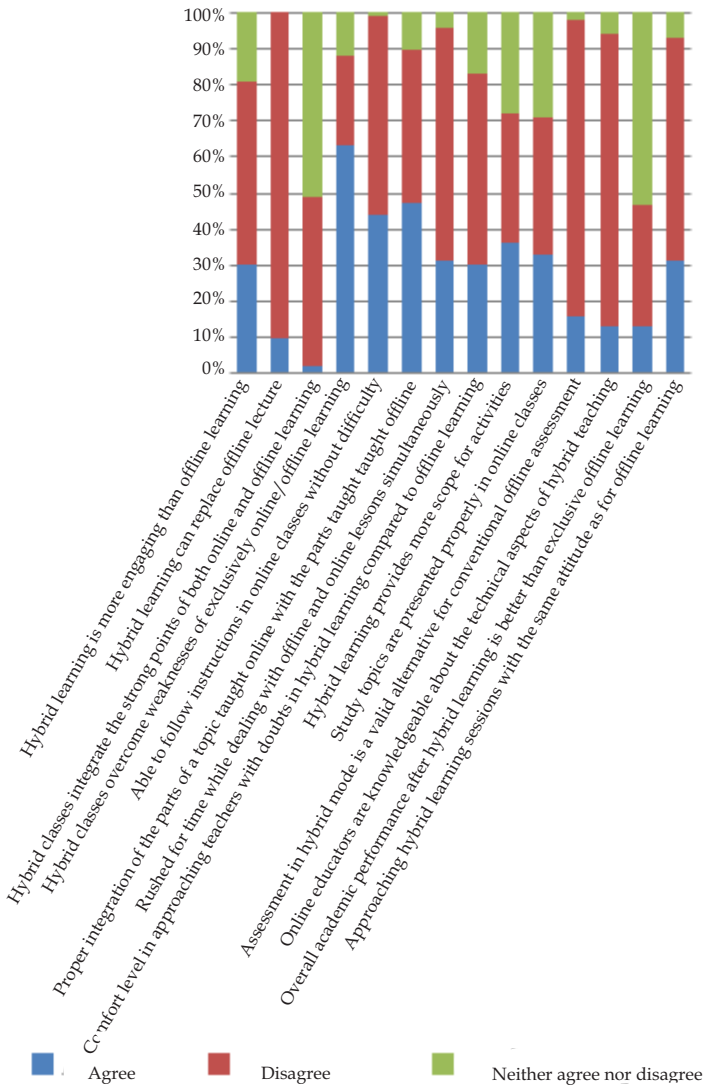

Figure 3: A component bar diagram showing opinion of students regarding mode of learning (n=100)

Majority of the students (63%) agreed that hybrid classes can overcome the weaknesses of exclusively online or offline classes.90% of the students disagreed with that fact that hybrid learning can replace offline lectures. 52% of the students neither agreed or disagreed with the fact that overall academic performance after hybrid learning has been better than that after exclusive offline learning.

Table 2: Distribution of study subjects regarding difficulty in joining online classes and the reasons cited. (n=100)

Difficulties in joining online classes	Reasons	Frequency	Percent
No		48	48.00
Yes*		52	52.00
	Difficulty in receiving the links for joining classes	30	57.69
	Interruption from fellow batchmates during classes.	23	44.23
	Environment inconducive to academics	19	36.54
	Problems with internet connection	11	21.15

*Multiple response

Table 3: Distribution of study subjects regarding difficulty in accessing online classes and study materials and the reasons cited. (n=100)

Difficulties in accessing online classes and study materials	Reasons	Frequency	Percent
No		69	69.00
Yes*		31	31.00
	Have difficulty navigating through online lecture platforms.	11	35.48
	Inability to stay focused when using a device for studying.	17	54.84
	Suffer from device-induced conditions	19	61.29
	Have to use devices from cybercafé or from fellow batchmates	1	3.22

*Multiple response

Table 4: Distribution of study subjects regarding difficulty in accessing offline classes and the reasons cited. (n=100)

Difficulties in accessing offline classes	Reasons	Frequency	Percent
No		84	84.00
Yes*		16	16.00
	Transportation from residence to college is difficult and/or expensive to avail.	8	50.00
	Difficulty in time management	4	25.00
	Prior info regarding classes is not given on time	5	31.25
	Suffer from some condition which makes attending offline classes strenuous	2	12.50

*Multiple response

Thus, after all experiences, the students opined that there should be improvement in hybrid method of teaching in the long run. They suggested improving the integration between online and offline modes, conducting offline doubt-clearing sessions for topics taught online, making the classes more offline format-oriented and lastly taking important classes' offline.

The present study showed that the hybrid mode of education was preferred by about 86% of the participants. Most of the participants [63%] felt that the hybrid mode of education could eliminate the lacunae in conventional offline as well as exclusive online mode of education. However, majority [90%] were of the opinion that hybrid education should not replace offline lectures. It was observed that 52% of the study subjects faced some form of difficulty while joining the online classes, whereas 31% had difficulty in accessing online study materials. It was found that 16% of the participants faced difficulty in attending offline classes, mainly due to transportation- related problems.

Prior to the COVID 19 pandemic, the hybrid mode of education was being practiced in a few institutions imparting higher education, where international students were also entitled to get enrolled. The provision for distant learning with the help of an online platform helped many students, and simultaneously reduced the financial burden on the institution as well as the students.[19] During the pandemic, enforcement of lockdown and restrictions in travelling resulted in closure of schools, colleges

and universities across the globe.[20] Consequently, the institutions shifted from the conventional mode of offline classes to the more feasible option of online mode of teaching.[21] This allowed continuation of the process of imparting education during the difficult times. However, the online mode of education appeared to have some disadvantages like less scope for interaction, absence of hands-on training, feeling of loneliness, as well as network connectivity issues during the classes.[22] It was necessary to find out the shortcomings of online classes in order to improve the method of imparting education. Several studies were undertaken in India and abroad in order to identify various problems associated with online classes.

A study from AIIMS, Raipur, India showed that majority of the students used mobile phones to access online classes, and most of them faced technical issues during the process.[23] In the present study also, technical issues appeared to be a major disadvantage of online mode of education. Another study from Pakistan highlighted internet connectivity issues, poor IT skills of the students and lack of proper facilitation by the faculty as the main barriers to successful implementation of online medical education.[24] Similarly, another Pakistani study commented that online mode was convenient, accessible and beneficial for remote learning, but carried the disadvantages of inefficiency and difficulty in maintaining academic integrity.[25] A study from Saudi Arabia also concluded that online mode of education can assist the teaching process in medical schools, but cannot be the sole mode of education.[26] The study by Singh et al has rightly pointed out that mixed mode or hybrid mode of education is the best mode of learning medical science.[27] Similarly, Wang et al has also found that majority of students preferred a mixed method of learning.[28] The disadvantages of online and offline modes can be alleviated by this mixed method of learning.

In spite of a small sample size, the present study focuses on the advantages and disadvantages of the hybrid mode of education in these turbulent times. It is evident from the present study that hybrid mode of medical education could be the preferred mode, given its ability to combine the advantages of offline and online education system.

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Review Article

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Covid-19 Vaccine Mandates: Challenges and Prospects

Azoof Khalid Qalyoubi

[1]Postgraduate, School of Life Sciences, Nottingham University, United Kingdom.

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Abstract

Over decades, vaccination has been proven to be a successful strategy to combat the spread of infectious diseases such as measles, tetanus, and polio amongst children and adults. When the COVID-19 pandemic emerged the biotech industry have put out a historical effort into developing vaccines to contain the pandemic. These vaccines have shown high efficacy in preventing disease transmission and associated risks. However, misinformation and lack of trust have caused a large proportion of the population to be skeptical about these vaccines. Authorities of different nations have established numerous policies to increase vaccination coverage, however in many areas mandates have not been well received. People's views on vaccinations are immensely impacted by their society and cultural beliefs, and enforcing mandates, although beneficial, may have negative consequences. This review discusses the COVID-19 vaccines from cultural and societal aspects; the main reasons withholding the public from receiving vaccination; the human rights angle of enforcing vaccination; and the challenges and prospects of establishing vaccine mandates.

Keywords: Covid-19, SARS-CoV-2, vaccination, vaccine mandate, vaccine hesitancy, health policy

Introduction

The use of immunizations to prevent disease was practiced by humans for over 1000 years and could be traced back to 1022 AD in ancient China. Records dating back to mid-1500's describe the process of variolation which was used to combat Smallpox, but it wasn't until the 18th century that vaccinology became the modern science, we know today [1]. As contagious diseases such as anthrax, rabies, and cholera continued to emerge, more vaccines were developed [1]. Childhood vaccination against diphtheria, measles, pertussis, and tetanus succeeded in enhancing child survival rates [2]. However, despite this success, vaccine hesitancy poses an obstacle for physicians. Skepticism and rejection of vaccines has existed since the introduction of the first smallpox vaccine in the 1796, andincreases as new ones are introduced [3].

The SARS-CoV-2(further labelled COVID-19) pandemic cost humanity nearly 7million lives [4] and even individuals who had mild symptomsremain at risk of suffering long-COVID syndrome complications [5]; making protecting the population against infection a priority of public health institutions. With the prevalence of media outlets, COVID-19 pandemic witnessed an explosion of misinformation surrounding the disease and vaccination which associated with vaccine hesitancy causing a major threat to public health. Hesitancy can stem from cultural reasons, safety concerns, and lack of trust in the authorities which associates with believing conspiracy theories [6].

Corresponding Author: Azoof Khalid Qalyoubi, Postgraduate, School of Life Sciences, Nottingham University, United Kingdom.

E-mail: azuf_33@hotmail.com

Although concerns regarding the vaccines can be found in all countries, different populations exhibit different levels of acceptance/rejection towards the vaccine, For example: Ecuador, Malaysia, and Indonesia have had the highest rates of vaccine acceptance, while Kuwait, Jordan and Italy have had the lowest rates [7]. This review aims to discuss the social and cultural aspects of hesitancy towards COVID-19 vaccine, and whether establishing vaccine mandates (VM) for health workers and educational bodies should be considered.

COVID-19 Vaccines: Cultural and Societal Aspects

Peoples' response to vaccines is influenced by their social environment and beliefs. An article published in 2021 casts light on the reasons behind COVID-19 vaccine concerns [8]. Conspiracy beliefs -including that the virus itself was man-made - have a large impact on peoples' readiness to take the vaccine, followed by concerns surrounding the vaccine's safety, and belief in COVID-19 misinformation mainly derived from unregulated social media outlets (e.g., YouTube and TikTok) and negatively influences people's readiness to accept vaccination.

Different societies have different views on vaccinations. A study conducted in the United Kingdom (UK) found that participants of Black African or Mixed Black African ethnicity were more likely to decline the vaccine due to concerns about its safety, in comparison to White European participants [9]. Another study applied in the United States (US) showed a similar pattern[10]. Lower intentions of vaccinations were also observed in Hispanic communities in the US and correlated with lower tendency to maintain non-pharmaceutical preventative measures such as social distancing and facial masks[11].

A study performed in Saudi Arabia revealed that a key barrier for80% of participants who rejected vaccination was fear of side effects [12]. Another study performed in Chinarevealed that only 26% of the over-60 population received the vaccine, due to lack of trust in the vaccine as it was "developed too quickly" and fear of compatibility as they suffered chronic conditions [13].Fear of compatibility of the vaccine was also observed in Indian cohort of cancer patients, where 80% of the participants refused to take COVID-19 vaccination either because they feared it would impact their cancer therapy or did not have enough information to make an informed decision [14].

Moreover, despite the high rate of vaccine acceptance in Malaysia there were concerns regarding side effects, safety, lack of information, effectiveness, and religious aspects. Participant of Islamic background showed a more positive attitude towards vaccination in comparison to participants of Buddhist background, however the study did not provide detailed information regarding the reasons behind this observation [15]. Furthermore, the survey which was conducted online may have been unable to reach all the vulnerable social groups, thus an in-person survey can provide a more accurate representation of society.

In contrast, believing and fearing the threat imposed by the pandemic and the rapid infection spread make people more positive towards vaccination. A study conducted in Saudi Arabia demonstrated a high level of awareness and support to vaccination campaigns, moreover 30% of participants stated they would be more willing to take the vaccine if it was taken by many in the public which highlights the societal impact on people's attitude towards the vaccine [16].

To promote vaccination, doubt and misinformation must be combated by building genuine trust through listening to concerns, alleviating fears, and providing education which allows people to make fully informed decisions.

The Effectiveness of COVID-19 Vaccination

Many individuals who are hesitant to take the COVID-19 vaccine have doubts regarding its ability to protect them against COVID-19 infection and side effects[8, 12]. Almaghaslah and colleagues reported half of the participants in their study were hesitating to take the vaccine because they doubt its effectiveness in preventing infection [16].

A meta-analysis estimated the efficacy of COVID-19 vaccines using data from 14 countries, 4 available vaccines, multiple age groups and categories revealed that amongst individuals who have taken at least 2 doses of the efficacy in

preventing COVID-19 infection was 89%, and efficacy of preventing hospitalization due to the illness was 97%. The Vaccine also decreased the likelihood of infection amongst health care workers by 95%. Moreover, receiving a second dose of the vaccine yields enhanced efficacy [17].

Despite the success of vaccines, data collected from the US and China showed that increasing coverage of vaccines significantly lowered the incidence of infection and number of critical cases, however vaccination was still incapable of preventing the rise of new waves [18]. The emergence of new variants hindered the efficacy of the vaccines,[19]this is a reminder of the importance of non-pharmaceutical interventions such as social distancing, wearing facial masks, and maintaining hygiene habits which are not only beneficial against COVID-19 infection but also against other contagious respiratory infections and the inhalation of fine particles [20].

Vaccine Mandates: Models from the Past

In effort to contain the spread of COVID-19 many countries resorted to VMsto increase vaccine coverage. Australia, Canada, and Saudi Arabia implanted strict mandate policies that included public and private sector employees, health care workers, and access to restaurants and entertainment venues[21]. Other countries took a more lenient approach; Greece established a mandate to vaccinate individuals over the age 60, while Italy established mandates for schools and healthcare workers [22]. Individuals who are more positive towards receiving vaccination also show more tolerance towards VMs, and although the overall perception of mandates was negative, employer mandates were more likely to be accepted than full-country-scale mandates [23].

VMs were employed way before the emergence of COVID-19. In 1982, measles vaccine became a requirement for obtaining a birth certificate in Saudi Arabia, this resulted in increasing vaccination coverage from 8% to 90% between 1982 until 1990, and lowering infection rate from 500/100,000 to >80/100,000 [24]. Another model of VMs can be observed in Italy where vaccination against hepatitis B virus became mandatory for children in 1991 resulting in long-lasting immunity as >90% of individuals who were vaccinated at ages ≥ 12 possessed antibodies against the virus even a decade later[25].

Vaccines assisted in eradicating many dangerous illnesses which led many people to doubt their necessity, and with misinformation spread on social media many individuals have opted not to vaccinate their children, causing vaccine coverage against infections like measles to drop sharply. In 2017, over 16,000 cases of measles were reported in the European Union among non-vaccinated individuals [26].

Enforcing nation-wide mandates can be more difficult for the public to accept, thus individual mandates forbusinesses, healthcare, educational sectors, and social venues deserve more attention from policy makers.

General Attitude Towards Mandates

A survey conducted amongst health workers in Greece revealed that 72% of physicians support the implementation of VMs for measles, mumps, rubella, varicella, and hepatitis B infections [27]. Health workers are highly susceptible to COVID-19 infection and the risk of passing it to compromised individuals [28]. Over 1000 medical student in India participated in a survey and out of 113 students who presented hesitancy towards vaccination 78% declared they would only take the vaccine if it became mandatory, while 75% of all participants supported mandating COVID-19 vaccines for health workers [29].

Moreover, businesses seek a return to normal operating conditions, thus 71% of executives questioned during Yale CEO summit 2020 supported the establishment of VMs by employers [30].

The educational system has also suffered a strong blow due to COVID-19 restrictions. Distant learning had negative impacts on the students' emotional wellbeing, educational outcomes, and cognitive development [31]. Although children and adolescents exhibit milder symptoms, they can transmit the disease to adult household members who are at a higher risk of experiencing a more severe illness [32]; thus establishing VMs in schools will not only protect vulnerable children, surrounding adults[33].

There is no one right way to implement a world-wide vaccine mandate, however addressing peoples' concerns, informing them about risks associated with

COVID-19 infection, and educating them about the role of vaccines in eradicating various diseases in the past will ease their hesitancy.

An Ethical Conundrum

In 2022, the Austrian government was days away from implementing a mandatory vaccine rule on all residents with fines for those who refuse to take the vaccine [34], however, it was not well received by the public[35]. Liberty, autonomy, and informed choice are universally protected human rights as per the Universal Declaration [36], thus many would argue nation-wide mandatory vaccination would threaten these rights.

Restricting the population's freedom to choose whether to take or reject newly developed vaccination can introduce social, psychological, and economic threats. Trust and transparency are crucial for the public to accept vaccination[8-10, 15], enforcing a strict mandate and blocking social media outlets popular among people can spread mistrust and encourage people to believe alternative theories. Furthermore, individuals who are unvaccinated will not be able to return to work, schools, and be excluded from social events which will endanger their economic and psychological well-being; and increase inequality [37].

Yet, it is the responsibility of government and healthcare institutions to ensure public health. Article 12 of the international human rights treaty assigns the responsibility of "prevention, treatment and control of epidemic, endemic, occupational and other diseases" to the state as part of ensuring everyone's right to highest attainable standard of physical and mental health [38].

Concluding Remarks

In conclusion, vaccine hesitancy resulting from fear of the unknown and spread of misinformation has imposed a barrier against containing COVID-19 pandemic. To encourage more people to accept vaccination, it is necessary to establish trust with the public and educate the population on the dangers of COVID-19 as well as benefits of vaccination to enable people to make informed decisions.

Although VMs face a lot of obstacles, they were built on previous successful experiences against epidemics. There is no single right way to establish VMs, however, educational institutions have a moral and legal obligation to protect students and employees; while healthcare workers are more likely to contract infectious diseases; thus, implementing VMs for these groups would be highly beneficial in controlling disease spread and protecting vulnerable individuals.

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Original Research

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Comparative Study of Efficacy of Corticosteroid Versus Analogues PRP in Chronic Plantar Fasciitis in Andhra Pradesh Population

B. Bhanu Pratap[1], Kiran Kumar Tapal[2]

[1,2]Assistant Professor, Department of Orthopaedics, Vishwa Bharathi Medical College Penchikalapadu, RT Nagar, Kurnool.

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Abstract

Background: Plantar fasciitis is a common pathological condition of the foot and can be a challenge for clinicians to treat successfully.

Method: Out of 60 patients 30 patients were injected corticosteroid 2ml (8 mg) along with 0.5ml of plain 2% xylocaine using 20G wide bore needle. PRP (platelet rich plasma) was prepared from the autologous blood, drawnfrom cubital vein three BD vacutainer tubes which is 2.7 ml tube that contains 0.35 ml of 3.2% of sodium citrate as an anti coagulant. Blood was centrifuged twice, first time at 1200/rpm, second time 2400 rpm. The platelets were checked randomly by pathologist by Neubauer's chamber method or auto analyser. PRP was injected at tenderness site, after injecting 2% of xylocaine with 20 Gauze needle and follow-up was done for a week, 6th week, 3rd month and 6thmonths and outcomes of results were noted.

Results: Clinical manifestations were VAS Baseline score – 7.137 in PRP group, 7.214 was in steroid group. Baseline of AOFAS was 53 (SD±5.12) in PRP group, 54.6 (SD±3.30) in steroid group. VAS score at 6th week was 2.62 in PRP group, 1.94 in steroid, at 3rd month 1.94 in PRP, 2.89 in steroid group, at 6th month 1.42 in PRP and 3.79 in steroid group. AOFAS scores was highly significant ($p<0.001$) at 6th weeks, 3rd months and 6th months.

Conclusion: Corticosteroid therapy is more effective for short duration relief but PRP therapy is more effective for long term relief.

Key Words: platelet rich plasma, Corticosteroids, Plantar Fasciitis, 2% xylocaine, 20 Gauge Needle

Introduction

Plantar fasciitis is classified as syndrome that results from repeated trauma to plantar fascia at its origin on the calcaneus. Plantar fasciitisis a common cause of heel pain and is the result of a degenerative process of plantar fascia at its calcaneal attachment. Age, Obesity, excessive weight bearing and tight Achilles tendon are the common predisposing factors[(1)]. Plantar fasciitis presents in a most characteristic manner, a gradual onset and worsening with time, pain in the morning on rising from rest and localization over the medial slip of the origin of the fascia [(2)]. Methods of treatment are the use of insoles, modification of shoes, stretching, physiotherapy, ice or cold, NSAID, analgesics, shock wave therapy and immobilization [(3)(4)]. If not responded local corticosteroid and/or autologus platelet rich plasma

Corresponding Author: B. Bhanu Pratap, Assistant Professor, Department of Orthopaedics, Vishwa Bharathi Medical College Penchikalapadu, RT Nagar, Kurnool.

E-mail: bhanu7123@gmail.com

injected locally in the management of chronic plantar fasciitis. It was suggestion that platelet rich plasma given locally was more effective than corticosteroid but some research have reported that local corticosteroid have been more effective than platelet rich plasma (PRP) hence attempt is made to compare the efficacy of both and outcome results were noted in adults of both sexes.

Material and Method

60 (sixty) patients aged between 25 to 60 years who visited to orthopaedic

Department of Vishwa Bharathi Medical College Hospital, Penchikalapadu, RT Nagar, Kurnool, Andhra Pradesh were studied.

Inclusive Criteria: The patients diagnosed plantar fasciitis by clinical and radiological evaluation presenting a complaint of planter heel pain more than 6 week (>6 weeks) and plantar fascia thickness was > 4 mm at the area of maximum tenderness (USG of heel for plantar fascia) were selected for study.

Exclusion criteria: Patients with severe anaemia thrombocytopenia, immune compromised, non-cooperative patients were excluded from the study.

Method: Out of 50, 25 patients were given corticosteroid 2 ml (8 mg) and 25 patients were given PRP. Depomedrol injection along with 0.5ml of plain 2% xylocaine using 20 G wide boreneedles into the point of maximum tenderness. Post injection, patients were asked to take rest for 15 minutes and then allowed to walk.

PRP preparation and administration – For the preparation of – PRP blood was withdrawn from cubital vein with the help of BD vacutainer eclipse in three BD vacutainer tubes which is 2.7ml tube that contains 0.5ml of 3.2% sodium citrate an anticoagulant and volume of approximately 2.35 ml for whole blood. It was prepared using a 2 – spin technique, in the 1st low spin step blood is centrifuged at 1200 rpm for 10 minutes in a Routine 380 R centrifuge model (Hettich, zentrifugen). After the formation of three layers (a bottom layer of RBC, an upper layer composed of plasma, platelets and some WBS an intermediate layer or Buffy coat, composed mostly WBC). The upper layerjust above the Buffy coat was collected with a 10 ml syringe; this collection was performed carefully to avoid disturbing the bottom layer of RBC and the Buffy coat layer. Depending upon the centrifugal force of the spin, the collected volume ranged from 0.75 ml to 1.25 ml in each BD vacutainer. Approximately 1 ml of upper layer of the sample that underwent the first spin step was collected and transformed to one empty tube (approximately 3 ml). The tube was centrifuged again for 10 minutes at 2400 rpm. The upper half of the plasma volume platelet poor plasma (PPP), was removed. The remaining volume of PRP was used for injection. Platelet count was estimated by pathologist. The PRP was randomly checked for number of platelets by Neubauer's chamber or auto analyser. Most of the sample had a platelet count more than 1,000.000/µl in 5 ml volume that is 5 times the baseline. After this the PRP is shaken by just turning the tube 2 to 3 times to mix the platelets.

PRP injection technique – patients was asked to resume supine position the involved foot was cleaned and prepared with spirit and povidoneIodine. The site of maximum tenderness i.e. medial aspect of the foot at the origin of plantar fascia was marked using marker. One ml of 2% plain xylocaine was infiltrated into the skin and subcutaneous tissue. Dry needling, also called peppering, was used to locally "injure" the soft tissue to stimulate the inflammatory response concomitant delivery of the PRP then modulates (enhances) the healing response. Each masking point of tenderness is penetrated with a 20 G-gauge needle until the underlying periosteum is touched. A gristly crunchy texture is audibly and palpably noted as the needle is advanced. After contacting the periosteum, the needle was gently partially withdrawn and then advanced in fan like wheel (peppering) the area 7 to 10 times. Next, 1 ml of the PRP is injected as this peppering manoeuvre is continued. This process is then carried out at each marked site.

Post-injection care – post injection, patients were asked to rest for 15 minutes and then allowed to walk. As PRP effectively induces an inflammatory response, some patients experienced minimal to moderate discomfort following the injection which usually last for upto 1 week. They are instructed to ice the injected area if needed for pain control and modify activity as tolerated. Acetaminophen was

the optional analgesic and NSAIDS were avoided. After 48 hours, patients were given a standardized stretching protocol to follow for 2 weeks. Patients were advised to avoid strenuous activities and rest for 2 weeks. No aggressive running or jumping activities were allowed for 2 weeks. After 4 weeks of the procedure, patients were allowed to proceed with normal sporting or recreational activities as tolerated. Any type of foot orthoses was not advised.

Each patient was assessed functionally using American orthopaedic Foot and ankle score (AOFAS), visual analogue scale (VAS) scores and radio-logically by ultrasound thickness of plantar fascia. The AOFS, VAS scores were recorded before treatment and at follow up visit scheduled at 6 weeks, 3rd month and six month.

The duration of study was from May-2018 to March-2022

Statistical analysis: Clinical manifestations comparison, VAS, AOFAS, pain severity was studied by using t test and percentage. The statistical analysis was done in SPSS software. The ratio of male and female was 2:1.

Consent taken from participants.

Observation and Results

- **Table-1:** Clinical manifestations of patients with chronic plantar fasciitis Right heel – 17 (56.6%) PRP group, 18 (60%) corticosteroid group,
- Left heel –12(40%) PRP group, 13 (43.3%) corticosteroid group
- VAS Baseline - 7.137 in PRP group, 7.214 in corticosteroid group,
- Baseline AOFS score 53±5.1 in PRP group, 5.60 in corticosteroid group.
- Thickness of Fascia - 5.72 in PRP group, 5.60 in corticosteroid group.

Table-2: Comparative study of VAS in both group

- Pre-treatment–PRP group 7.137 in PRP group, 7.214 in corticosteroid group.
- 6 Weeks 2.62 in PRP group, 1.94 in corticosteroid group.
- 3 months 1.94 in PRP group, 2.89 in corticosteroid group.
- 6 months 1.42 in PRP, 3.79 in corticosteroid group.

Table-3: Comparison of pain sensitivity in both groups

- No pain VAS-0 at 6th months, 5 (6%) in PRP group only
- Mild pain VAS 1,2,3 – 6th week 14 (46.6%) in steroid, 24 (80 %)in PRP group, At 3rd month 25 (83.3%) at corticosteroid,11 (36.6%) in PRP, At6th month 20 (66.6%) in PRP and 5 (20%) in steroid
- Moderate pain (VAS 4,5,6) – pre-treatment 10 (33.3%) in steroid, 6 (20%) in PRP group,At 6th week, 16 (53.3%) steroid group, 15 (16.6%) in PRP group, At 3rd month 5 (16.6%), in steroid 19 (63.3%) in PRP group. At 6th month 4 (13.3%) PRP group, 23 (76.6%) steroid.
- In severe pain –(VAS 7, 8, 9) pre-treatment 19 (63.3%) in steroid group, 23 (76.6%) PRP group and no pain is reported later on.

Table-4: Comparison of AOFS score in both groups –

- During pre-treatment 54 (±5.12) in PRP group, 55.30 (±3.20) in steroid group, t test 1.17 and p>0.24 (p value was insignificant).
- At 6th week 79.4 (±2.40) in PRP group, 86.04 (±1.30) in steroid group, t test 13.3 and p value was highly significant (p<0.001)
- At 3rd month 85.60 (±2.15) in PRP, 78.48 (1.88) in steroid group, t test value 13.65 and p value highly significant (p<0.001).
- At 6th months 88.04(±3.10) in PRP group, 72.64 (±3.30) in steroid group, t test 18.6 and p value highly significant (p<0.001)

Discussion

Present comparative study of efficacy of corticosteroid versus Platelet Rich Plasma injection in the management of chronicplantar fasciitisin Andhra Pradesh Population. The clinical manifestations were: Right heel was treated in 17 (56.6%) persons

using PRP, 18(60%) were given corticosteroid. Left heel was treated in 12 (40%) persons using PRP, 13 (43.3%) were given corticosteroid. VAS Baseline 7.137 in PRP group, 7.214 in steroid group, Baseline of AOFS 53 (±5.12) in PRP group, 54.6 (±3.30) in steroid group. Thickness of plantar fascia 5.72 in PRP group, 5.60 in steroid group (Table-1). VAS score at 6 weeks 2.62 in PRP group, 1.94in steroid group. In 3rd month 1.94 in PRP group, and 2.89 in steroid group. At 6th months 1.42 in PRP, 3.79 in steroid group (Table-2). In Comparison AOFAS score in both groups: during pre-treatment 54 (± 5.1) in PRP group, 55.3 (±3.2) in steroid group. At 6th weeks 79.4 (±2.40) in PRP group, 86.04 (±1.30) in steroid group, t test was 13.3 and $p<0.001$, At 3rd month 85.6 (±2.15) in PRP, 78.48 (±1.88) in steroid group, t test was 13.65 and $p<0.001$, At 6th month 88.04 (±3.10) in PRP, 72.64 (±3.3) in steroid, t test 18.6 and $p<0.001$ (Table-4). These finding are more or less in agreement with previous studies (5)(6)(7).

Plantar fasciitis is considered an overuse injury and such patient's history will typically reveal some combination of either intrinsic or extrinsic factors that contribute to the development of the injury. Extrinsic factors are due to unyielding surface on exercise (movement) and improper and excessively worn foot wear [8]. Intrinsic factors include obesity, foot structure, reduced plantar flexion strength and reduced flexibility of the plantar flexor muscles and tensional malalignment of the lower extremity [9]. The most often cause of plantar fasciitis is excessive pronation (inversion) of foot. Increased tension placed arch lowering during standing and walking.

The non-surgical management for the treatment of the symptoms and discomfort associated with plantar fasciitis are (1) reducing pain and inflammation (2) reducing stress to tolerate level (3) restoring muscle strength and flexibility involved tissue. Corticosteroid local injection gives sudden relief for pain and inflammation but to reducing stress, to tolerate and restoring muscle strength PRP proved to be efficient because enables cell proliferation, angiogenesis and cell migration are stimulated resulting in tissue regeneration. Platelets secrete anti microbial peptides, suggesting an antibiotic effect [10]. Moreover PRP has anti-inflammatory and analgesic effects also. It is also reported that PRP is superior to hyaluronicacid, visco supplementation because PRP is a biological product [11]. Hence PRP HAS a multi potential application in orthopaedics & sport medicine. While corticosteroid has many side effects on prolong usage like osteoporosis, loss of immunity even addiction to steroids is also recorded.

Summary and Conclusion

In the present comparative study of PRP and corticosteroids in the management of chronic fasciitis confirmed that PRP injection is an efficient and safe therapeutic option for the treatment of chronic plantar fasciitis but long duration treatment has to be the protocol to get satisfactory result. But this study demands further histo-pathological, nutritional, genetic, musculo-skeletal study. Because despite many contributing factors, none of these factors have proven to be predictive of clinical outcome, plantar fasciitis occurs at any age in both sexes and in many occupations.

Limitation of study: Owing to tertiary location of research centre and small number of patients and lack of latest technologies, we have limited findings and results.

Table 1: Clinical Manifestations of patients with chronic plantar fasciitis

(No. of patients: 60)

Sl No	Manifestations	PRP group (30)	Corticosteroid Group(30)
1	Right heel	17 (56.6%)	18 (60%)
2	Left heel	12 (40%)	13 (43.3%)
3	VAS Base line score	7.137	7.214
4	Base line of AOFAS	53±5.12	54.6±3.30
5	Thickness of plantar fascia (in mm)	5.72	5.60

AOFAS = American orthopaedic Foot and ankle score, PRP = Platelet rich plasma, VAS = visual analogue scale

Table 2: Comparison of VAS (Visual Analogue score) in both groups

Visual score	PRP group (30)	Corticosteroid Group (30)
Pre treatment	7.137	7.214
6 Weeks	2.62	1.94
3 months	1.94	2.89
6 months	1.42	3.79

Table 3: Comparison of pain severity in both groups

VAS	Pre treatment		6th week		3rd month		6th month	
No pain VAS-0	Steroid (%)	PRP (%)	Steroid (%)	PRP (%)	Steroid (%)	PRP (%)	PRP	Steroid
	0	0	0	0	0	0	5 (16%)	0
Mild pain VAS 1, 2 3	0	0	14 (46.6%)	24 (80%)	25 (83.3%)	11 (36.6%)	20 (66.6%)	6 (20%)
Moderate pain VAS 4, 5 6	10 (33.3%)	6 (20%)	16 (53.3%)	5 (16.6%)	5 (16.6%)	19 (63.3%)	4 (13.3%)	23 (76.6%)
Severe pain VAS- 7 8, 9	19 (63.3%)	23 (76.6%)	0	0	0	0	0	0
Worst pain VAS – 10	0	0	0	0	0	0	0	0

PRP = Platelet Rich Plasma, VAS = Visual Analogue Scale

Table 4: Comparison of AOFAS score in both groups

AOFAS score	PRP Group (30)	Corticosteroid group (30)	t test	p value
Pre-treatment	54 (SD±5.12)	55.30 (SD±3.20)	1.17	p>0.24
6 Weeks	79.4 (SD±2.40)	86.04 (SD±1.30)	13.3	P<0.001
3 Months	85.60 (SD±2.15)	78.48 (SD±1.88)	13.65	P<001
6 Months	88.04 (SD±3.10)	72.64 (SD±3.30)	18.6	P<0.001

AOFAS = American Orthopaedic Foot and Ankle Society Score

PRP = Platelets Rich Plasma

The research paper was approved by Ethical committee of Vishwa Bharathi Medical College and hospital Penchikalapadu, RT Nagar, Kurnool-518467.

Conflict of Interest: No

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Original Research

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Assessment of Skills of Health Care Professionals Posted in Labour Room and Maternity OTs Based on OSCE (Objective Structured Clinical Examination) Using LaQshya Guidelines

Chandra Gopal Dogne[1], Shailesh Rai[2], Nalini Dogne[3], Sana Afrin[4], Deepa Raghunath[5], Salil Sakalle[6]

[1,4]Post graduate student, [2]Assistant Professor, [5]Associate Professor, [6]Professor and Head, Department of Community Medicine, MGM Medical College, Indore, [3]Post graduate student, Department of Obstetrics and Gynaecology, Gandhi Medical College, Bhopal.

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Abstract

Background: Present study attempts to assess the skills of staff including Doctors and nurses posted in labour room and maternity OTs based on OSCE (Objective Structured Clinical Examination) as mentioned in LaQshya guidelines in selected areas of Indore and Ujjain district (M.P) regarding the management of normal labour, the active management of third stage of labour, Newborn Resuscitation, management of PPH due to atonic uterus and management of eclampsia. Even in these parameters many sub-parameters were studied.

Materials and Methods: Pre designed semi structured Observation checklist for Health care providers regarding skill assessment of the staff based on OSCE guideline was used to assess Health care providers including Doctors, Staff nurses/ANMs, who are providing MCH services in LR (Labour room) and maternity OT of the selected hospitals of Indore and Ujjain district.

Results: Most of the manoeuvres were better performed by staff nurses posted in CHCs rather than those posted in PHCs. Breathing assessment of baby was lacking among staff nurses of both CHCs and PHCs and needed to be tackled with by a reorientation training of paramedical staff in critical care. Decision to transfer (is usually after Consultation with the in charge, hence it is usually the Medical officers prerogative) and bimanual compression/ aortic compression/condom tamponade to control bleeding was done exclusively by MOs.

Conclusion: OSCE helped to assess the skills of the staff of maternity wing in a comprehensive manner and was well appreciated by the staff. Such OSCE modules should be developed and regularly used and updated to assess the clinical skill of the staff in the maternity wing of any health centre or hospital.

Keywords: OSCE, LaQshya, Labour room, Maternity

Introduction

The Objective Structured Clinical Examination (OSCE) introduced by Haden and Gleeson, in 1975, has become a standard method of assessment in both undergraduate and postgraduate students.[1] The Government of India launched LaQshya programme

Corresponding Author: Sana Afrin, Post Graduate student, Department of Community Medicine, MGM Medical College, Indore, Madhya Pradesh.

E-mail: drsana181@gmail.com

in 2017 by the Ministry of Health and Family welfare (MoHFW, India) which aims at improving quality of care in labour room and maternity operation theatre so that every pregnant woman receives most appropriate care with dignity and respect, which is her fundamental right.[2]

One of the key features in these LaQshya guidelines is ensuring skill assessment of all staff of LR & Maternal OT through OSCE testing as per Dakshata guidelines for delivery of 'zero-defect' quality obstetric and newborn care.[2]

Present study attempts to assess the skills of staff including Doctors and nurses posted in labour room and maternity OTs based on OSCE as mentioned in LaQshya guideline in selected areas of Indore and Ujjain district (M.P) regarding the management of normal labour, the active management of third stage of labour, Newborn Resuscitation, management of Postpartum hemorrhage (PPH) due to atonic uterus and management of eclampsia. Even in these parameters many sub-parameters were studied.

Material and Methods

Study Site-Selected hospitals of Indore and Ujjain district of Madhya Pradesh

Study Design: Cross-Sectional Study

Duration of Study- Study was conducted one Year from date of approval from Institutional ethics committee for a period of 1yr from June 2020 to June 2021.

Study Population:

Health care providers including Doctors, Staff nurses/ANMs, who are providing MCH services in Labour room and maternity OT of the selected hospitals of Indore and Ujjain district.

Study tools

Pre designed semi structured Observation checklist for Health care providers regarding skill assessment of the staff based on OSCE guideline, based on Madhya Pradesh National Health Mission (NHM) LaQshya Labour room and maternity OT checklist.[3]

The investigation was started after receiving ethical approval from the institute. Written informed consent was obtained from all the participants. The data collected was coded appropriately on MS Excel spreadsheet. Data was checked for any potential errors. Statistical software was used for analyzing the data.

Findings

Skill assessment of healthcare professionals (HCPs) was done regarding the management of normal labour using OSCE. Responses of HCPs were recorded on Methods to control the birth of head & Steps adopted after the head has delivered. (Table 1)

Table 1: Assessment of skills of HCPs regarding the management of normal labour using OSCE: Methods to control the birth of head & Steps adopted after the head has delivered

S.No	Parameter Studied		Responses of HCPs			
			Yes		No	
			MOs* (N=25=100%)	Staff Nurses (N=25=100%)	MOs (N=25=100%)	Staff Nurses (N=25=100%)
1.			25 (100%)	25 (100%)	0(0%)	0(0%)
		Control the birth of the head with fingers of one hand to maintain flexion	25 (100%)	25 (100%)	0(0%)	0(0%)

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Methods to control the birth of head	Encourage the woman to make small pushes with contractions	Support the perineum with other hand using a clean pad	25 (100%)	25 (100%)	0(0%)	0(0%)
		Place hands on either side of baby's head and deliver anterior shoulder	25 (100%)	25 (100%)	0(0%)	0(0%)
		Deliver posterior shoulder once axillary crease is seen by guiding head in an upwards direction	25 (100%)	25 (100%)	0(0%)	0(0%)
		Once delivery complete, place the baby on the mother's abdomen	25 (100%)	25 (100%)	0(0%)	0(0%)
		Note time of birth, sex of baby on partograph	25(100%)	5(20%)	0 (00%)	20 (80%)

Skill assessment of HCPs was done regarding the active management of third stage of labour using OSCE. Responses of HCPs were recorded on Steps adopted during the third stage of labour. (Table 2)

Table 2: Assessment of skills of HCPs regarding the active management of third stage of labour using OSCE- Steps adopted during the third stage of labour

S.No	Parameters studied	Responses of HCPs			
		Yes		No	
		MOs* (N=25=100%)	Staff Nurses (N=25=100%)	MOs (N=25=100%)	Staff Nurses (N=25=100%)
1.	Ruling out another baby	25 (100%)	25 (100%)	0(0%)	0(0%)
2.	Administration of Uterotonic drug	25 (100%)	13 (52%)	0(0%)	12 (48%)
3.	Delivery of Placenta and membranes	25 (100%)	13 (52%)	0(0%)	12 (48%)
4.	Uterine massage	20 (80%)	13 (52%)	5(20%)	12 (48%)
5.	Examination of lower vagina and perineum	25 (100%)	25 (100%)	0(0%)	0(0%)

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6.	Examination of placenta, membranes and umbilical cord	20 (80%)	14 (56%)	5(20%)	11 (44%)
7.	Decontamination of instruments	25(100%)	24 (96%)	0 (0%)	1(4%)
8.	Decontamination of syringe and needle	25(100%)	24 (96%)	0 (0%)	1(4%)
9.	Disinfection of gloved hands	22 (88%)	21 (84%)	3(12%)	4(16%)
10.	Washing of hands	25 (100%)	25 (100%)	0(0%)	0(0%)

Skill assessment of HCPs was done regarding the newborn resuscitation using OSCE. Responses of HCPs were recorded on Steps adopted during the newborn resuscitation. (Table 3)

Table 3: Assessment of skills of HCPs regarding Newborn Resuscitation using OSCE- Steps adopted during newborn resuscitation

S.No	Parameters studied	Responses of HCPs			
		Yes		No	
		MOs* (N=25=100%)	Staff Nurses (N=25=100%)	MOs (N=25=100%)	Staff Nurses (N=25=100%)
1.	Arrangement of instruments and set up	25 (100%)	25 (100%)	0 (0%)	0(0%)
2.	Cord Clamping	25 (100%)	11 (44%)	0(0%)	14 (56%)
3.	Radiant warmer	25 (100%)	25 (100%)	0(0%)	0(0%)
4.	Head position	25 (100%)	13 (52%)	0(0%)	12 (48%)
5.	Airway clearance	25 (100%)	25 (100%)	0(0%)	0(0%)
6.	Stimulation by rubbing back	25 (100%)	14 (56%)	0(0%)	11 (44%)
7.	Head repositioning	25 (100%)	25 (100%)	0(0%)	0(0%)
8.	Breathing assessment of baby	25 (100%)	20 (80%)	0(0%)	5(20%)

Skill assessment of HCPs was done regarding the Management of PPH due to Atonic Uterus using OSCE. Responses of HCPs were recorded on Steps adopted during management of PPH due to Atonic Uterus. (Table 4)

Table 4: Assessment of skills of HCPs regarding Management of PPH due to Atonic Uterus using OSCE- Steps adopted during management of PPH due to Atonic Uterus

S.No	Parameters studied	Responses of HCPs			
		Yes		No	
		MOs* (N=25=100%)	Staff Nurses (N=25=100%)	MOs (N=25=100%)	Staff Nurses (N=25=100%)
1.	Uterine massage	20 (80%)	13 (52%)	5(20%)	12 (48%)
2.	Checking the bleeding	25 (100%)	25(100%)	0(0%)	0(0%)
3.	Placenta Inspection	20 (80%)	14 (56%)	5(20%)	11 (44%)
4.	Uterine tone and bleed recheck	20 (80%)	13 (52%)	5(20%)	12 (48%)
5.	Second dose of medication	25 (100%)	13 (52%)	0(0%)	12(48%)
6.	Uterine tone and bleed recheck	20 (80%)	13 (52%)	5(20%)	12 (48%)
7.	Urinary bladder emptying	25 (100%)	25 (100%)	0(0%)	0(0%)
8.	Measures to control bleeding, if any	25 (100%)	0(0%)	0(0%)	25 (100%)
9.	Decision to transfer	25 (100%)	0(0%)	0(0%)	25 (100%)
10.	Explanation to patient regarding need to transfer	25 (100%)	0(0%)	25 (100%)	0(0%)

Skill assessment of HCPs was done regarding the Management of Management of Eclampsia using OSCE. Responses of HCPs were recorded on Steps involved in management of eclampsia. (Table 5)

Table 5: Assessment of skills of HCPs regarding Management of Eclampsia using OSCE - Steps involved in management of eclampsia

S.No	Parameters studied	Responses of HCPs			
		Yes		No	
		MOs* (N=25=100%)	Staff Nurses (N=25=100%)	MOs (N=25=100%)	Staff Nurses (N=25=100%)
1.	Immediate step	25 (100%)	25 (100%)	0(0%)	0(0%)
2.	Positioning of woman	25 (100%)	25 (100%)	0(0%)	0(0%)
3.	Hand washing	25 (100%)	25 (100%)	0(0%)	0(0%)
4.	Preparation of magnesium sulphate	25 (100%)	13 (52%)	0(0%)	12 (48%)
5.	Administration of magnesium sulphate bolus	25 (100%)	13 (52%)	0(0%)	12 (48%)
6.	Disposal of used needles and gloves	25(100%)	1(4%)	0 (0%)	24 (96%)
7.	Administration of magnesium sulphate (next doses)	25 (100%)	13 (52%)	0(0%)	12(48%)
8.	Disposal of used needles and gloves	25(100%)	24 (96%)	0 (0%)	1(4%)
9.	Hand washing	25 (100%)	25 (100%)	0(0%)	0(0%)
10.	Record drug administration	0(0%)	25 (100%)	25 (100%)	0(0%)

Discussion

In this study as far as normal labour is concerned, 100% Medical Officers (MOs) and 100% (Staff nurses) posted in Labour room were skilful in all the sub-parameters. The sub-parameters studied in active management of the third stage of labour like ruling out another baby which was performed by 100% HCPs, administration of Uterotonic drug, 10 IU oxytocin IM or Misoprostol 3 tablets (600ug) orally, was done by 100% MOs but only by 52% Staff nurses. Controlled Cord Traction during contractions and delivery of the placenta and membranes and performing uterine massage was done by 100% MOs but only by 52% Staff nurses. It was a common finding that these manoeuvres were better performed by staff nurses posted in CHCs rather than those posted in PHCs. 100% MOs and Staff nurses examined the lower vagina and perineum whereas 80% MOs but only by 56% Staff nurses examined placenta, membranes and umbilical cord. 100% Medical Officers and 96%) staff nurses were doing decontamination of instruments, syringe and needle satisfactorily, however, Disinfection of gloved hands was done by 88% Medical Officers and 84% staff nurses.

The sub-parameters studied in newborn resuscitation including arrangement of instruments and set up including (a) Bag and masks, (b) Suction equipment, (c) Radiant warmer or other heat source, (d) Warm towel-2, (e) Clock with second hands, (f) Oxygen source, (g) Gloves, (h) Shoulder roll, (i) Cord tie/cord clamp, (j) Scissors, was done by 100% nursing staff. Although 100% MOs were aware of the arrangement of the instruments and set up, in most places nurses make arrangement of instruments. Cord Clamping (If baby is not breathing or crying, clamps and cuts the cord immediately) was done by 100% MOs and 44% staff nurses. Shifting the baby under the radiant warmer was done by 100% MOs

and 100% staff nurses respectively, Positioning the head with neck slightly extended using shoulder roll was done by 100% MOs and 52% staff nurses respectively, stimulation by rubbing back was done by 100% MOs and 56% staff nurses respectively. Breathing assessment of baby was done by 100% MOs and 80% staff nurse. It was clearly evident that this aspect of critical care was lacking among staff nurses of both CHCs and PHCs and needed to be tackled with by a reorientation training of paramedical staff in critical care.

The sub-parameters studied in management of PPH due to atonic uterus including Uterine massage, Inspection the placenta for completeness and any missing pieces and re-checking the tone of uterus and bleeding was done by 80% MOs and 56% staff nurses that too of CHCs mainly. Re-checking the tone of uterus and bleeding was done by 80% MOs and 52% staff nurses that too of CHCs. Decision to transfer (is usually after Consultation with the in charge, hence it is usually the Medical officers prerogative) and bimanual compression/aortic compression/ condom tamponade to control bleeding was done exclusively by MOs. An important observation in the steps of the management of eclampsia is the fact that in CHCs staff nurses were aware of the preparation and administration of magnesium sulphate; however in PHCs staff nurses did not know the process of preparation and administration of magnesium sulphate. 100% MOs and 52% staff nurses knew correctly the process of preparation and administration of magnesium sulphate.

In fact many studies have time and again highlighted the importance of OSCE especially its utility in maternity wing. For example, **Shadia A. Eldarir** et.al in her study in 2013, has concluded that OSCE can be used as an appropriate method in evaluation maternity nursing clinical skills because of various advantages such as improving students' clinical performance, preparing highly qualified and competent graduates, increasing decision making abilities and enhance teaching level. Similarly, **Alexander Omu et al** while using OSCE in the evaluation process in the department of Obstetrics and Gynaecology have concluded that based on examinees 'attitudes, OSCE may be a more appropriate choice for graduation examinations of compared to the conventional clinical examination, however they found it to be expensive in terms of manpower requirement.[4, 5]

Conclusion

OSCE helped to assess the skills of the staff of maternity wing in a comprehensive manner and was well appreciated by the staff. Such OSCE modules should be developed and regularly used and updated to assess the clinical skill of the staff in the maternity wing of any health centre or hospital.

Conflict of Interest: Nil

Source of funding: Self

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Original Article

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An Epidemiological Profile of Previously Treated Patients Registered in Tuberculosis Units in Urban Visakhapatnam

Devi Madhavi Bhimarasetty[1], VenkataDurga Prasad Vithanala[2], Jayasree Palla[3], Sindhura Moparthi[4]

[1]Professor and Head , Rangaraya Medical college , Kakinada, Department of Community Medicine, [2]Associate Professor, Government Medical College, Rajamahendravaram , Department of Community Medicine, [3]Associate Professor, [4]Assistant Professor, GSL Medical College, Rajamahendravaram, department of Community Medicine.

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Abstract

Background: Tuberculosis (TB) remains a major global public health problem. Retreatment patients have higher risk of drug resistance compared with new cases. The objective of the study is to describe the types of retreatment (previously treated) patients and assess the Socio demographic characteristics, co morbid and behavioural conditions of retreatment patients and to identify the factors associated with relapse under Revised National Tuberculosis Control Program (RNTCP) in the tuberculosis units located in Urban Visakhapatnam. The main aim of the study is to study epidemiological profile of previously treated patients to identify the factors which make tuberculosis patients prone for retreatment so that necessary action can be taken.

Methods: This is an Observational Analytical Cross-sectional study done in Tuberculosis units in GVMC. All the subjects(193) who were registered as Previously treated patients in TUs during the second and third quarter of the year 2016 i.e April to September 2016. A pretested semi structured schedule was administered. Categorical data was analysed by Chi square test. Quantitative variables were represented as means and standard deviation. Unpaired t test was used for testing statistical significance in quantitative data.

Results : Among 193 study subjects 168 (87%) were having pulmonary TB and remaining 25 (13%) were having extra pulmonary TB. Majority of the study participants, 141 (73%) were males whereas only 52 (27%) were females. Relapse patients were 125(64.9%) Defaulters were 12 (6.2%), Treatment failure was 9 (4.6%) and Others previously treated were 47 (24.3%). Chi square test was used for testing statistical significance of association between categorical variables.

Conclusion: Socio demographic factors, behavioural and co morbid factors have an effect on Relapse and modifying these risk factors may bring about favourable outcomes. There is further need for exploring the reasons for high rates of relapse.

Keywords: Previously treated patients, Relapse, Retreatment, Tuberculosis Units, Visakhapatnam.

Corresponding Author: Sindhura Moparthi, Assistant Professor, GSL Medical College, Rajamahendravaram, department of Community Medicine.

E-mail: sindhu.pummy@gmail.com

Introduction

India has the highest burden of TB in the world, an estimated 2 million cases annually. This accounts for approximately one fifth of the global incidence of TB. It is estimated that about 40% of the Indian population is infected with TB bacteria.[1]

Retreatment tuberculosis patients are those who have been treated previously for one month or more with anti TB drugs and are once again diagnosed with the disease. These patients include relapses, defaults, treatment failure and other previously treated patients.[2]

Retreatment for TB has long been a neglected area in global TB control. India, however, disproportionately accounts for nearly half of retreatment TB cases notified globally.[3]

Besides disease burden, tuberculosis also causes huge socio economic burden. Tuberculosis is a disease of poor as it is widely found in developing countries like India.[4]

In 2020 5.8 million people were reported as having developed TB. This is a decrease from 7.1 million in 2019. TB affects all countries and age groups. Overall in 2020 fifty eight per cent of notifications were of reports of TB in adult males. Thirty five per cent were adult women. Seven per cent were children aged 0-14.[5]

Estimates of TB Burden in India (as per Global TB report 2021)[6]

Incidence - 188 cases per 100,000 population.

Deaths - 36 deaths per 100,000 population.

Incidence of Multi Drug Resistant TB: 9.9 cases per 100,000 population.

The data from the reports indicates a rise in the mortality from Tuberculosis in the Country.

At the start of 2020, in view of End TB targets the central government of India renamed the Revised National Tuberculosis Control Programme (RNTCP) to National Tuberculosis Elimination Program (NTEP).[7]

Government of India has been striving to prevent and control Tuberculosis through intensified efforts under RNTCP with a vision of "TB free India" with reduction of the burden of the disease until it is no longer a major public health problem.

The main objective of the study is to describe the Socio demographic characteristics, co morbid and behavioural practices of retreatment patients and to identify the factors associated with relapse.

Material and Methods

An observational analytical Cross sectional study was conducted among Previously treated tuberculosis patient registered in Tuberculosis units in Visakhapatnam. Study period was November 2016 – April 2017. Inclusion Criteria included patients registered in Tuberculosis Units of Visakhapatnam and who were above the age of Eighteen and who have given consent to participate in the study. Those subjects who could not be traced or who were transferred out of the TUs were excluded. The sample size was calculated using formula $n = Z^2 P \times (1-P)/d^2$ where, Z = 1.96 (at 95% confidence interval [CI]), error of estimate d = ±5, assumed prevalence P = 10%, the required estimated sample 144 study subjects. A total sample of 193 retreatment patients was drawn from tuberculosis units. All the patients aged above 18 years of age who were registered in each of the five tuberculosis Units and categorised as retreatment patients during the second and third quarters of 2016 were considered for the study. There are 5 Tuberculosis units under GVMC jurisdiction. The total patients registered in the selected Tuberculosis Units for second and third quarters of 2016 were 213.The selected TUs were visited and list of the patients was taken from the TU and the patients were contacted by telephone or through the TB Health Visitor. Among them, there were 15 deaths and 5 were not responsive. Finally 193 subjects were included in the study by Consecutive sampling technique.

Participants were included in the study only after obtaining their Informed consent. Institutional Ethics Committee approval was obtained for carrying out the study. Permission was also obtained from the District TB officer

A pretested semi structured schedule prepared in local language was administered and data was collected at either the home of the participant or at

the health facility as per the convenience of the study participant.

Operational definitions of variables in the study:

Socio-Economic Classification: The study participants were classified based on modified Kuppuswamy's socio-economic status scale ,which is based on education and occupation of the head of the family and total family income revised for 2016 . [8]

Smoker: A person who has smoked at least 100 cigarettes in their life time and who, at the time of survey, smoked either every day or in the last 30days.[9]

Alcohol Consumption: Patients who said they habitually consumed alcohol every day or most days of the week during the study period were considered to be alcoholic for the purpose of this study.[10]

Diabetes: Participants were considered to have diabetes mellitus if previously they had been recognized by the doctor as having DM or any documents in favour of DM or they reported taking insulin or oral anti -diabetic drug . [11]

Hypertension: the person was considered as hypertensive if the systolic blood pressure equal to or more than 140 mmHg or diastolic pressure equal to or more than 90 mmHg or on current use of antihypertensive drugs, or already diagnosed by a registered doctor as hypertensive. [12]

Relapse: Patients who have previously been treated for TB, were declared cured or treatment completed at the end of their most recent course of treatment, and are now diagnosed with a recurrent episode of TB (either a true relapse or a new episode of TB caused by re infection).

Treatment Failure: Patients are those who have previously been treated for TB and whose treatment failed at the end of their most recent course of treatment.

Default: Patients have previously been treated for TB and were declared lost to follow-up at the end of their most recent course of treatment.

Other Previously Treated Patients: are those who have previously been treated for TB but whose outcome after their most recent course of treatment is unknown or undocumented.

Data Entry and Statistical Analysis:

Data was entered into MS Excel worksheet 2007. Data analysis was performed using SPSS software (trial version 21). Categorical variables were represented as proportions/ percentages. Chi square test was used for testing statistical significance of association between categorical variables. Unpaired t test was used for testing statistical significance in quantitative data.

To find the predictors for relapse, the subjects were made into two groups which were Relapse and Non Relapse. In Non Relapse group three categories were combined i.e defaults, treatment failure and others previously treated. Univariate logistic regression was done for all the socio demographic characteristics to find the predictors for relapse

Results

The present study was conducted among 193 study subjects. Among them 168 (87%) were having pulmonary TB and remaining 25 (13%) were having extra pulmonary TB.

In the present study, majority of the study participants were Relapse patients 125(64.9%), Defaulters were 12 (6.2%), Treatment failure were 9 (4.6%) and Others previously treated were 47 (24.3%).

Table 1: Socio demographic details of study participants:

Socio demographic variable	Number	Percentage
Gender		
Male	141	73%
Female	52	27%
Socio economic status		
Lower	20	10.3%
Upper lower	129	66.9%
Lower middle	26	13.5%
Upper middle	18	9.3%
Social status		
BC	124	64.2%
OC	30	15.5%
SC	35	18.1%
ST	4	2.1%

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Religion		
Hindus	174	90.1%
Christians	14	7.3%
Muslims	5	2.6%
Marital status		
Married	160	82.9%
Unmarried	30	15.5%
Separated	3	1.6%
Education status		
Illiterate	99	51.3%
Up to class 10	69	35.7%
Above class 10	25	13%

Table1 shows that among 193 study participants, 141 (73%) were males where as only 52 (27%) were females. The age of the study population ranged from 19 to 76 years. The mean age of study population 43.92 ±13.9 years. Mean age of males was 46.33 ± 12.4 years. Mean age of Females was 37.4 ± 15.6 years. On unpaired t test , difference between mean age of males and females was found to be statistically significant.(t value 4.09, p value- 0.000).Among study participants, 90 (46.7%) were in the age group of 41 – 60 years. More than half of the male study participants were in the age group of 41 – 60 whereas more than half of the female study participants were in the age group of 21– 40years

Majority of the study participants i.e 129 (66.9%) belonged to upper lower class and no study participants were in upper class. Regarding social status of the study population, 124 (64.2%) belonged to BC class. Based on religion among the study population, 174 (90.1%) were Hindus. Regarding marital status of the study participants, 160(82.9%) was married. In the present study 99 (51.3%) subjects were illiterates.

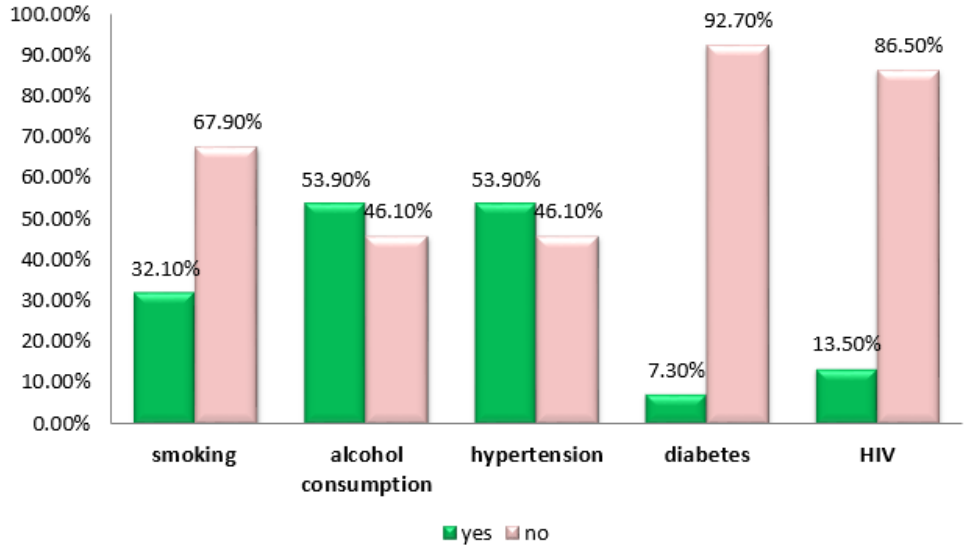

Figure 1: Distribution of Study subjects based on behavioural practices and co morbid conditions.

Smoking was present in 62 (32.1%) of the study subjects and among males 60 (42.5%) were smoking and among females 2 (3.8%) were smoking. On statistical analysis smoking was found to be significantly associated with male retreatment subjects. (Chi square value 26.1, p value 0.000). As the cell size in female smoking is less than 5.

The study shows that 104 (53.9%) of the study subjects were consuming alcohol and among males 101 (71.6%) of them and 3(5.7%) of females were consuming alcohol. Association of alcohol consumption with males was found to be highly statistically significant (chi square value 66.3 , p value 0.000).

The study shows that 14 (7.3%) of the study subjects were hypertensive. The prevalence of Diabetes Mellitus in the study participants was found to be 13.5%. Among the total study participants, 8 (4.1%) of them were having HIV

Among total study participants, 80(56.8%) of males were underweight, 60(42.5%) were normal and

1(0.7%) were obese. Among females 22(42.3%) were underweight, 25(48.1%) were normal and 5 (9.6%) were obese.

Table 2: Distribution of study participants based on socio demographic Characteristics, behavioural and co morbid risk factors among Relapse and Non Relapse:

Characteristics	Relapse (n=125)n(%)	Non relapse (n=68)n(%)	Crude odds ratio	95% CI	P value
Gender					
Male	95(67.3%)	46(32.7%)	1.5	0.7 – 2.9	0.2
Female	30(57.6%)	22(42.4%)			
Age					
< 45	58(58%)	42(42%)	1.8	1.02 – 3.4	0.04
≥45	67(72%)	26(28%)			
Socio economic status					
Upper lower & lower	99(66.4%)	50(33.6%)	0.7	0.3-1.4	0.37
Upper middle & lower middle	26(59.1%)	18(40.9%)			
Marital status					
Married	104(65%)	56(35%)	0.9	0.4 – 2.05	0.88
Unmarried & Separated	21(63.6%)	12(36.4%)			
Education					
Literates	70(70.7%)	29(29.3%)	0.58	0.3 – 1.06	0.07
Illiterates	55(58.5%)	39(41.5%)			
Smoking					
Yes	46(74.2%)	16(25.8%)	1.8	0.9 – 3.6	0.059
No	79(60.3%)	52(39.7%)			
Alcohol					
Yes	74(71.1%)	30(28.9%)	1.83	1.01 – 3.3	0.045
No	51(57.3%)	38(42.7%)			
Hypertension					
Yes	11(78.5%)	3(21.5%)	2.09	0.5 – 7.7	0.26
No	114(63.7%)	65(36.3%)			
Diabetes					
Yes	18(69.2%)	8(30.8%)	1.2	0.5 – 3.07	0.6
No	107(64%)	60(36%)			

The age group ≥ 45years was found to be associated with relapse and which was statistically significant. Being male was also found to be associated with Relapse but was not found to be statistically significant. On Univariate analysis alcohol consumption was found to be significantly associated with relapse (OR – 1.83, 95% CI 1.01 – 3.3, p value –0.045). Smoking, Hypertension and Diabetes were also found to be associated with relapse but was not statistically significant.

Discussion

Retreatment cases represent a serious threat to TB control in many settings and could significantly undermine the overall success of the DOTS strategy. It is a matter of concern as cases who fail treatment also infect others, which may be resistant to the first line drugs. In this study, the most common indication for retreatment among the study subjects were relapse (64.9%) followed by others (24.3%), defaults (6.2%) and treatment failure (4.6%). Sreelatha ch et al[13]also reported similar findings where relapses were 51.76%, treatment after default were 9.65%, failure cases were 5.57% and others were 33.02%. In contrast to our study Giri Prasad et al[14]study reported that default cases were more i.e 42.3%. The possible reasons for retreatment patients may be due to ignorance and inadequate knowledge about tuberculosis and importance of appropriate tuberculosis treatment.

In the present study of the total 193 population 141 (73%) were males and 52 (27%) were females. Study conducted by Santha T et al[15]in Tiruvallur district showed that 75% of the study population were males 25% were females.

The mean age of males and females in the present study were46.33 ± 12.4 and 37.4 ± 15.6 years, (on unpaired t test difference of means was statistically significant) which was similar to Sarpalet al[16]study which was done among retreatment patients where there was a significant difference in the mean age of males and females.

Similar to this study, Katiyar K S et al[17]study done among failure category II patients found that most of the cases were from lower socio economic strata and to them earning was more important than spending time at DOTS centre for treatment. The more prevalence in low socio economic class might be due to ignorance, poverty and closed proximity of positive cases in vicinity as well as within the family.

In the present study, 104 (53.9%) of the study subjects were consuming Alcohol and most of them were males and this association was found to be statistically significant. Susan et al[18]reported that a significant relation between alcohol consumption and pulmonary tuberculosis in their study.

Retreatment cases pose a serious challenge to the TB elimination program .Counselling must be given by the health personnel regarding the duration and benefits of treatment initiation before start of anti TB treatment. Health education must be provided to the retreatment tuberculosis patients to increase their awareness about aetiology of tuberculosis, its modes of transmission and importance of appropriate treatment so as to reduce unsuccessful treatment outcomes.

Conclusion

An analytical cross -sectional study was conducted to asses epidemiological profile of previously treated patients and to look for socio demographic characteristics, behavioural and co morbid factor associated with Relapse. Relapse cases are the most common cause for Retreatment which may be indicative that the present treatment regimens of RNTCP need to be relooked. The study indicates that socio demographic factors, behavioural and co morbid factors have an effect on Relapse and modifying these risk factors may bring about favourable outcomes.

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Conflict of interest: None declared

Ethical approval: The study was approved by the institutional ethics committee.

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Original Article

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Exploring Pregnant Women and Very Low Birth Weight Babies: A Study in a Tertiary Care Medical College Hospital

Anumodan Gupta[1], Aditi Saini[2], Ghanshyam Saini[3], Mohammad Irfan Dar[4]

[1]Lecturer, Department of Neonatology Government medical college Jammu, [2]Lecturer, Department of Obstetrics and Gynaecology Government Medical College Jammu, [3]Professor and Head, [4]Senior Resident, Department Paediatrics, Government Medical College Jammu.

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Abstract

Low birth weight is a critical indicator of new-born health, particularly in developing countries where it is more prevalent. However, data on low birth weight in these countries is often limited due to home or small health facility deliveries that go unreported. This study aimed to examine the characteristics of mothers and their very low birth weight (VLBW) infants, who are at high risk for morbidity and mortality.

Methods: The study included hospitalized mothers and their VLBW neonates. Pre- and perinatal data, including hospitalization complications, were collected from case files using a pre-designed questionnaire and analysed.

Results: The mean maternal age in the study group was 24.88 ± 2.92 years, with the majority falling between 21 and 25 years. Gestational hypertension, alone or in combination with other risk factors, was the most significant risk factor (18.36%). The caesarean section (C-section) rate was 58.7%. Among the study group, 49.81% of mothers had one or more risk factors, with gestational hypertension (18.3%), leaking (12.6%), eclampsia (1.3%), and gestational diabetes mellitus (4.8%) being the most prevalent. Out of 7,288 neonates born in SMGS Hospital, 458 (4.3%) were VLBW babies, with a mean gestational age of 32.19 ± 1.5 weeks and a mean birth weight of 1320 ± 0.21 grams. The mortality rate among VLBW neonates was 5.8%. The most common neonatal outcomes were sepsis (21.8%) and respiratory distress syndrome (15.9%). The need for mechanical ventilation and surfactant therapy was 6.5% and 9.1%, respectively.

Conclusion: Delivering preterm VLBW babies from mothers with high-risk factors in hospitals equipped with tertiary care neonatal intensive care units is crucial to improving their outcomes and survival. These findings highlight the importance of appropriate healthcare facilities for this vulnerable population.

Keywords: Neonatal Mortality, Very Low Birth Weight, NICU

Introduction

Birth weight is a crucial indicator of the viability and health of new-borns. The World Health Organization (WHO) defines low birth weight as a weight at birth of less than 2500 grams (5.5 pounds)[1]. Low birth weight can occur due to intrauterine growth restriction, prematurity, or a combination of both factors. It is more prevalent in developing countries compared to developed nations[2]. However, the data on low birth weight in developing countries is often

Corresponding Author: Mohammad Irfan Dar, Senior Resident, Department Paediatrics, Government Medical College Jammu.

E-mail: darirfan53@gmail.com

limited because a significant number of deliveries take place in homes or small healthcare facilities, where cases of infants with low birth weight frequently go unreported. Consequently, official figures may significantly underestimate the prevalence of low-birth-weight babies, as well as their associated morbidity and mortality rates.

This study aims to assess the prevalence and characteristics of mothers and their very low birth weight (VLBW) infants who face a higher risk of morbidity and mortality. The study was conducted in a tertiary care medical college hospital in northern India, where hospital-based data were used to estimate the prevalence and explore the postnatal characteristics of VLBW infants. By focusing on this vulnerable population, we seek to enhance our understanding of the factors influencing low birth weight and its associated outcomes, thereby improving healthcare interventions and strategies for these high-risk infants.

Methods

This cross-sectional observational study was conducted at the Obstetrics and Gynecology and Department of Pediatrics of SMGS Hospital, Jammu. After approval from institute ethics committee of government medical college Jammu , a sample of 458 patients with gestation less than 34 weeks and birth weight less than 1500gms, who were delivered and admitted to the NICU of SMGS Hospital, was included the study while as patients with newborns weighing more than 1500 grams and more 34 weeks of gestation were excluded from study. Very low birth weight (VLBW) infants were defined as those with birth weight less than 1500gms. Gestational age was determined using a first-trimester ultrasound scan or the mother's last menstrual period. Antenatal records of Doppler study were evaluated for VLBW infants admitted to the NICU.

Among the 7288 births during the study period, 458 were born preterm VLBW. Data on demographic variables, obstetric history, and risk factors contributing to preterm delivery were collected from inpatient case records obtained from the medical records department. Information on labor onset, mode of delivery, baby's weight, NICU admissions, and complications was recorded on a predesigned proforma.

Definitions and classifications:

Surviving infants: Neonates who survived until discharge.

GA: Gestational age calculated from the last menstrual period or fetal ultrasound assessment.

SGA: Small for gestational age, defined as birth weight below the 10th percentile for infants of the same gender and gestational age.

RDS: Respiratory distress syndrome, diagnosed in preterm infants with respiratory distress shortly after birth and confirmed by chest radiograph appearance.

NEC: Necrotizing enterocolitis, diagnosed and graded according to Bell's stage.

ROP: Retinopathy of prematurity, diagnosed and graded according to the international classification of ROP.

IVH: Intraventricularhemorrhage, diagnosed by cranial ultrasonography or MRI using the Papile grading system.

PVL: Periventricular leukomalacia, defined as degeneration of white matter adjacent to the cerebral ventricles following cerebral hypoxia or brain ischemia.

BPD: Bronchopulmonary dysplasia, described as oxygen dependency at 28 days.

Pre-eclampsia: Defined as hypertension after 20 weeks of pregnancy combined with proteinuria and/or edema.

Oligohydramnios: Decreased amniotic fluid volume for gestational age, with an amniotic fluid index (AFI) less than 5 cm.

Polyhydramnios: Increased amniotic fluid volume, with a deepest vertical pool (DP) equal to or greater than 8 cm or AFI equal to or greater than 24 cm or above the 95th percentile for gestational age.

Statistical Analysis: Qualitative data was expressed as a percentage, while quantitative data was presented as mean and standard deviation. Data collected were recorded in Microsoft Excel spreadsheets and analyzed using Microsoft Excel Statistical Package for Social Sciences (SPSS) version 22.

Results

During the study period, a total of 7,288 births were recorded, among which 458 were born preterm VLBW, accounting for 10.68% of the total births. The mean maternal age in the preterm VLBW cases was 24.88 ± 2.92 years, with the majority falling in the age group between 21 to 25 years. Gestational hypertension, either alone or in combination with other risk factors, was the most significant risk factor observed in the studied group, accounting for 18.36% of cases. The number of cases that underwent caesarean section (LSCS) was 58.7%.

Among the mothers in the study group, 49.81% had one or more risk factors. The most common risk factors observed were gestational hypertension (18.3%), followed by leaking (12.6%), eclampsia (1.3%), and gestational diabetes mellitus (GDM) (4.8%) as shown in Table 1.

The mean gestational age in the study group was 32.19 ± 1.57 weeks. The mean weight and duration of hospital stay for the infants were 1.32 ± 0.21 kg and 15.83 ± 9.88 days, respectively, as shown in Table 2

Table 1: Risk factors in mother

Risk factors in mother	Study group	
	Count	Column N %
No	234	51.09
Leaking	58	12.6
HTN	84	18.3
Hypothyroidism	2	0.43
APH	0	0
Eclampsia	6	1.3
Cholestasis of pregnancy	6	1.3
HTN & DM	3	0.65
GDM	22	4.8
HTN & Leaking	28	6.1
HTN & Hypothyroidism	3	0.65
HTN & Breech	5	1.09
HTN & DM, Twins	6	1.3
ATT intake	1	0.21
Total	458	100.0%

Table 2: Neonatal characteristics in study group.

Neonatal characteristics	Study group (458)
Gest. Age (weeks)	32.19 ± 1.59
Weight (kg)	1.32 ± 0.21
Duration of hospital stay	15.83 ± 9.88

Among the preterm VLBW neonates, 5.8% experienced mortality. The leading neonatal outcome observed was sepsis (21.8%), followed by respiratory distress syndrome (RDS) (15.9%). The need for mechanical ventilation and surfactant administration was observed in 6.5% and 9.1% of cases, respectively, as shown in Table 3.

Table 3: Neonatal Outcomes in Cases

Neonatal outcome	Study group(n=458)
Mortality	27(5.8%)
RDS	73 (15.9%)
Hypoglycaemia	55(12.0%)
Hypothermia	31 (6,76%)
Sepsis	112(21.8%)
BPD	1(0.004%)
Feed intolerance	51(11.1%)
NEC	19 (4.1%)
Hospital stay > 1 week	366(79.9%)
Delivery room resuscitation	52 (11.3%)
Birth weight < 1 kg	22(4.8%)
IVH	7 (1.52%)
Need of surfactant	42 (9.1%)
Gest. Age ≤ 28weeks	36 (7.8%)
Need of Mechanical Ventilation	30(6.5%)

Discussion

Preterm birth is a significant concern in healthcare, often associated with a higher risk of perinatal deaths. In our study, among the 7288 births during the study period, 458 were born preterm VLBW, resulting in a prevalence of 10.68%. This finding is consistent with a study by Yamini V. Teklehaimanot et al. [3] that reported a prevalence of 12.6% in a similar population. However, a study by Kebde B et al. [4] showed a higher incidence of preterm birth at 25%.

One of the major contributors to preterm birth in our study was pregnancy-induced hypertension, accounting for 18.3% of cases. This finding is in line with existing literature, which has shown that

mothers with pregnancy-induced hypertension have a threefold increased risk of preterm birth compared to those without hypertension. Hypertension can lead to increased resistance in uterine vessels and reduced uteroplacental blood flow, ultimately resulting in intrauterine growth restriction.

In terms of neonatal outcomes, our study revealed a mortality rate of 5.8% among VLBW neonates. The leading neonatal outcome was sepsis, affecting 21.8% of the cases, followed by respiratory distress syndrome (RDS) at 15.9%. These findings are consistent with a study by Croft et al. [5] ,which reported a similar incidence of RDS at 22.6%. The need for mechanical ventilation and surfactant administration was observed in 6.5% and 9.1% of cases, respectively.

In conclusion, our study underscores the importance of identifying VLBW infants and the risk factors associated with their early delivery. It also highlights the increased susceptibility of these infants to adverse neonatal outcomes compared to term babies. To improve the survival and growth of VLBW infants, it is crucial to identify and address risk factors for preterm birth. Furthermore, high-risk deliveries should be conducted in hospitals with well-equipped tertiary care neonatal intensive care units capable of managing infants with lower gestational age and low birth weight. Implementing these measures can significantly reduce neonatal mortality and morbidity, ultimately improving long-term neurodevelopmental outcomes in this vulnerable population.

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Original Research Article

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A Systematic Review and Metaanalysis of Clinical Perspective in Trichotillomania

Dimple Gupta[1], Chirag Ambaliya[2], Aman Ankur[3], Abhinav Ankur[4]

[1,2]Senior Resident, Government Medical College, Bhavnagar, Department of Psychiatry, [3]Field Investigator ,Masters of Public Health, Government medical college , Bhavnagar, [4]Senior Resident, Government Medical College, Bhavnagar, Department of Medicine.

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Abstract

Trichobezoar is a mass of hairs found trapped in the gastrointestinal system. They are common in children under the age of 2 and in children and adults living in poverty. Complications such as gastric ulceration, bleeding and perforation and intestinal obstruction may occur. There is paucity of reports on trichobezoars in Psychiatric literature however it is well described in terms of surgical diagnosis and procedure. Here, we present a case of trichotillomania and pica leading to intestinal obstruction to stress the importance of considering trichobezoars as one of the important differentials in cases of patients presenting with abdominal pain in face of suggestive symptoms, even if signs of trichotillomania are not present.

Keywords: Bezoar, Obstruction, Trichobezoar, Trichotillomania, pica.

Introduction

Pica is described as the compulsive ingestion of substances not fit as food or of no nutritional value. The most common forms of pica include geophagia (soil-like), pagophagia (ice), trichophagia (hair), and amylophagia (starch like).[1] It commonly occurs in children under the age of 2 years who actually start perceiving the world through the oral cavity. The likely devastating complication of pica is the development of a bezoar, with subsequent gastrointestinal complications such as gastric ulceration, bleeding and perforation, and small bowel obstruction. "Bezoar" is an Arabic word refering to a kind of antidote "bazahr" or "badzehr", meaning that stones obtained from the stomach or intestines of animals were thought to have medicinal properties. Bezoars can be categorized in four types: trichobezoar (hair); lactobezoar(milk/ curd); phytobezoar (vegetables) and miscellaneous (sand, paper).[7] eyelashes, eyebrows and other parts of the body. The process results in an instant release of tension, a sense of relief and security. However, non-scaring alopecia is its clinical presentation. The development of trichobezoar following ingestion of the pulled hair is its salient complication in a few cases. Subsequently, it may cause symptoms pertaining to the gastrointestinal tract culminating in intestinal obstruction, perforation, pancreatitis and obstructive jaundice. The Rapunzel syndrome (trichobezoarTrichobezoar is the most common bezoar in the pediatric age group.[2]

Corresponding Author: Aman Ankur, Filed investigator, Masters of Public Health, Government Medical College, Bhavnagar.

Mobile: 81467 95900

E-mail: dimplegupta935@gmail.com

Trichobezoars were first reported by Baudomant in 1779, consisting of dense mass of hair, occupying the gastric cavity to a various extent. Patients frequently present with recurrent abdominal pain and a palpable abdominal mass. The mechanism underlying is thought to be that the smooth surface of hair does not propagate further in gut peristalsis, getting trapped in the mucosa. As more hair is added, the resulting mass causes the stomach to cease peristalsis completely. The stomach of normal individuals have capacity to clear even large foreign bodies in up to 80 to 90% of the cases, which may suggest that bezoar formation occurs in the presence of both altered gastric anatomy or physiology and continued ingestion of the offending substance.[11,12] When the trichobezoar is seen extending from the stomach to various lengths of the intestine, it is called "Rapunzel Syndrome", for its resemblance to a tail. [3]

Trichobezoars are usually described in the context of an underlying psychiatric disorder, trichotillomania is commonly considered as cause of it, and usually accompanied by characteristic features such as signs of alopecia. There is paucity of reports on trichobezoars in psychiatric literature however it is well described in terms of surgical diagnosis and procedure.[4]

5% to 30% of the patients with trichotillomania engage in trichophagia while 1% to 37.5% of these will develop a trichobezoar. The explanation for such disparities may be the fact that most patients of trichotillomania primarily present to paediatric OPD, dermatology OPD and surgery OPD due to the physical consequences of their disorder and diagnosis of trichotillomania is made at a later stage. Also these patients may not be identified by clinicians as having a psychiatric problem, they may simply be lost in psychiatric referral after surgical recovery owing to stigma or ignorance.

Previous studies distinguish between voluntary pica (eating in response to what is available) and involuntary pica (eating in response to a compulsion or addiction). The likelihood that some cases of pica may respond to selective serotonin reuptake inhibitors (SSRIs) has led some to view it as a form of compulsion and that pica belongs on the same compulsivity-impulsivity spectrum that includes trichotillomania, trichophagia, and OCD .[5]

Method

Literature Search

The Cochrane Central Register for Controlled Trials and databases listed in EBSCOhost were searched. Google scholar and the PsychFileDrawer.org archive was searched, a website that specialises in studies which fail to replicate and studies that report null results. Electronic search strategies were based on Cochrane recommendations, the "Cochrane Highly Sensitive Search Strategy" for identifying randomised trials in MEDLINE (Higgins & Green, 2011).

Abstracts were screened and the inclusion criteria applied. All records were saved and duplicates removed. The references of included studies were searched. Authors were contacted by email (see Appendix S1 for list of authors contacted). Reasons for exclusion were recorded.Full-text articles were quality assessed with a standardised tool (See Appendix S2 for the detailed search strategy).

Quality Assessment

The suitability of studies was assessed with the Quality Assessment Tool for Quantitative Studies (Higgins & Green, 2011). Two researchers assessed full-text studies independently. Overall scores and acceptance/rejection decisions were compared. Any substantial discrepancies were resolved by a third author (RM).

Acceptance Criteria

The acceptance criteria were discussed between study authors and finalised before commencement of the systematic search. Only studies which achieved an overall score higher than an average moderate rating (6/12) were included. Randomised controlled clinical trials including quasi-randomised controlled clinical trials and randomised cross-over trials were included. Studies were not excluded based on lack of useable data (Higgins& Green, 2011).

Participants

The target population was adults who have been diagnosed with trichotillomania, with or without comorbidity.

Interventions

Psychological treatments needed to include the use of BT techniques or BT-based treatments (e.g., movement decoupling). Any psychological intervention that is administered in conjunction with BT (e.g., cognitive therapy, ACT) could be included. Psychological interventions included any intensity, length, and type of therapy delivery (e.g., group, individual, tele-interventions, self- help). Pharmacological interventions included any dosage, delivery mode, frequency, and duration. Com- parison groups could be active or passive control groups. A passive control group is a group of participants on a wait list or with minimal attention; an active control group is a group of participants who were given a placebo pill, or supportive, not symptom-specific intervention (e.g., progressive muscle relaxation).

Outcomes

The primary outcome was a reduction in trichotillomania symptoms as measured by the Massachusetts General Hospital—Hairpulling Scale (MGH-HPS); a self-report measure of symptom severity (see Keuthen et al., 1995). Reduction of symptoms could be measured with a variety of measurement types, such as: self-report questionnaires, number of hairs pulled, number of episodes ofhair pulling, and clinician ratings.

Results

Included Studies

The flow of studies through the screening process is presented in the Preferred Reporting Items for Systematic Reviews and Meta-analysis flow chart (see Fig. 1). Four hundred and thirty-four search records were found through database searches, no studies were identified by contacting authors, and 23 publications were identified by reference searches. Twelve studies, with a combined total of 299 participants, were included in this systematic review.

	Age	Clinical Presentation	First Clinical Visit	Provisional Diagnosis	Site	Clinical Intervention	Psychiatric intervention
Iqbal MM, et al[4]	26 year old male	Forcible hair pulling from scalp and moustache. Progressive loss of interest and motivation	Primary care physician	Trichotillomania	Scalp, Moustache	6 weeks' trial of sertraline, risperidone and clonazepam By Primary Care Physician	Trifluoperazine 1mg (thrice daily), Trihexyphenidyl 2mg (half three times daily), and Alprazolam 0.5mg (once daily). Furthermore, he was also advised for regular sessions of behavioral therapy
MichaelKD [5]	21-year-old Woman	chronic and significant hair pulling, associated hair loss, concealment of damage secondary to hair pulling, body image disturbance, depression, anxiety, and low self-esteem.	Psychiatrist	Trichotillomania	Scalp		HRT, progressive muscle relaxation, Gestalt awareness training, positive practice of rubbing a string of beads between her fingers (most often used during hair-pulling events), and thought stopping
Görgülü SA et al[6]	43-year-old married woman	Complaints of hair pulling.	Psychiatrist	Trichotillomania and Post-Traumatic Stress Disorder (Delayed Expression)	Scalp		Sertraline 100 mg, Aripiprazole 5 mg

Continue .....

Kumar PNS et al[7]	58-year-old, married Hindu,	pulling hair and eating the hair root for the last 5 years.	Psychiatrist	Schizophrenia and trichorhizophagia.	Scalp		Olanzapine, escitalopram 10 mg
Patkar P et al[8] Case Series	14-year-old girl	plucking her own hair	Psychiatrist	TM	Scalp		fluoxetine 80 mg and buspirone 20 mg. Jacobson's Progressive Muscular Relaxation (modified for children), deep breathing exercises, distraction techniques, response prevention, thought-stopping, and diary maintenance was
	10-year-old male illiterate child	patchy hair loss due to pulling out of hair by the child. severe level of retardation in intellectual functioning	Psychiatrist	Trichotillomania	Scalp		fluoxetine 10 mg and risperidone 1 mg
	6-year-old Hindu girl child	bald patch on the vertex of her head due to her pulling out her own hair.	Psychiatrist	autism spectrum disorder with moderate severity of symptoms	Scalp		syrup fluoxetine, and referred for occupational and sensory stimulation therapies
	4-year-old girl child, Hindu by religion	pulling out her hair from the head, especially by her left hand. Most of the time, she threw away the hair immediately after plucking it; however, sometimes, she was seen smelling it before throwing.	Psychiatrist	Children's Apperception Test (CAT) test to look for any depressive or anxiety features	Scalp		syrup fluoxetine 10 mg

Modi N et al[9] Case Series	30-year-old female patient	hearing of voices, persecutory ideas and fearfulness, suspiciousness, and pulling out her hair for the last 12 years. pulled hair from the scalp and developed patches in these areas	Psychiatrists	Schizophrenia with Trichotillomania	Scalp		6 mg of risperidone, 20 mg of fluoxetine
	18-year-old female patient	anger outbursts and self-harm behavior; pulled her scalp hair and hid this hair in her books and cupboards.	Psychiatrist	borderline personality disorder with depression and Trichotillomania	Scalp		300 mg of oxcarbazepine, 20 mg of fluoxetine, Schema-focused therapy
	40-year-old female patient	depressed mood without diurnal variation, feelings of worthlessness and hopelessness, sleep disturbance for 2 months along with scalp hair pulling behavior.	Psychiatrist	Bipolar affective disorder with Trichotillomania	Scalp		1000 mg of sodium valproate.

Behaviour Therapy versus Passive Control

Four studies were included in the analysis which addressed the question "how effective is BT when com- pared to a passive control condition?" Included studies were: Van Minnen, Hoogduin, Keijsers, Hellenbrand, and Hendriks (2003), who investigated BT verses wait listcontrol (effect size (ES) = 1.08); Woods, Wetterneck, et al. (2006), who investigated ACT combined with HRT versus wait list (ES = 1.71); Ninan et al. (2000), who investigated CBT versus Medication placebo (ES = 5.09); and Keuthen et al. (2012), who investigated DBT enhanced CBT versus minimal attention control (ES = 1.78). The results indicated that BT was more effective than a passive control condition (ES = 1.85, 95% confidence interval (CI) = 0.97, 2.74). While significant differences betweenstudy effect sizes were found (I^2 = 71%), further analyses investigating this difference were not conducted due to thesmall sample size.

Discussion

Overview of Findings

Based on the available RCTs, the findings indicate that BT has the most evidence as an effective intervention for TTM. This is when BT is conducted by highly trained therapists in research conditions and is compared to passive control groups. However, a more complex picture emerges when BT is compared to an active control, with the analysis revealing that when BT is delivered in group format or via the Internet, it was no more effective than the active control conditions. Fluoxetine was found to have minimal to no efficacy for the treatment of TTM. Clomipramine, olanzapine, and N-acetyl cysteine showed potential efficacy for TTM treatment.

Pharmacological Interventions

When compared to a placebo, N-acetyl cysteine, olanzapine, and clomipramine all show potential for the treatment of TTM symptoms. This is in agreement with both Bloch et al. (2007) and Rothbart et al. (2013).

With respect to psychological therapies, there is some preliminary evidence for the potential efficacy of integrating cognitive and affective strategies in the treatmentof TTM, as well as the contribution of social support, self-help activities, and generic therapy factors in the treatment of TTM. The social support component of HRTis not currently the most common component used in therapy for TTM (Flessner et al., 2010). However, the potential efficacy of supportive group therapy found herein suggests that social support may be important in reducing underlying negative emotions and beliefs. When comparing the social support discussed in previous literature and the social support explored in the current review, previous literature suggested that social support consists of a loved one reminding the individual to use a competing response and offering praise when the competing response is used correctly. The current review indicates that non-technique orientated social support of others who have experience with TTM may be particularly important in the treatment of TTM, consistent with the operation of this mechanism more generally in group therapy (Bieling, McCabe, & Antony, 2013). Finally, it is also of note that the only RCT to compare single versus dual modality treatment provides preliminary support for the efficacy of combined BT and medication. Future research would need to further examine the elements of the specific intervention that may have contributed tothe change.

Conclusion

In summary, this review found qualified support for some of the pharmacological and psychological treatments, although the small number of studies is a notable caveat to the drawing of firm conclusions. Nonetheless, N-acetyl cysteine, clomipramine, and olanzapine show some efficacy for the treatment of TTM. However, evidence is lacking for the usefulness of fluoxetine. BT shows the greatest efficacy for the treatment of TTM when com- pared to a passive control, supporting previous research. Of significance, this review found preliminary evidence that when BT delivered in group format or via the Inter- net is compared to an active control group, BT, progressive muscle relaxation, and supportive therapy show similar efficacy. Future research to enable more firmcomparisons is needed, particularly given the poor treatment outcome in this area in routine practice, combined with the schism between research evidence and typical treatment practices.

Informed Consent: Written informed consent was taken from patients.

Ethical Approval: Ethical committee approval was taken from the Institutional Committee Of Ethics, GMCB (GMCB/2022/11-99) .

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Conflict of Interest: There was no conflict of interest

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Experimental Study

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A Study on the Effectiveness of Cognitive Training on Attention, Concentration, Motor Dexterity and Working Memory among Children with Attention Deficit/ Hyperactivity Disorder

M M Mahesh[1], Ferina Fradinand[2]

[1]Clinical Psychologist&Assistant professor, Research and Post Graduate Department of Psychology, Sri C Achutha Menon Government College, Thrissur, [2]Psychologist, Malabar Mental Health Education and Charitable Trust, Thalassery, Kannur.

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Abstract

Children with Attention Deficit Hyperactivity Disorder (ADHD) found to have impairments in cognitive functions such as attention, concentration, motor coordination and working memory. Current study aims to assess the effectiveness of the concentration and coordination exercise tool (CCET) in improving cognitive functions in children with ADHD. A quantitative research study was advanced with the help of pre-test post-test experimental research design. Participants of the current study were 15 children within the age range of 7-12 years. A pre-test was conducted to assess the cognitive functions such as, concentration, motor coordination and working memory. Then the participants were undergone 8 weeks of exercise using CCET. The data were statistically analyzed by using SPSS. From the findings, it can be concluded that training using CCET significantly improves the motor dexterity, verbal working memory, attention and concentration in children with ADHD.

Key words: ADHD, Cognitive Training, Working Memory, Motor Dexterity

Introduction

Neuro-developmental disorders (NDD's) are disorders caused due to inappropriate development of central nervous system. This happens due to the interaction between genetic and environmental factors. NDD's were developed in the developmental period of an individual which is before adulthood. In India NDD in children aged 2-9 years constitutes a significant public health burden. Arora., et al[1] found that almost one in eight children of the age 2-9 years have at least one of the nine Neuro-Developmental Disorders. According to DSM V, Attention deficit/ hyperactivity disorder, intellectual disability, autism spectrum disorder, specific learning disability, communication disorders, Motor disorders, Other specified neurodevelopmental disorder and Unspecified neurodevelopmental disorder were the classifications of NDDs. ADHD is one among the prominent NDD's and was marked by persistent symptoms of inattention, hyperactivity and/or impulsivity. Children with ADHD will be having difficulties in attention, inhibit impulses, regulate their behaviours and these difficulties may affect

Corresponding Author: Ferina Fradinand, Psychologist, Malabar Mental Health Education and Charitable Trust, Thalassery, Kannur.

E-mail: ferinafradinand10609@gmail.com

their communication and socialisation, daily living etc. in the case of children, ADHD symptoms will be severely affecting their academics.

From the pool of researches already existing in the area of ADHD, it was found that the difficulties arise due to the deficits in executive functioning (EF). Children with ADHD have shown significant difference in the performance in EF task comparing to typically developingpeers[11-15]. Studies in ADHD literature also suggest that children with ADHD shows significant deficits in inhibitory control, vigilance, working memory, planning, processing speed, cognitive flexibility, sustained attention etc[12-13].

In the case of ADHD, a frequently used treatment option is psycho stimulant. These psycho stimulant medications were also known for its drawbacks such as short-term effects, unknown long-term effect, side effect like insomnia and lack of appetite. Thus, it is crucial to develop non-pharmacological inventions to decrease ADHD symptoms. Cognitive trainings were one among the non-pharmacological interventions beneficial for ADHD since cognitive training enhances neuropsychological functions. Brain plasticity helps strengthen and develop certain brain networks essential for the cognitive functioning which improves the executive functioning in individual with ADHD. This will help people learn much behaviour and adapt to their daily living. A meta-analysis study showed that cognitive trainings have significantly stronger benefits as an adjunctive strategy to decrease neuropsychological impairments. And highly significant improvements were found in the areas of visual and verbal working memory although inhibition and inattention showed no particular effects[4]. Children with ADHD and SLD have shown a significant improvement in attention, inhibition, overall working memory, verbal working memory and visuo-spatial working memory after giving cognitive training as an intervention [14]. Various tools and exercises can be used to enhance the cognitive functions such as attention, concentration, motor coordination and working memory. The present study aims to assess the effectiveness of the concentration and coordination exercise tool in improving such cognitive functions.

Materials and Methods

The main objective of the study was to find out the effectiveness of Cognitive training on attention, concentration, motor dexterity and working memory among children with attention deficit/ hyperactivity disorder by using a pre-test post-test experimental design. An "eligible participant" was defined as a child in the age range of 7-12 years who were already assessed and was undergoing attention enhancement trainings. The participants were located from various government and private child development centers in Kannur District, Kerala. A sample of 15 children diagnosed with ADHD was chosen as the participant of the current study. Children with co-morbid rare disorders (example:- fragile X syndrome), cerebral palsy or other physical or motor disabilities were excluded from the study.

Research participants were provided with the necessary information about the study and an informed consent was obtained. Anonymity of individuals was ensured. Then at first needed socio-demographic details and brief history was taken from the parents and the pre-test was done. ADHD Rating scale was administered for the diagnosis of ADHD. The pre-test consisting of finger dexterity test, The six letter cancellation test, Digit letter substitution test, N back working memory test and Concentration Coordination Testing apparatus were used. Then eight weeks training was given to the participants using the CCET apparatus. Finally, a post-test was done. The data were entered/converted to a spread sheet and coded into excel sheet. This excel sheet was fed into a statistical processor and further analysis was done.

Concentration and coordination exercise tool (CCET-1): is an instrument manufactured by Coexin Technologies Healthcare Private Limited. It is an electronic Instruments that works on 3.7V (1200mAh) capacity rechargeable battery. The main box of the instrument is constructed with acrylic sheet (Black or white) on which two holes are provided on top of the box and an on/off switch with rechargeable port on right side of the box. The driving string port is only available in light mode, sound mode and light-sound mode which will be in front of the box. For the vibration mode, CCET is not required to plug the probe. Along with a CCET unit, there are types of

main strings, two driving strings and a 5v adaptor. A mode selector is also available. The task is to hold the driving string on left/right hand and move in the path of main string without touching each other. If the drive string, contact with main string an error is committed. The drive strings are advised not to touch/drag on the main strings. All the errors in each trial are marked and counted manually by the experimenter. And the time taken in each trial is recorded by means of a stop watch. The time taken and errors committed in each trial are recorded in the response sheet.

Results and Discussion

Table 1: Paired sample statistics & paired sample test of finger dexterity test, letter cancellation test, letter substitution test and N back test

		mean	t	Sig. (2 tailed)
Pair 1	Time for right hand finger dexterity (pre)	11.180	7.29	.001***
	Time for right hand finger dexterity (post)	9.141		
Pair 2	Error for right hand finger dexterity (pre)	9.907	5.286	.001***
	Error for right hand finger dexterity (post)	4.900		
Pair 3	Time for left hand finger dexterity (pre)	13.528	5.939	.001***
	Time for left hand finger dexterity(post)	10.760		
Pair 4	Error for left hand finger dexterity (pre)	2.553	4.932	.001***
	Error for left hand finger dexterity (post)	8.340		
Pair 5	Hit for 1 back test (pre)	5.44	-4.899	.001***
	Hit for 1 back test (post)	7.44		
Pair 6	Error for 1 back test (pre)	4.22	4.400	.002
	Error for 1 back test (post)	1.78		
Pair 7	Hit for 2 back test (pre)	2.22	-5.060	.001***
	Hit for 2 back test (post)	4.89		
Pair 8	Error for 2 back test (pre)	7.00	5.547	.001***
	Error for 2 back test (post)	4.78		
Pair 9	Letter cancellation pre-test	6.20	-6.754	.001***
	Letter cancellation post-test	11.90		
Pair 10	Letter substitution pre-test	13.80	-9.127	.001***
	Letter substitution post-test	21.40		

Motor coordination was measured with the O'Connor's finger dexterity test. The scores of finger dexterity test were categorized into four different categories. They are the time and error committed using both dominant and the recessive hands. The table 1 shows the descriptive statistics of the participant's scores on the finger dexterity test, N Back working memory test, letter cancellation test and the letter substitution test. From the table it is clear that that there was a significant improvement in the performance of the participants and this was clear from the mean time taken for dominant hand is more for pre-test and it decreased in the post-test and the error committed by the participants significantly decreased from pre-test to post-test. And the findings are same in case of recessive hand too. Since the four category scores of finger dexterity test was found to be highly significant, it can be concluded that the CCET is very efficient in enhancing the motor coordination of children with ADHD. Motor

deficiencies are not yet considered as a diagnostic criterion for ADHD, but it is very common among this population. The prevalence of motor problem in children with ADHD was found to be ranging from 30 to 52% 5,2. These deficiencies affect the daily life the children with ADHD in different levels such as reduced handwriting skills, less motor control and coordination, jerky and non-fluent movements, and some others difficulties in movement speed and temporal organization were also found6,7. Previous studies suggested that fine motor trainings and cognitive trainings can be beneficial for alleviating the problem in motor coordination of children with ADHD9. Thus, the findings of the current study also support the earlier findings and the CCET tool can be used for training children with ADHD to reduce the issues in motor coordination.

The verbal working memory of the participants was assessed by using N Back verbal working memory test. The test scores are categorized into four groups and they are the hit and error for both 1 Back test and 2 Back test. From the table 1, it is clear that the results of 1 Back and 2 Back test shows a significant improvement, it can be concluded that the concentration coordination exercise tool is very effective in enhancing the verbal working memory of the children with ADHD. Working memory is a key component in academic achievements. And studies have suggested that 35 -40% of children with ADHD was found having a significant problem with working memory comparing their peers [8,3]. Conducted a study and concluded that children with ADHD were having working memory deficits and it is not about short-term memory deficits. And this working memory deficit is associated with ADHD inattentiveness and hyperactive/impulsive symptoms severity. The current study suggests that cognitive training using CCET can help increase the working memory of children with ADHD and thus it can be effectively incorporated as an intervention strategy to reduce the working memory deficits and thereby reduce the inattention, hyperactivity and impulsivity severity.

The attention and concentration of the participants was assessed by letter cancellation test and letter substitution test. The net score of the letter cancellation test was calculated by subtracting the error from the total attempted. From the test scores in the table 1 it can be concluded that the attention and concentration of the participant's increased significantly after the training with CCET. And the net score of letter substitution was also calculated by subtracting the wrong attempts from the total attempts. Since the scores for letter cancellation test and letter substitution test showed a high significance, it can be concluded that the cognitive training using concentration coordination exercise tool effectively helped to enhance the attention and concentration of the participants. The results correlate with the existing pool of research which concludes that there will be a significant improvement in attention and concentration after any sort of cognitive trainings. The core deficit that children with ADHD pose is lack of attention and concentration. Various studies showed that this lack of attention and concentration can be improved through cognitive and motor training strategies[10]. The current study results add to the growing literature that supports the effectiveness of cognitive trainings on improving attention deficits in children with ADHD. Thus, training using CCET can be highly effective for improving attention and concentration of children ADHD thus can be included in intervention.

Table 2: Paired sample statistics of CCTA.

		Mean	t	Sig. (2 tailed)
Pair 11 Right hand error for 8mm clockwise	Pre	41.593	4.037	.001
	Post	33.640		
Pair 12 Right hand error for 8mm anticlockwise	Pre	34.027	3.424	.000
	Post	28.460		
Pair 13 Right hand error for 14mm clockwise	Pre	32.640	4.115	.034
	Post	20.780		

Continue.....

Pair 14 Right hand error for 14mm anticlockwise	Pre	28.306	4.510	.062
	Post	21.947		
Pair 15 Left hand error for 8mm clockwise	Pre	40.773	2.030	.000
	Post	34.780		
Pair 16 Left hand error for 8mm anticlockwise	Pre	37.647	2.356	.001
	Post	30.767		
Pair 17 Left hand error for 14mm clockwise	Pre	34.240	5.616	.004
	Post	23.066		
Pair 18 Left hand error for 14mm anticlockwise	Pre	34.593	4.365	.001
	Post	26.907		

Concentration coordination testing apparatus (CCTA) is a testing apparatus working with the same principles of concentration coordination exercise tool. The testing was done using a D string and two driving strings with 14mm and 8mm diameters. The testing was done for both dominant hand and recessive hand and for both clockwise and anticlockwise directions. The time and error for all these categories were measured. According to the table 2, the paired t test results of pre & post CCTA shows that there were significant differences in the pre & post test score of errors. The mean errors of post-test are less compared to pre test in all categories. And this difference was highly significant to state that CCET enhanced the participant's performance in CCTA. The overall result of CCTA indicates that after the training with CCET the participant took more time and effort to complete the task. Thus, the time taken increased but the errors committed decreased significantly. This indicates the cognitive, motor and attention skills acquired by the participants.

Limitations: Presence of a control group can strengthen the findings of the study. The study population was children with ADHD, but different categories of ADHD were not specified.

Conclusion

Notwithstanding the limitations mentioned above, this study adds on to the growing literature on the contribution of cognitive training in enhancing cognitive abilities. (e.g.: attention, working memory etc.). The study can be concluded that, the training using CCET significantly improves the motor dexterity, verbal working memory, and attention and concentration in children with ADHD and therefor every useful in clinical practices. The CCET apparatus can be incorporated as an intervention strategy along with other interventions such as attention enhancement training and behavioural therapy for a more efficient management of children with ADHD.

Conflict of Interest: Nil

Source of Funding: Self

Ethical Clearance: Taken from department research committee

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Original Research Article

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Diagnostic Importance of Clinic-Pathologic Features and p16, CD34, MDM2 Expression in Differential Diagnosis of Tumors

Pankaj Deval[1], Kaveri Agrawal[2]

[1]Assistant Professor, Department of Pathology, Venkateshwar Institute Of Medical Sciences, Gajraula, Amroha, [2]Senior Resident, Department of Pathology, Rama Medical College And Hospital, Hapur.

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Abstract

Background: The large majority of soft tissue tumors are benign. Malignant mesenchymal neoplasm amount to less than 1% of the overall human burden of malignant tumors but they are life threatening and may pose a significant diagnostic and therapeutic challenge since there are more than 50 histological subtypes of STS, which are often associated with unique clinical, prognostic and therapeutic features.

Methods: The study was undertaken in department of Pathology, King George's Medical University, Lucknow. The Study Design was Retrospective and prospective study carried over a period of two year from September 2018 to august 2020 including 70 cases. *Results*. Most common diagnosis of malignant cases was Synovial saroma (21.4%) followed by Leiomyosarcoma (19.0%) and Undifferentiated pleomorphic sarcoma & Fibromyxoid sarcoma (11.9% each). Less common diagnosis were Ewing's sarcoma, Liposarcoma and Rhabdomyosarcoma (9.5% each), 1 (2.4%) case each was diagnosed as Chondrosarcoma, MPNST and Myxoid liposarcoma.

Conclusions: Genetic alterations involving the 12q13-15 chromosomal region are common in musculoskeletal sarcomas, and many bone and soft-tissue malignant tumors showed amplification of various genes located in this region**.**

Keywords: synovial sarcoma; ewing's sarcoma ;histopathological.

Introduction

The large majority of soft tissue tumors are benign. Malignant mesenchymal neoplasm's amount to less than 1% of the overall human burden of malignant tumors but they are life threatening and may pose a significant diagnostic and therapeutic challenge since there are more than 50 histological subtypes of STS, which are often associated with unique clinical, prognostic and therapeutic features.[1]The etiology of most benign and malignant soft tissue tumors is unknown. In rare cases, genetic and environmental factors, irradiation, viral infections and immune deficiency have been found associated with the development of usually malignant soft tissue tumours.[2] However, the large majority of soft tissue sarcomas seem to arise de novo, without an apparent causative factor. In this study we analyze the expression of CDK4 and p16 in the various lineages

Corresponding Author: Kaveri Agarwal, Senior Resident, Department Of Pathology, Rama Medical College And Hospital, Hapur.

Mobile: 7565999660

E-mail: Kaveriagrawal@Yahoo.Co.In

of soft tissue sarcoma and their role in differentiating atypical lipomatous tumor/WDL from benign lipomas.[3]

Material and Methods

The study was undertaken in department of Pathology, King George's Medical University, Lucknow. The Study Design was Retrospective and prospective study carried over a period of two year from September 2018 to august 2020 including 70 cases with

Inclusion Criteria:

Histologically diagnosed cases of soft tissue tumors.

Exclusion Criteria:

Inadequate biopsy tissue for immune-histochemistry.

Results

The present study was conducted in the Department of Pathology in collaboration of Departments of Surgical Oncology and Orthopedics, King George's Medical University, Lucknow to study the immunohistochemical expression of p16 and CDK4 markers in various lineages of soft tissue sarcomas. In the present study, 70 histological diagnosed cases of soft tissue tumors fulfilling the inclusion criteria were enrolled in the study.

Age of patients enrolled in the study ranged from 1 to 97 years, mean age was found to be 34.98±19.96 years. Most common age groups were 31-40 years (20.0%) followed by 11-20 years and 41-50 years (18.6% each).

Out of 70 patients enrolled, majority were males (61.4%) and rest 38.6% were females.

Most common site of swelling were lower extremity (34.3%) followed by head and neck (22.9%) and Upper extremity (11.4%) while less common sites of swelling were Back and Trunk (8.6% each) and Pelvic and Retroperitoneum (7.1% each).

Majority of the patients presented with pain (61.4%) and showed progression of swelling (84.3%).

Duration of symptoms in majority of the patients was >6 months (77.1%).

Minimum size of tumour was 1 cm while maximum size was 18 cms. Mean size of tumour was 7.09±4.52 cms. Only 5 (7.1%) cases had tumour size >15 cm, 12.9% had tumour size 11-15 cm, 34.3% had tumour size 6-10 cm and rest 45.7% had tumour size ≤5 cm.

Excisional biopsy was done for majority of the cases (80.0%) and for rest of the cases Incisional biopsy was done (20.0%).

Out of 70 cases enrolled in the study, 42 (60.0%) were histopathologically found to be malignant, 20 (28.6%) as benign and rest 6 (11.4%) as intermediate.

Out of 20 cases histopathologically found to be benign, Lipoma was the most common diagnosis (25.0%) followed by Angiomyolipoma, Benign fibromyxoid neoplasm, Calcifying fibrous tumour and Fibroma (15.0% each), 1 (5.0%) case each was diagnosed as Dermatofibroma, hemangioma and myxoma.

Most common diagnosis of malignant cases was Synovial saroma (21.4%) followed by Leiomyosarcoma (19.0%) and Undifferentiated pleomorphic sarcoma & Fibromyxoid sarcoma (11.9% each). Less common diagnosis were Ewing's sarcoma, Liposarcoma and Rhabdomyosarcoma (9.5% each), 1 (2.4%) case each was diagnosed as Chondrosarcoma, MPNST and Myxoid liposarcoma.

Among histopathologically intermediate cases most common diagnosis was DFSP (62.5%) followed by Well differentiated liposarcoma (25.0%) and Low grade myofibroblastic sarcoma (12.5%).

Age of histologically benign cases ranged between 9 to 56 years of age, mean age was 29.55±15.37 years. Difference in age of benign cases with different diagnosis was not found to be significant statistically.

Range of age of histopathologically malignant cases was 1 to 97 years, mean age of these cases was 36.58±22.56 years. Age of 1 case each of Chondrosarcoma, MPNST and Myxoid liposarcoma was 40, 16 and 74 years respectively. Minimum mean age was observed for cases diagnosed as Rhabdomyosarcoma (1.88±0.85 years) followed

by Ewing's sarcoma (12.25±6.29 years) while mean age was maximum for cases diagnosed as myxoid liposarcoma (74.00±0.00 yrs) followed by Undifferentiated pleomorphic sarcoma (61.60±25.58 years). Difference in mean age of malignant cases with different diagnosis was found to be significant statistically.

Age of histopathologically intermediate cases ranged between 23 to 64 years, mean age was 40.13±13.27 years. Minimum mean age was observed for cases diagnosed as low grade myofibroblastic sarcoma (27.00±0.00 yrs) followed by DFSP (36.60±9.76 years) while maximum age was observed for cases diagnosed as Well differentiated liposarcoma (55.50±12.02 years). Difference in age of intermediate cases with different diagnosis was not found to be significant statistically.

Among benign cases majority were males (70.0%) and rest were females. Male preponderance was found for all the above diagnosis except for Dermatofibroma (33.3% males only). Difference in gender of benign cases with different diagnosis was not found to be significant statistically.

Out of 42 malignant cases 23 (54.8%) were male and rest were females. Male preponderance was seen for cases diagnosed as Chondrosarcoma, MPNST (100.0% each), Lipo sarcoma (75.0%) and synovial sarcoma (66.7%). Ewing's sarcoma and Leiomyosarcoma were present in equal proportion of males and females. Female preponderance was seen for cases diagnosed as Myxoid liposarcoma (100.0%), Fibromyxoid sarcoma (80.0^), Rhabdomyosarcoma (75.0%). Difference in gender of malignant cases with different diagnosis was not found to be significant statistically.

Out of 8 histopathologically intermediate cases 6 (75.0%) were males. Male preponderance was observed for cases diagnosed as DFSP (80.0%) and low grade myofibroblastic sarcoma (100.0%) while male:female ratio was similar cases diagnosed as Well differentiated liposarcoma. Difference in gender of histopathologically diagnosed intermediate cases with above diagnosis was not found to be significant statistically.

Positive p16 expression was observed in majority of the cases (51.4%) while negative p16 expression was observed for 44.3% cases and rest were found to be focal positive (4.3%).

Negative CDK4 expression was observed in majority of the cases (81.4%) while positive CDK4 expression was observed for 10.0% cases and rest were found to be focal positive (8.6%).

Both p16 & CDK4 positive expression was observed in only 12.9% cases, 38.3% had both negative expression and rest 48.6% cases had positive expression either for p16 or CDK4.

Negative p16 expression was observed among higher proportion of Benign as compared to malignant and intermediate cases (75.0% vs. 31.0% & 37.5%) while positive p16 expression was observed among higher proportion of malignant as compared to Benign & intermediate cases (66.7% vs. 20.0% & 50.0%) while focal positive expression was observed in higher proportion of Intermediate as compared to Benign & Malignant cases (12.5% vs. 5.0% & 2.4%). This difference was found to be significant statistically.

Negative CDK4 expression was observed among higher proportion of Benign as compared to malignant and intermediate cases (90.0% vs. 78.6% & 75.0%) while positive CDK4 expression was observed among higher proportion of Intermediate as compared to Benign & malignant cases (25.0% vs. 5.0% & 9.5%) while focal positive expression was observed in higher proportion of malignant cases as compared to Benign & Intermediate cases (11.9% vs. 5.0% & 0.0%). This difference was not found to be significant statistically significant.

Both p16 & CDK4 negative expression was observed among higher proportion of Benign as compared to malignant and intermediate cases (65.0% vs. 26.2% & 37.5%) while among higher proportion of malignant as compared to Benign & intermediate cases had either positive expression (57.1% vs. 35.0% & 37.5%), positive expression was observed among higher proportion of Intermediate as compared to benign and malignant (25.0% vs. 0.0% & 16.7%). This difference was not found to be significant statistically significant.

Out of 45 diagnosed cases of Sarcoma, majority had FNLCC Grade 3 (62.2%), only 11.1% were Grade 2 and rest 26.7% were Grade 1 cases.

TNM Staging was done for 31 cases. Majority of the cases were pT1 and pT2 (67.7%), only 12.9% cases were pT4 and rest 19.4% were pT3 stage.

An increment in p16 negative expression with increase in FNLCC Grade was observed (8.3%, 20.0% & 39.3%) while p16 positive expression was found to be higher in Grade 1 as compared to Grade 2 and Grade 3 (83.3% vs. 60.0% & 60.7%). Association of p16 expression with FNLCC grade was not found to be significant statistically.

Association of p16 expression with TNM staging was not found to be significant statistically.

A decline in CDK4 negative expression with increase in FNLCC Grade was observed (83.3%, 80.0% & 71.4%) while CDK4 positive expression was found to be higher in Grade 2 as compared to Grade 1 and Grade 3 (20.0% vs. 16.7% & 10.7%). Association of CDK4 expression with FNLCC Grade was not found to be significant statistically.

Association of CDK4 expression with TNM staging was also not found to be significant statistically.

For adipocytic tumors, majority of the benign tumours had negative expression of p16 (6/8; 75%) and CDK4 (8/8; 100%) while majority of malignant and intermediate tumours had positive p16 (7/7; 100%) and CDK4 (6/7; 85.7%) expression. These differences were found to be significant statistically (p16; χ^2=8.750; p=0.003; CDK4; χ^2=11.429; p=0.001).

Discussion

In present time apart from clinical and histomorphological picture there are many techniques to differentiate soft tissue tumors specially sarcomas. These techniques are immunohistochemistry, cytogenetics and molecular genetics. Immunohistochemistry is used to identify the differentiation of tumor cells in a particular section.Immunohistochemistry also plays a major role in soft tissue tumor classification, diagnosis, treatment and prognosis.

Genetic alterations involving the 12q13-15 chromosomal region are common in musculoskeletal sarcomas, and many bone and soft-tissue malignant tumors showed amplification of various genes located in this region[10].

p16 is a tumor suppressor gene and it is an important cell cycle regulator. It inhibits cell cycle at G1-S checkpoint by binding to cyclin-dependent kinases 4/6 and prevent inactivation of the Rb protein. p16may be mutated or deleted in many cancers[22,33-36].

Conclusion

Genetic alterations involving the 12q13-15 chromosomal region are common in musculoskeletal sarcomas, and many bone and soft-tissue malignant tumors showed amplification of various genes located in this region.

INFORMED CONSENT: written informed consent was taken from patients .

Ethical Approval: ethical committee approval was taken from the Institutional Committee Of Ethics, VIMS (VIMSE/2022/11-99) .

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Conflict of Interest: there was no conflict of interest

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Original Research Article

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Comparative Analysis of Mini Open versus Arthroscopic Repair of Supraspinatus Tears

Parth P Thakor[1], C Sai Sabharish Reddy[2]

[1,2]Assistant Professor, Department of Orthopaedics, Zydus Medical College and Hospital Dahod, Gujarat, India.

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Abstract

Background and Aim: Among all the rotator cuff tendon injuries, supraspinatus tear is very common and it is most common in older individuals. Before the arthroscopy came into high demand, the open repair of supraspinatus tear was the preferred method of surgery. Recently, the miniopen technique of repair has also gained popularity because of certain factors like better repair strength, requires less expertise and facilitates early active mobilization. Present stud was performed to compare functional and clinical outcomes of arthroscopic and mini-open repair.

Material and Methods: The present analysis is the randomized control study done on the patients diagnosed with rotator cuff tears and was planned with supraspinatus repair with the use of arthroscopic and mini open technique. As per the inclusion and exclusion criteria total of 128 patients were included in the study. The included patients were equally divided into two groups: 64 patients who underwent mini-open repair and 64 patients who underwent arthroscopic repair. Follow up was done after 12 months postoperatively and the results were evaluated using University of California Los Angeles (UCLA) shoulder score.

Results: For arthroscopic repair group, UCLA shoulder score were: 26 patients got excellent result, 30 patients got good result and only 8 patients got fair result. In the other group UCLA shoulder score were: 22 patients in whom excellent results were obtained good results were obtained in 32 patients and in 10 patients we got fair results.

Conclusion: The arthroscopic procedure decreased postoperative pain, faster regains normal ROM and quicker return to function and in turn early return to work compared to mini-open procedure. The arthroscopic procedure better in addressing intra-articular and other associated problems than mini-open technique.

Key Words: Arthroscopy, Mini-Open repair, Rotator Cuff Tear, Supraspinatus Tear

Introduction

Rotator cuff tears involving the supraspinatus tendon are common and can be associated with debilitating pain and dysfunction in the shoulder.[1] The size and degree of supraspinatus tendon tears can range from low-grade partial-thickness tears to massive full-thickness tears. In the general population, the prevalence of rotator cuff tears was reported to be up to 22%. A partial-thickness tear of the supraspinatus can progress to become a full-thickness tear involving the other rotator cuff tendons if not detected and addressed early.[2,3]

Corresponding Author: C Sai Sabharish Reddy, Department of Orthopaedics, Zydus medical college and hospital Dahod, Gujarat, India.

E-mail: saisabharishreddy@gmail.com

Among all the rotator cuff tendon injuries, supraspinatus tear is very common and it is most common in older individuals. As the tendon undergoes several degenerative changes in many metabolic diseases, its tear is very common after even a trivial fall over the shoulder.[4,5] Rotator cuff repair was first described by Codman over a century ago. Rotator cuff pathology may be graded arthroscopically using the "ABC" system in which "A" represents the articular side of the cuff, "B" is bursal, and "C" denotes a complete tear connecting the two surfaces.[6,7]

Many studies have shown that mini-open requires less tissue dissection and decreased chances of deltoid muscle detachment. On the other hands in arthroscopic method, there is decreased post-operative pain, shorter hospital stay and faster rehabilitation. Also, many studies have data to prove that there is no significant difference between the two modalities.[8,9]

In the trauma institute there is a facility of performing both types of surgeries, but as most of the patients visiting the hospital belong to below poverty line group and cannot afford arthroscopic surgery and having some evidence that mini open repair can be comparable to arthroscopic repair, hence the current study was done to compare both the methods.

Material and Methods

The present analysis is the randomized control study done on the patients diagnosed with rotator cuff tears and were planned with supraspinatus repair with the use of arthroscopic and mini open technique. The ethical committee of the institute as informed about the study and the ethical clearance certificate was obtained prior to the start of the study. The entire included cases of the study were operated in the department of orthopedics medical college asscoaited hospital for the period of two year.

On the basis of the clinical history clinical examination and the radiographic analysis the patients were included in the study. On the radiological examination the full thickness supraspinatus tear was the common findings. The inclusion and exclusion criteria of the study were as follows:

Inclusion criteria:

Patients with age between 18 and 60 years

Patients with traumatic tear of supraspinatus tendon

Exclusion criteria:

- Patients with other medical history diabetics, previous history of any fracture around the shoulder joint
- Patients with any previous history of the injury near the biceps or shoulder area.

As per the inclusion and exclusion criteria total of 128 patients were included in the study. An informed consent was taken from all the patients before their participation in the study. The included patients were equally divided into two groups: 64 patients who underwent mini-open repair and 64 patients who underwent arthroscopic repair. The surgical procedure was done by the two experienced surgeon.

For post-operative pain management, intravenous acetaminophen and a cyclooxygenase-2 selective inhibitor was administered till postoperative day 3. From day 3 to day 8 oral tablet containing combination of acetaminophen 325 mg and tramadol 37.5 mg was given. For additional pain control in some patient intramuscular diclofenac was administered if needed. This rehabilitation protocol was same for both the groups and all the patients followed it satisfactorily.

Patients were placed in arm sling early passive ROM for 3 weeks active assisted exercise after 3 weeks active ROM and strengthening exercise after 6 weeks. Follow up was done after 12 months postoperatively and the results were evaluated using University of California Los Angeles (UCLA) shoulder score. Statistical analysis was performed using statistical package of social science (SSPS) version 20 software.

Results

Total of 128 patients were included in the study. The included patients were divided into two groups. In group 1 there were 64 patients who underwent mini-open repair and in group 2 there were 64 patients who underwent arthroscopic repair. The male to female ratio was found to be 1.25:1.

There were 68 males and 60 females. (Table 1) The maximum numbers of included patients were from age more than 40 years.

At the end of the study period the collected results were analyzed using the UCLA shoulder score as it is the simplest test and there are fewer chances of errors. For arthroscopic repair group, total 64 patients were there. The results according to the UCLA shoulder score were: 26 patients got excellent result, 30 patients got good result and only 8 patients got fair result. None of the study patients got poor result in this group.

In the other group none of the patients were lost on follow up. Total of 64 patients were included in this group. At the end of the follow up periods as per the UCLA shoulder score there were 22 patients in whom excellent results were obtained good results were obtained in 32 patients and in 10 patients we got fair results. Poor outcome was not recorded in any of the groups. (Table 2)

Table 1: Gender Wise Distribution of study participants

Gender	Number	Percentage (%)
Male	68	53.12
Female	60	46.87

Table 2: Distribution according to UCLA shoulder score

UCLA shoulder score	Arthroscopy N (%)	Mini Open N (%)
Excellent	26 (40.62)	22 (34.37)
Fair	30 (46.87)	32 (50)
Good	8 (12.5)	10 (15.62)
Total	64 (100)	64

Discussion

In the previous literature, several studies have been conducted in order to compare the outcome of mini-open and all-arthroscopic surgeries. In the meta-analysis on randomized controlled trials comparing the outcome of arthroscopic and mini-open rotator cuff repair, conducted by Ji *et al*.[10] the authors founded no differences with regards to surgery time, functional outcome score, VAS pain score and ROM between these two techniques.

Arthroscopic supraspinatus repair is a very common modality of definitive management of supraspinatus tear. The 2 most important benefits of an arthroscopic repair are small incision and better visualization of the tear.[11] It has become a hugely popular modality for supraspinatus repair and surgeon's skills and experiences are still improving. Moreover, causes less pain and as the result rehabilitation is quite compliant.[12,13]

The present study is based on the outcomes evaluated using UCLA shoulder score. These parameters are evaluated and compared between the 2 study groups. According to some researches, patients who underwent arthroscopic repair obtained good results in terms of functional score as compared to mini open group. When pain is taken as one of the parameters, some studies found there is no significant differences between the 2 groups. The results are also similar to the mentioned studies.[14,15]

In the UCLA scoring, strength and range of active forward flexion are 2 important parameters for evaluating the outcome. Even when these 2 parameters were compared among the 2 groups, no statistically significant difference was observed. For range of active forward flexion, arthroscopy group had mean score of 4.56 compared to 4.50 of mini open group with p value being 0.73. For strength of forward flexion, the mean scores were 4.47 and 4.19 for arthroscopy group and mini open group respectively with p value of 0.07. All of the patients in the present study were satisfied with their outcomes. Studies suggest arthroscopic repair has very good short as well as long term results.

Conclusion

The arthroscopic procedure decreased postoperative pain, faster regains normal ROM and quicker return to function and in turn early return to work compared to mini-open procedure. The arthroscopic procedure better in addressing intra-articular and other associated problems than mini-open technique. Even on the basis of functional outcome no technique is superior to one other producing similar result over long term. So, depending on the patient's need the method of choice of repair can be customised. Also, miniopen method can be an essential decision-making tool in the set ups where arthroscopic facilities are not available.

Ethical approval was taken from the institutional ethical committee and written Informed Consent was taken from all the participants.

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Conflict of Interest: None declared

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Original Research

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Assessment of Community Accordance to the Essential Actions at School Level and Support for Reopening in Covid Era

Shruti Kardalkar[1], Harsha B[2], Mayur S Sherkhane[3], Swetha[4], Harikrishna B N[5]

[1]Assistant Professor, Department of Community Medicine, ESIC Medical College and Hospital, Gulbarga, Karnataka, [2]Associate Professor, H.K.D.E.T's Dental College, Hospital and Research Institute, Humnabad, Bidar, [3]Professor, Department of Community Medicine, SDM College of Medical Sciences and Hospital, Shree Dharmasthala Manjunatheshwara University, Dharwad, Karnataka, [4]Assistant Professor, Department of Dentistry, BRIMS, Bidar, Karnataka, [5]Assistant Professor, ESIC Medical College and Hospital, Sanathnagar, Hyderabad, Telangana

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Abstract

Background: The emergence of a novel strain of Coronavirus, now named SARS-CoV-2, in Wuhan city, China, in late 2019, resulted in a global pandemic that spread to every region of the world. Various measures like social distancing, wearing masks including closure of schools became the new normal. The decision to close schools is to bring stability between the risk associated with transmission in the school environment and the educational and welfare impact upon children of shutting down education establishments. While countries in the region are at various phases of evolution of the COVID-19 pandemic, facing a combination of common and unique challenges, each has begun to prepare and effectuate the safe reopening of schools.

Objective: To assess community accordance to the essential actions at school level and support for school reopening in covid era and factors responsible for it.

Methodology: A community based cross-sectional study was conducted among adults who were parents/ care takers/guardians of school children aged 5-15years residing in urban area. The proforma comprised of sociodemographic profile and the 21 Actions at School level as per WHO recommendation. Data was collected using Google Forms. Responses were presented as frequencies, percentages and Chi-square test.

Results: A total of 615 adults were enrolled for the study. 44.44% of study participants accepted the 21 actions at school level and were in favour of school reopening. 60% were 32–45 years, 63.25% were literates and maximum were females. Significant associations were observed with study participants with younger age ($p<0.0001$), residing in nuclear families and children enrolled in private schools ($p<0.00001$), were more in favour of accepting the 21 actions at school level and willing to send the children back to school.

Conclusion: There is a need to revaluate purpose, content and modes of delivery of education and to make adjustments that in the future strengthen multiple flexible learning pathway introduce innovative pedagogical models, and incorporate crisis-sensitive planning.

Keywords: Accordance, 21 Actions by WHO, Community, Coronavirus, Pandemic, Reopening, School, Support.

Corresponding Author: Shruti Kardalkar, Assistant Professor, Department of Community Medicine, ESIC Medical College and Hospital, Gulbarga, Karnataka.

Mobile: 7846897777

E-mail: drshru.kardalkar@gmail.com

Introduction

The emergence of a novel strain of coronavirus, now named SARS-CoV-2, in Wuhan city, China, in late 2019, has resulted in a global pandemic that spread to every region in the world.[1] As the number of confirmed cases increased both nationally and globally, there was a concern that hospital and intensive care capacities would be rapidly overwhelmed without the introduction of interventions to curb the spread of infection. With this in mind, many countries introduced a range of social distancing measures, such as the closing of workplaces, pubs and restaurants, the restriction of leisure activities and the closing of schools.

The decision to close schools is a balance between the risk associated with transmission in the school environment and the educational and welfare impact upon children of shutting down education establishments.[2]

Schools closed in many countries for some period of time during COVID-19 pandemic as part of mitigation efforts to reduce transmission of SARS-CoV-2. While the duration of school closures is still uncertain, past experience (other epidemics, conflicts and natural disasters) shows that widespread and extended school closures represent a serious risk to the learning, protection and welfare of children and adolescents.

Reopening schools is a government decision, which may be made on the basis of epidemiological evidence and analysis of benefits and risks in education, public health and socio-economic factors in the local context.

This pandemic has paved way for developing long-term strategies that address pre-existing gaps and challenges, making learning accessible to all, and developing resilient systems that are prepared for possible future crises.[3] Accordingly, there is a need to rethink the purpose, content and modes of delivery of education and to make adjustments that in the future strengthen multiple flexible learning pathways (including mixed and distance education modes), introduce innovative pedagogical models, and incorporate crisis-sensitive planning.[3]

Based on the lessons learnt from this pandemic, policies, plans and strategies have to be developed to build more relevant and equitable education systems that are adaptable and able to withstand any resurgence of the pandemic or other future crises. In view of the existing situation, this study was initiated to assess community accordance to the essential actions at school level and support for reopening in covid era and factors responsible for it.

Methodology

Study design and duration: Community based cross sectional study was conducted for a period of six months June-December 2021, after obtaining due permission from institutional ethical committee. **Study area:** Field practice area attached to urban health training centre of department of community medicine.

Study population: The study population consists of parents/guardians/care takers of school going children aged 5-15years.

Inclusion criteria: Parents/Caretakers/ Guardians having one or more than one child aged 5-15years. Residing in the study area for more than one year.

Exclusion criteria: Parents/guardians/caretakers of children studying in class X and class XII.

Sample size: The population of children aged 5-15 years (%) as per National family Health Survey (NFHS-5) 2019-20 is 22.4% (Karnataka factsheet).[6]Based on the formula $4pq/L^2$, where 'p' is the population of age 5-15 years (%), q=100-p (77.6) and L relative precision 15%. The sample size was estimated to be 615 at 5% alpha error.

Sampling Procedure: A house to house survey was conducted in New Rehmat Nagar, which is an urban field practice area of department of Community Medicine. In each house, one eligible individual was enrolled in the study and the eldest of them satisfying the inclusion and exclusion criteria of the study was given priority and included, so as to avoid duplication of data. All the houses were surveyed till the required sample size was achieved.

Study instrument: The proforma consisted of two parts. Part I included the sociodemographic details and Part II comprised the Actions at school level recommended by World Health Organization

(WHO).[7] The responses to acceptance of 21actions at school level and support to reopening were rated on a 3-point Likert scale as follows: 2= "Agree," 1=Disagree, 0= "Neutral." The total score was calculated by adding the scores obtained on all the 21 items. A score ≥11 would be considered as good acceptance and support to reopening of schools and anything less than it as poor acceptance of the actions undertaken at school level for supporting reopening of schools.

Data collection: Approximately 1903 families were residing in the selected study area, systematic random sampling was applied, and every 3rd house was considered for data collection to meet the required sample size. Data collection was done through face to face interview after taking informed consent. The questionnaire was administered ensuring COVID-19 protocols so as to avert transmission of any infection through exchange of material (paper) and matter during COVID times.

Statistical analysis: Microsoft excel was used for data compiling and descriptive statistics (frequencies and percentages) along with chi-square test for association of factors.

Results

A total of 615 enrolled for the study. 44.44% of the study participants accepted the actions at school level and were affirmative for reopening of the schools. Table 1_illustrates sociodemographic details of the study participants, majority of nearly 60% were in the age group of 32–45 years, 63.25% were literates and maximum were females who were interviewed in the study. The study participants belonged to upper middle class and middle class socioeconomic status [(SES), Modified B.G. Prasad's Classification 2019 – India[8]

Table 2 depicts responses of the study participants to actions at school level as per WHO recommendations.[7]72.03% agreed that school administration had to re-assess and plan for additional staff required to implement adapted teaching methods. 45.68% were in favour of schools revising personnel and attendance policies, >50% accepted promotion of wearing of masks among students, teachers and school staff. 66.34% strongly accepted daily checks to ensure compliance with measures and raise awareness among staff and students of the importance of self-reporting any symptoms (60%) along with 55.61% of them agreeing for school health staff to keep a record of students health status and development. 45.04% were in favour of school administration to provide training and learning materials/ Platforms for school staff and teachers to deliver (culturally sensitive and age-appropriate) messages, activities and lessons to prevent and Control disease outbreaks in schools. Many study participants were not in favour of attending regular pedagogical sessions and training sessions regarding guidance on protection measures through communication materials such as notes, posters, and flyers.

Table 3 shows association of sociodemographic profile with acceptance to actions at school level (n=615) as per WHO recommendations.[7] Significant associations were observed with younger age ($p<0.0001$), study participants residing in nuclear families were more in favour of accepting the school actions and willing to send the children back to school. ($P < 0.0001$). Caretakers of children in Government school had poor acceptance in comparison to private institutions ($p<0.00001$). Other factors though not statistically significant but had an impact on acceptance were education of both parents, working mothers and siblings attending the same school.

Table 1: Sociodemographic Profile of the Study Participants (n=615)

Variables	Number	Percentage
Age in years		
18-24	106	17.24
25-31	129	20.98
32-38	195	31.71
39-45	185	30.08

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Education		
Liberates	389	63.25
Illiterates	226	36.75
Type of Family		
Nuclear	311	50.57
Joint/three generation	304	49.43
Occupation*		
Skill level I	233	37.89
Skill level II	154	25.04
Skill level III	139	22.60
Skill level IV	89	14.47
Socioeconomic Status**		
I	214	34.80
II+III	232	37.72
IV+V	169	27.48

**International Standard Classification of Occupations.*[9] ***Modified B G Prasad classification-2020.*[8]

Table 2: Responses of the Study Participants to Actions at School Level (n=615).

Sl.no	Actions at School Level[7]	Agree		Neutral		Disagree	
		No.	%	No.	%	No.	%
1	Set up a school support team (SST) appropriate to local context	108	17.56	332	53.98	175	28.46
2	Schools should revise personnel and attendance policies	281	45.69	196	31.87	138	22.44
3	Mandatory to implement physical distancing in and outside classrooms	188	30.57	215	34.96	212	34.47
4	Promote adherence to hand hygiene and respiratory etiquette	136	22.11	381	61.95	98	15.93
5	Promote the wearing of masks among students, teachers and school staff	332	53.98	52	8.46	231	37.56
6	School administrators and teachers to ensure adequate ventilation, using natural ventilation in classrooms, canteens and other rooms.	202	32.85	83	13.50	330	53.66
7	Guidance on protection measures through communication materials such as notes, posters, and flyers.	82	13.33	194	31.54	339	55.12
8	Reorganize the school layout for protective measures	133	21.63	265	43.09	217	35.28
9	Ensure adequate and sufficient supplies of soap, hand sanitizer and masks and to avoid potential stock outs	169	27.48	144	23.41	302	49.11
10	Daily checks to ensure compliance with measures	408	66.34	179	29.11	28	4.55
11	Conduct regular health education and pedagogical Sessions to promote healthy and protective behaviors	218	35.45	81	13.17	316	51.38
12	School administration to engage with students, parents and staff to ensure acceptance of the school's protective measures,	141	22.93	281	45.69	193	31.38

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13	Raise awareness among staff and students of the importance of self-reporting any symptoms	366	59.51	91	14.80	158	25.69
14	Sick leave policies to be revised accordingly.	111	18.05	286	46.50	218	35.45
15	School health staff to keep a record of students health status and development	342	55.61	170	27.64	103	16.75
16	Disseminate information on hygiene and cleaning protocols to school staff and students	244	39.67	312	50.73	59	9.59
17	School administration to re-assess and plan for additional staff required to implement adapted teaching methods (e.g. Smaller groups, shifts)	443	72.03	64	10.41	108	17.56
18	School administration, teachers, students, parents/ caregivers to identify measures for the continuation of school feeding and school-based Health services	378	61.46	219	35.61	18	2.93
19	School administration to inform and update students, staff and parents about current measures adapted to the evolving situation	198	32.20	256	41.63	161	26.18
20	School administration to set up training sessions on distance learning, safety and cleaning, and disease outbreak prevention, preparedness and response measures	149	24.23	207	33.66	289	42.11
21	School administration to provide training and learning materials/ Platforms for school staff and teachers to deliver (culturally sensitive And age-appropriate) messages, activities and lessons to prevent and Control disease outbreaks in schools	277	45.04	122	19.84	215	35.12

Table 3: Association of Actions at School Level in relation to sociodemographic profile of study participants. (n=615)

WHO Actions at School Level[7]					
Variables	**Good acceptance (n=261, 42.44%)**		**Poor acceptance (n=354, 57.66%)**		**Test of Significance**
Age in Years					
18-24 (106)	73	27.97%	33	9.32%	$\chi2$ =112.3788 p<0.0001 *Significant
25-31 (129)	88	33.72%	41	11.58%	
32-38 (195)	39	14.94%	156	44.07%	
39-45 (185)	61	23.37%	124	35.03%	
Type of Family					
Nuclear (311)	182	69.73%	129	36.44%	$\chi2$ =66.6104 p<0.0001 *Significant
Joint/Three Generation (304)	79	30.27%	225	63.56%	
Socioeconomic status**					
I (214)	86	32.95%	128	36.16%	$\chi2$ =5.9774 p=0.5034 Not significant
II+III (232)	90	34.48%	142	40.11%	
IV+V (169)	85	32.57%	84	23.73%	
School enrolled					

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Private (245)	143	54.79%	102	28.81%	$\chi 2$ =42.2947 p<0.00001 *Significant
Government (370)	118	45.21%	252	71.19%	
School stages to which child belongs					
Pre School (172)	23	8.81%	149	42.09%	$\chi 2$ =141.9962 p<0.0001 *Significant
Primary (158)	55	21.07%	103	29.10%	
Preparatory (168)	88	33.72%	80	22.60%	
Middle stage (117)	95	36.40%	22	6.21%	

*p<0.05

**Modified B G Prasad classification-2020[8]

Discussion

School children being an integral part would require extra efforts in helping them face the pandemic. In the present study, it was found that the 44.44% of the study had good acceptance for actions at school level and were in favour of school reopening.

In a research done by Dheeraj Sharma and Poonam Joshi, in Muzaffarnagar, Uttar Pradesh[4], in 2021 concluded that situation for schools is also worrisome, as their revenue has decreased markedly. only 11% of parents were in support of sending their children back to school during the pandemic. Around 16 000 parents were willing to wait until there are no cases in their area, or vaccine had become widely available, or were unsure. In comparison to our study where in 42.44% agrees on to actions taken at school level by the authorities and were willing to send their children back to school quoting their own terms and conditions.

In a study done in England by Keeling et al[2]., in 2021 concluded that school reopening would result in increased mixing and infection amongst children and the wider population, reopening schools alone in June 2020 was unlikely to push R above one. In our study there were mixed responses for reopening of schools. Ultimately, reopening decisions are a difficult trade-off between epidemiological consequences and the emotional, educational and developmental needs of children.

A study by Alfonso Landeros et al[5]., Los Angeles, United States of America in 2021, analysis identified child-adult transmission as a potential risk to reopening schools even under the plausible assumption of weak child-child transmission relative to adult-adult transmission. During a 6-month time span, reopening schools in a population with 0.1% infections with 2 cohorts avoids triggering a prevalence closure decision rule based on a 5% pediatric infection threshold. Apparently in our study sending children back to school was dependent on factors like residing in nuclear families, siblings attending same school, working parents and so on.

Conclusion

The study was a focussed on the acceptance of actions at school level and imminent opening of schools, reluctance was observes among the study population to support school reopening. Apparently, there is a need to revaluate purpose, content and modes of delivery of education and to make adjustments that in the future strengthen multiple flexible learning pathways (including mixed and distance education modes), introduce innovative pedagogical models, and incorporate crisis-sensitive planning. Based on the lessons learnt from this pandemic, it is recommended that policies, plans and strategies be developed to address pre-existing gaps and challenges and to build more pertinent and equitable education systems that are resilient and able to withstand any resurgence of the pandemic or other future crises.

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Original Article

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Genital Hygiene Behavior and its Relationship with Vaginitis

Rully Ayu Nirmalasari Hariadi Putri[1], Lily Marliany Surjadi[2], Arleen Devita[3], Ida Effendi[4]

[1,2]Obstetric and Gynecology Department, Faculty of Medicine, Universitas Trisakti, Jakarta, Indonesia; [3,4]Microbiology Department, Faculty of Medicine, Universitas Trisakti, Jakarta, Indonesia.

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Abstract

Purpose: To determine the relationship between genital hygiene behavior and the emergence of vaginitis, especially in female motorcycle taxi drivers at Jakarta area

Patients and methods: Subjects are 50 female motorcycle taxi drivers in Jakarta area who met inclusion/ exclusion criteria. A questionnaire of genital hygiene behavior inventory (GHBI) was used to obtain the genital hygiene behavior among subjects. Vaginal examination and microbiological swab from vaginal discharge were then performed as diagnostic for any type of vaginitis. Data collected were then analyzed using SPSS application for univariate and bivariate analysis to show subjects' characteristics and to look for relationships between variables.

Results: 62% of respondents are over 40 years old and most of them work more than 8 hours per day. Vaginitis was found in 42% of drivers divided into 21 subjects with bacterial vaginosis (42%) and 8 subjects with vaginal candidiasis (16%). There are more subjects with poor knowledge of general genital hygiene, menstrual hygiene management, and self-awareness of abnormal genital symptoms, but no statistically significant difference in the incidence of vaginitis and the total GHBI score (p>0,05). This study found a relationship between age and the incidence of vaginitis in female motorcycle taxi drivers in Jakarta area.

Conclusion: There is no relationship between the GHBI score, duration of work, length of working experience, access to clean toilet and the incidence of vaginitis. There is a significant relationship between age and the incidence of vaginitis in female motorcycle taxi drivers.

Keywords: female motorcycle taxi drivers, genital hygiene behavior inventory (GHBI), vaginal swab, vaginitis.

Introduction

Genital hygiene is very important to reproductive function. Poor genital hygiene may end in reproductive tract infection which can cause advanced problem. Many habits in daily life especially during menstruation thought as an effort to increase genital hygiene were actually harmful, such as vaginal douching, tampon using, etc. These activities may result in vaginal flora shifting and cause vaginal dysbiosis.[1,2]

Bacterial vaginosis (BV) is an unspecific vaginal inflammation (vaginitis) caused by imbalanced

Corresponding Author: Lily Marliany Surjadi, Obstetric and Gynecology Department, Faculty of Medicine, Universitas Trisakti, Jakarta, Indonesia.

E-mail: lily0712@trisakti.ac.id

vaginal flora, with less lactobacillus (peroxide produced bacteria) and other bacteria to be dominant such as *Gardnerella vaginalis*.[3–5] Other inflammation can be caused by fungi and parasite. Many factors have been identified to correlate with vaginitis, like smoking, vaginal douching, wrong method of genital wiping, types of underwear, and menstruation hygiene. Vaginitis is thought to be a result of complex interaction between host, environment and vaginal microbe.[6] It has been known that vaginitis is a risk factor of many advanced reproductive tract damages such premature labor, pelvic infection, infertility, ectopic pregnancy, cervical cancer and with more following problems.[7,8]

Motorcycle taxi (Ojek) is one of transportation mode widely known nowadays, especially in Indonesia. Many women, especially single moms, choose this job for it is considered easy because the time is flexible. All drivers, including female drivers, must spend most of the time on the road, despite sunny or rainy weather, wearing thick pants especially made from denim material, with limited access to clean toilet and water supply. This condition could create a big problem especially in women for vulvovaginal hygiene care, especially during period.[9]

Previous studies showed contradictive results about the relationship of genital hygiene and bacterial vaginosis. Bahram et al conducted a study in Zanjan, Iran showed positive relationship, while study by Demba et al in Gambia, West Africa showed the opposite.[10,11] Most studies were performed in adolescents around menarche. This inconsistencies encourage us to conduct a similar study in female motorcycle taxi drivers with limited access to clean toilet and water supply.

Material and methods

An analytic observational designed as a cross sectional study has been performed in 50 subjects who are online motorcycle taxi drivers around Jakarta areas. The study itself took place at Faculty of Medicine Universitas Trisakti during January 2023. Data collection were taken using genital hygiene behavior inventory (GHBI) questionnaire, followed by vaginal examination and vaginal swab was performed for microbiology testing. All subjects have been informed completely the purpose of this study as well as the examination that will be performed, and asked to sign their approval.

Genital hygiene behavior questionnaire consists of 23 question that divided in 3 groups, that is 12 questions about general genital hygiene, 8 questions about menstrual hygiene management and 3 questions about their self-awareness of genital abnormal signs and symptoms. Subjects are also asked to fulfill a form about their characteristics as age, length of work hour, etc. After completing the questionnaire, respondent's vaginal examination and swab were taken privately, and the specimens were then sent to microbiology department Faculty of Medicine, Universitas Trisakti for vaginitis testing using Nugent score for detecting bacterial vaginosis and detection of hyphae for candidiasis.

All data from questionnaire and microbiology findings were recorded and will be presented in tables and then analyzed using Statistical Package for Social Sciences (SPSS) application for univariate and bivariate analysis.

Results and discussion

Table 1 showed characteristics data from the total of 50 subjects. According to the characteristics, it was found that most subjects were ≥40 years of age (62%), have been working as motorcycle taxi driver for less than 5 years with more than 8 working hours per day and mostly have no problems with access to clean toilet. From further discussion, they stated that they can use public toilet at some minimarket or at gas station, and they were quite satisfied with the toilet's condition. The questionnaire showed that most subjects have poor knowledge about genital hygiene, menstrual hygiene, and self-awareness of abnormal genital symptoms, but the result of microbiology testing for vaginitis were quite similar (42% negative and 58% positive results).

Table 2 were designed to look for relationship between respondents' characteristics with the microbiology result. There is no relationship between length of working experience, daily working hours and difficulty in access to clean toilet. However, there is a relationship between age and the incidence of vaginitis in female online motorcycle taxi drivers (p=0,01).

Table 3 showed the relationship between respondents' knowledge and awareness with microbiology result. Although there were more drivers who had poor knowledge about general genital hygiene, menstrual hygiene management, and self-awareness about abnormal genital symptoms, the relationship with the incidence of vaginitis was not statistically significant (p>0,05). Thus, GHBI total score has no significant relationship with the incidence of vaginitis (p>0,05)

Table 1 Characteristics of respondents

Characteristics			**n**	%
Age (years)	<40		19	38
	≥40		31	62
Experience in this job (years)	≤ 5		39	78
	>5		11	22
Working hour per day (hours)	≤ 8		12	24
	>8		38	76
Difficulty in access to clean toilet	Yes		23	46
	No		27	54
Knowledge of general genital hygiene	Poor		28	56
	Good		22	44
Knowledge of menstrual hygiene management	Poor		28	56
	Good		22	44
Self awareness of abnormal genital symptoms	Poor		27	54
	Good		23	46
Total genital hygiene knowledge	Poor		26	52
	Good		24	48
Vaginitis finding of vaginal swab	Negative		21	42
	Positive	Bacterial vaginosis	21	42
		Vaginal candidiasis	8	16

Table 2. Relationship of respondent's characteristics and bacterial vaginosis

Characteristics		**Vaginitis findings**				**p**
		Positive		**Negative**		
		n	%	**n**	%	
Age (years)	< 40	15	78,9	4	21,1	0.01*
	≥40	8	25.8	23	74.2	
Experience in this job (years)	≤ 5	18	46.2	21	53.8	1*
	> 5	5	45.5	6	54.5	
Working hour per day (hours)	≤ 8	5	41.7	7	58.3	0,98*
	>8	18	47.4	20	52.6	
Difficulty in access to clean toilet	Yes	12	60	8	40	0,18*
	No	11	35.7	19	64.3	

* chi-square test

Table 3. Relationship of genital hygiene behavior and bacterial vaginosis

Characteristics		Bacteriology findings				p
		Positive		Negative		
		n	%	n	%	
Knowledge of general genital hygiene	Poor	12	54.5	10	45.5	0,43*
	Good	11	39.3	17	60.7	
Knowledge of menstrual hygiene management	Poor	11	50	11	50	0.82*
	Good	12	42,8	16	57.2	
Self awareness of abnormal genital symptoms	Poor	13	56.5	10	43.5	0,27*
	Good	10	37.0	17	63.0	
Total genital hygiene knowledge	Poor	13	54.2	11	45.8	0,40*
	Good	10	38.5	16	61.5	

* Chi-square test

Discussion

Environment is one of the factors that encourage women to choose a job. The internal environment that has the most effect is their family. They want their family's needs to be met.[12] Being an online motorcycle taxi driver is easier and has flexible working hours. especially for single mothers. Most of drivers who took part in this study were≥40 years old. Some of them are single parents and others has to work to support the husband for their ability to earn money have declined due to age, illness or being laid off from workplace. Most of them have been working for 1-5 years as an online female motorcycle taxi driver. Although they have to work with male drivers, they feel safe because their male fellow drivers treat them well and considered equal by others driver. They are more worried about the indecent behavior of the male passengers so for safety reason, they prefer to be an online food delivery drivers instead of taking passengers. Regarding the duration of work, even though they work a total of more than 8 hours a day, they can start working after finish preparing for their family's household needs such as cooking and taking the children to school. This is in accordance with the study from Rafidan H. qualitative study that states that online motorcycle taxi women interpret their profession as fulfilling economic needs for their families and themselves. And this kind of profession has a comfortable work environment.[13]

None of subjects have ever received education about reproductive health care as online motorcycle taxi drivers. Likewise, we have never found reproductive health studies in Indonesian female online motorcycle taxi drivers, soitwas shown in the result of this study that most subjects have poor knowledge about genital hygiene behavior. Although it is not significantly related to vaginitis, subjects with vaginitis have insufficient knowledge about general genital hygiene and self-awareness of abnormal genital symptoms. Bardin M, et al showed in their study that some hygiene habits were associated to bacterial vaginosis and/or vulvovaginal candidiasis, such as the use of soap while cleaning genital area and left the genital moist after urination.[14]

In this study, it was found that 58% of female drivers had vaginitis (21 of them were bacterial vaginosis and 8 were candidiasis). The use of tight pants, thick or made of denim material is associated with an increased incidence of vulvovaginitis.[15] Moreover, most subjects did not change their wet pants but left the wet pants to dry after hit by rain during their working hours. This risk factor is also supported by the finding that almost all drivers have been experienced fungal inflammation in the genital area.

Age has a significant relationship with vaginitis. Li Meng et al found that the possibility of getting bacterial vaginosis was higher with the age of 40-50.[16] Ocviyanti et al also found that age above 40 years old was risk factor for BV.[17] At that age, approaching perimenopausal stage, there is a decrease in estrogen levels which will affect the

vaginal acidity. This environmental change made it harder for Lactobacillus sp. to grow and causing other microorganisms to be more dominant.

Conclusion

There is no statistically significant relationship between the GHBI score, working hours, length of working experience, or access to clean toilet and the incidence of vaginitis. There is a relationship between age and the incidence of vaginitis in female motorcycle taxi driver.

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Original Research

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A Community Based Study on Various Aspects of Breast-Feeding Practices from Central India

Sanjay Silawat[1], Vijay Verma[2], Praveen Yuwane[3], Shivam Dixit[4], Shailesh Rai[5]

[1]PG Resident, Department of Community Medicine, MGM Medical College, Indore, Madhya Pradesh, [2]PG Resident, Department of Community Medicine, MGM Medical College, Indore, Madhya Pradesh, [4]Assistant Professor, Department of Community Medicine, MGM Medical College,Indore, Madhya Pradesh, [3]Assistant Professor (Statistician), Department of Community Medicine, MGM Medical College, Indore, Madhya Pradesh, [5]Assistant Professor, Department of Community Medicine, MGM Medical College, Indore, Madhya Pradesh.

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Abstract

Background: For optimum growth and development of newborns breastfeeding is of utmost importance. Identification of breastfeeding practise gaps need to be identified and filled. This study was undertaken to explore the breastfeeding practices, influence of literacy and prevailing cultural factors on different aspects of breastfeeding.

Materials and Methods: Complete line listing of 576 breastfeeding women in the study area was done. Then the study subjects were interviewed by making house to house visits. Data was gathered on the participant's demographics, breastfeeding knowledge, and practices. Privacy was maintained while conducting the interview. Anonymity and confidentiality were ensured to the study participants.

Results: Data of 550 study participants was analyzed and presented here. 377 (68.5%) could not practice timely initiation of breast feeding. Most common reason (264, 70%) for the same was insufficient knowledge about it. Exclusive breast feeding was practiced by merely 44 (8%) subjects. Not good for health of newborn (108, 36.7%), not easily digested by the newborn (thick) (85, 28.9%) and myths prevalent in society (64, 21.8%) were three most common reasons for discarding colostrum by mothers. Lower socio-economic status, muslim religion and joint family were found to be associated with practice of exclusive breastfeeding.

Conclusion: The issue of lower prevalence of early breastfeeding initiation and exclusive breastfeeding continues to persist in the study area. Still, colostrum is being discarded. Tailored and region specific health promotion activities must be intensified in this regard by grass root level health care workers.

Keywords: breastfeeding, colostrum, cultural factors, practice.

Introduction

Breastfeeding is of utmost importance for optimum growth and development of newborns. Only breast milk is given to the baby during exclusive breastfeeding (EBF), with the exception of oral rehydration solution (ORS), syrup, or drops of vitamins, minerals, or medications.[1] The World

Corresponding Author: Shailesh Rai, Assistant Professor, Department of Community Medicine, MGM Medical College, Indore, Madhya Pradesh.

E-mail: dr.shaileshrai@gmail.com

Health Organization (WHO) currently recommends exclusive breastfeeding for six months, as well as starting supplemental foods at six months of age while the mother continues to breastfeed her child concurrently up to 24 months of age.[2] 10% of the disease load in children under the age of five years is caused by suboptimal and non-EBF in the first six months of life, which accounts for 1.4 million fatalities.[3]

Only 37% of newborns in low- and middle-income nations are exclusively breastfed until they are six months old.[4] According to the National Family Health Survey-5 (NFHS-5), only 59.6% of newborns in urban regions of India are exclusively breastfed until they are six months old.[5] The mother's decision to exclusively breastfeed her child and to keep doing so until the child is two years old is influenced by a variety of interrelated circumstances. A wide range of cultural and societal influences, peer pressure and behaviour, and the accessibility of healthcare services are among these issues.[6]

For the growth, development, health, and nutrition of newborns and children everywhere, the beginning of nursing and the prompt introduction of sufficient, safe, and suitable supplemental feeds in addition to continuous breastfeeding are of utmost importance. Therefore, in order to improve children's nutritional status, it is necessary to promote and safeguard the best practises for newborn feeding. Hence this study was undertaken to explore the breastfeeding practices, influence of literacy and prevailing cultural factors on different aspects of breastfeeding. This has a significant impact on the delivery of primary care because it allows for the identification of breastfeeding practise gaps, the strengthening of supportive factors, the reduction of cultural norms that are harmful to breastfeeding, and the incorporation of suitable interventions.

Material and Methods

This community-based study was planned and conducted by department of community medicine of a tertiary care teaching hospital located at Indore city of Madhya Pradesh in central India. This study was conducted for a period of one year i.e. April 2021 to March 2022 in an urban re-settlement slum colony.

Complete line listing of 576 breastfeeding women in the study area was done. Then the study subjects were interviewed. Homes that were noticed to be locked on the initial visit were checked again and excluded if still locked. The semi-structured, pre-formed performa was used to interview mothers. House-to-house visits were used to gather data on the participant's demographics, breastfeeding knowledge, and practices. Their written informed consent was obtained in the local language once the purpose of the study was explained to them. It took around 25-30 minutes to interview each subject. Privacy was maintained while conducting the interview. Anonymity and confidentiality were ensured to the study participants.

Study was conducted after obtaining necessary permission from Institutional Ethical Committee. The Microsoft Excel Sheet 2009 was used to enter all of the gathered data. After that, the data were transferred and examined using SPSS version 21. Qualitative data were represented in the form of frequency and percentages. Chi Square test and Fisher Exact test were applied to find out association of exclusive breast feeding with selected socio□demographic factors. Statistical tests were applied considering p value <0.05 as statistically significant.

Findings

Of total 576 eligible subjects, ten houses were found locked despite two visits hence excluded. 12 mothers did not provide consent for this interview hence again excluded. data of 4 subjects, was found incomplete. Thus, finally data of 550 study participants was analyzed and presented here.

Most (n=384, 69.8%) of the lactating mothers were between 19 and 28 years of age. Four hundred and seventy-three (86%) mothers were illiterate. Of total, majority (n=348, %) of study subjects belonged to lower socio-economic status. Religion wise, more than 90% (n=502) were muslim. Most (n=395, %) of the lactating mothers were staying at joint family. Of total 550 mothers, 166 (%) did not get ANC registration done whereas 290 (%) mothers delivered at home rather than hospital.

Of 550 lactating mothers, only 173 (31.4%) timely initiated the breast feeding whereas remaining 377 (68.5%) could not practice timely initiation of breast

feeding. In total, 256 (46.5%) study participants gave colostrum to their new born babies while 294 (53.4%) mothers discarded it. Exclusive breast feeding was practiced by merely 44 (8%) subjects. Regarding correct time of initiation of complementary feeding, most (n=392, 71.3%) of the study participants did not knew that correct time of initiation of complementary feeding is when the new born attains 6 months of age. Pre-lacteal feed was given to 417 (75.8%) of the babies.

Out of the total mothers, 377 (68.5%) could not practice timely initiation of breast feeding. Most common reason (264, 70%) for the same was insufficient knowledge about early initiation of breast feeding among mothers. Milk not letting down (67, 17.8%) and mother not comfortable (56, 14.9%) were other two important reasons. Not good for health of newborn (108, 36.7%), not easily digested by the newborn (thick) (85, 28.9%) and myths prevalent in society (64, 21.8%) were three most common reasons for discarding colostrum by mothers. Two common reasons for the discontinuation of exclusive breastfeeding were inability of mother to feed the baby (288, 56.9%) and sick infant (105, 20.8%). (Table 1)

Table 1. Distribution of study subjects on different aspects of breastfeeding

Variables		Frequency	Percentage
Reasons for delay in timely initiation of breast feeding* (n=377) 68.5%			
1	Insufficient knowledge about early initiation of breast feeding	264	70.0
2	Milk did not let down	67	17.8
3	Mother not comfortable	56	14.9
4	Myths prevalent in society	42	11.1
5	Infant not well	25	6.6
6	Others	20	5.3
Reasons for discarding colostrum* (n=294)			
1	Not good for health of newborn	108	36.7
2	Not easily digested by the newborn (thick)	85	28.9
3	Myths prevalent in society	64	21.8
4	Elder's advice	40	13.6
5	Socio-cultural reasons (fed after third days)	03	1.0
6	Others	12	4.1
Reasons for cessation of exclusive breast feeding*(n=506)			
1	Mother not able to feed the infant	288	56.9
2	Infant not well	105	20.8
3	Insufficient milk output	72	14.2
4	Working mother	22	4.3
5	Others	36	7.1
*Multiple responses permitted			

Lower socio-economic status, muslim religion and joint family were found to be associated with practice of exclusive breastfeeding ($P < 0.01$). Illiteracy of head of the family, illiteracy of mother and home delivery were also found to be associated with practice of exclusive breastfeeding ($P < 0.05$). No association was observed with the ANC registration with practice of exclusive breastfeeding ($P > 0.05$). (Table 2)

Table 2. Association of exclusive breast feeding with selected socio-demographic factors

Selected socio-demographic factor	Practice of exclusive breast feeding		Total	Test of significance
	Yes (n=44)	No (n=506)		
Illiteracy of head of the family	30 (6.8%)	410 (93.2%)	440 (100%)	$\chi2$= 4.1749, df=1,p=.041*
Illiteracy of mother	33 (6.9%)	440 (93.1%)	473 (100%)	$\chi2$= 4.8064, df=1,p=.028*
Lower socio-economic status	38 (10.9%)	310 (89.1%)	348 (100%)	$\chi2$= 10.9734, df=1,p=.001*
Muslim religion	24 (4.8%)	478 (95.2%)	502 (100%)	$\chi2$= 19.4653, df=1,p<.001*
Joint family	22 (5.5%)	373 (94.5%)	395 (100%)	$\chi2$= 11.2486, df=1,p<.001*
ANC registration	33 (8.6%)	351 (91.4%)	384 (100%)	$\chi2$= 0.6094, df=1,p= .435
Home delivery	16 (5.5%)	274 (94.5%)	290 (100%)	$\chi2$= 5.1378, df=1,p< .05*

Discussion

A critical turning point in the development of the infant is the timing of breastfeeding beginning and adequate breastfeeding duration. If infants are placed to the breast within the first 60 minutes after delivery, when the sucking reflex is most active and they are awake and alert, their chances of exclusively nursing improve.[7] Only 173 (31.4%) of the 550 lactating mothers in this study were able to practise timely initiation of breastfeeding, leaving 377 (68.5%) unable to do so. Another study from South India on the factors influencing Early Initiation of Breastfeeding (EIBF) in healthy term newborns found that the use of prelacteal feeds, lower segment caesarean section (LSCS) delivery, and mother sickness are the primary influences on EIBF.[8]Similar outcomes were seen in an Andhra Pradesh study.[9] According to study, 36.30% of subjects had knowledge about correctinitiation of breastfeeding. Lack of knowledge may result from inadequate coverage of breastfeeding advice given to the mother during antenatal consultations.

We observed that pre-lacteal feed was given to 417 (75.8%) of the newborns in this study. Pre-lacteal feeding was seen to be given to 417 (75.7%) of the infants in this study. Another population-based study from the Punjabi city of Patiala found that 50.81% of the infants received prelacteal feeds.[10] Numerous investigations have demonstrated that prelacteal feeding is a deeply ingrained practise in India. These studies have presented a range of data from around the states.[11,12] It is a widely held misconception that children take on the characteristics and appearance of the individual who provides prelacteal nutrition. Drinks including tea, boiled water, honey, sugar water, jaggery (a coarse brown sugar produced from palm sap), glucose with plain water, diluted animal milk, canned milk, ghee, and castor oil were among the prelacteal feeds that were given to newborns babies.[13,14]

In this study, 256 (46.5%) mothers gave colostrum to their new born babies while 294 (53.5%) mothers discarded it. Another study from the coastal region of South India produced findings that are almost identical to these ones.[15]In their study, Divyarani and Patil from Karnataka stated that 56% of infants received colostrum.[16] This is in contrast to the studies from Raipur's slums and rural Uttarakhand. [17,18] These studies have estimated that, based on their observations, 80% of infants received colostrum feeding. According to a study by Sinha LN et al. in the underserved Mewat area of Haryana state, mothers most frequently discard colostrum because they believe it is unsafe for the baby (19.77%), unhygienic (17.44%), or social norms (8.14%).[19]

In a meta-analysis on colostrum feeding practises in northern India, Chaturvedi M. and Awasthi S. found that the majority of studies discarded colostrum because it was not deemed healthy, some believed that the newborn baby would not properly digest it, and some households fed it to the sister-in-law after the third day as was customary.[20] Multiple barriers to EBF were observed by Saxena Y et al., including insufficient mother's milk, caesarean sections, and pressure from family elders to start top milk.[21] Many

nursing and weaning approaches are not beneficial to the child's growth and development, according to a recent systematic review (2022) on the investigation of breastfeeding habits in India. The report also notes that, despite widespread use of early breastfeeding, colostrum is still being wasted.[22] According to this systematic review, a transcultural study is required to comprehend cultural practises that could obstruct the early start of the breastfeeding, EBF, and weaning processes, which will help create various intervention modules in accordance with local customs.

Regarding association of exclusive breast feeding with selected socio-demographic factors, we observed that lower socio-economic status, muslim religion and joint family were found to be associated with practice of exclusive breastfeeding. Illiteracy of head of the family, illiteracy of mother and home delivery were also found to be associated with practice of exclusive breastfeeding. One of the most potent predictors of the practise of exclusive breastfeeding, according to many research, is maternal education. These results also agreed with those of other studies by Srivastava and Awasthi[23] in urban Lucknow and Obbulareddy and Narreddy[24] in Andhra Pradesh, which found that neonates of parents who had never attended school were significantly less likely to be exclusively breastfed than those whose parents had. Another Punjabi study[10], which is consistent with our findings. Significant correlations between exclusive breastfeeding and the mother's education level, socioeconomic status, nuclear family status, history of antenatal care registration, and hospital delivery have been found.

Conclusion

The issue of lower prevalence of early breastfeeding initiation and exclusive breastfeeding continues to persist in the study area. Still, colostrum is being discarded. The prelacteal feed beliefs that prevent postpartum mothers from starting breastfeeding early must be dispelled. The significance of early breastfeeding, early breast feeding, and early weaning practises as health promotion activities in this respect must be emphasised by community health workers and grass root health care workers particularly Accredited Social Health Activists (ASHA) and Auxiliary Nurse Midwives (ANM).

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Original Article

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A Comparative Study of Visual Outcome and IOP Changes in Postoperative PCO Cases Among Diabetics and Non Diabetics Following Nd: YAG Laser Capsulotomy

Anil Kumar[1], Pranesh Kulkarni[2]

[1]Post-graduate, Department of Ophthalmology, Faculty of Medical sciences Khaja Banda Nawaz University Kalaburagi, (Karnataka), [2]Professor and Head, Department of Ophthalmology, Khaja Banda Nawaz University, Faculty of Medical Sciences, Kalaburagi, (Karnataka).

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Abstract

Background: Posterior capsular opacification is the most common long term complication of modern IOL surgery. ND: YAGlaserre mains the corner stone of its treatment. In this study, an attempt is made to study the visualout come and change in the intraocular pressure following Nd: YAG laser capsulotomy and compare the results between diabetic patients and non-diabetic patients.

Method: This was a prospective study of 100 patients (50 diabetics and 50 nondiabetics), conducted in Khaja Banda Nawaz Teaching and General Hospital, Kalaburgai. All patients in the age group 45-75 years, attending the regular OPD who presented with visually significant posterior capsular opacification and were treated with Nd:YAG laser capsulotomy. Patients were included in the study taking into consideration inclusion and exclusion criterias. Patients were followed up on first day, first week and the four weeks and the improvement in the BCVA and the changein IOP (Intra Ocular pressure) were recorded.

Results: All the patients treated for PCO with Nd:YAG laser capsulotomy showed an improvement in visual acuity. The visual outcome at four weeks (41%had $\geq$ 6/12) was found to be better than that at first week (34 % had the same) and first day (16% had the same). The final visualoutcome at 4 weeks was found to be better in non-diabetics (52% had$\geq$6/12) compared to diabetics (30% had$\geq$6/12). All the patients showed an increase in IOP at the first day and first week of follow up and return to near normal of baseline values at four weeks of follow up, the pattern of change in IOP being similar in both the study groups.

Conclusion: Nd:YAG laser capsule to May effectively improves the visualacuity inpatients with visually significant PCO. The comparatively poor outcome in the diabetic group can be attributed to the associated retinopathy changes. Nd:YAGl aser capsulotomy is associated with a transient rise in the intraocular pressure in all patients which can very rarely remain persistently high.

Keywords: ND: YAG, Best corrected visual acuity (BCVA), Posterior capsular opacification (PCO), intraocular pressure(IOP)

Corresponding Author: Pranesh Kulkarni , Professor and Head, Department of Ophthalmology, Khaja Banda Nawaz University, Faculty of Medical Sciences, Kalaburagi, (Karnataka).

E-mail: kdrpranesh@gmail.com

Introduction

Posterior capsule opacification is the most common long tern post-operative complication following un-complicated cataract surgery[1]. It usually causes a decrease in the visual acuity by directly blocking the visual axis. It can also cause indirect complications secondary to mechanical forces.

Diabetics are at increased risk of developing PCO[2] but the rate of progression may be slower in the diabetes compared to non-diabetics[3].

Various methods have been employed for the prevention of PCO like capsular polishing implantation of intra ocular lens with concave posterior surface, the surface modified lenses, and usage of anti-mitotic but none of these have shown to be successful on long term follow up. Hence attempt was made to compare the outcome of Nd: YAG laser posterior capsulotomy in diabetes and non-diabetes developed PCO post-operatively in terms of the best corrected visual acuity (BCVA) and intra ocular pressure (IOP) in both groups.

Material and Method

100 (one hundred) patients aged between 45-75years regularly visited to Ophthalmology department of KBN teaching and general hospital Kalaburgi-585102.

Inclusive Criteria: The patients diagnosed PCO Aged between 45-75 years planned for Nd:YAG capsulotomy. Consent taken from participants.

Exclusion Criteria: All hypertensive patients, Patients with type 1 DM. Patients with anterior segment pathology like corneal scar, corneal irregularity, corneal edema, keratitis, conjunctivitis, Patients with glaucoma, Patients with suspected cystoid macular edema.

Method: Out of 50 patients were type-II DM and 50 were non-diabetics. Detailed history was taken in prescribed proforma. Visual acuity was checked by using snellen's visual acuity chart.

Pupils were dilated using tropicamide 0.5% and phenylephrine 5% drops. Slit lamp examination was done to assess anterior segment with special attention to type and grade of PCO. Further Fundus examination was done. IOP was measured using Goldmann Applantion Tonometre.

Assessment of PCO: Pupils were dilated and slit lamp bio microscopy using retro illumination was performed giving special attention of posterior capsule under IOL optic. PCO grading was done by kuck Sumer etal[5] by subjective assessment of the extent and density (assessed by its adverse effect on BCVA) of the lensepithelial cells migration on the posterior capsule.

Nd: YAG capsulotomy was done by using topical anaesthesia, 1.2 drops of proparacaine 0.5%, patients were made to Sit comfortably at APPA SAMY Nd: YAG laser machine and an illuminated target were provided to the patient for maintaining steady fixation. Abraham lens (contact lens) was placed to stabilize the eye and to improve the laser optics and facilitate accurate focussing. Once the procedure was completed, the patient was advised regarding the scheduled follow up day 1, 1st week and 4th week after the procedure. During each follow up BCVA and IOP were recorded.

Duration of study was March-2021 to August-2022.

Statistical analysis: Grades of PCO were classified with percentage. The follow up at various interval in both groups were compared with t test and significant results were noted. The statistical analysis was carried out in SPSS software. The ratio of male and female was 1:1.

Observation and Results

Table-1: Distribution of patients according to grade and type of PCO

Fibrous – 28 (56%) in group-A (diabetics), 33 (66%) in group-B (Non-diabetics)

Pearl – 22 (44%) in group-A, 17 (34%) in group-B

Table-2: Comparison of pattern of change in Intra-ocular pressure during follow-up

Pre Op ND: YAG in group-A 14.4 (± 2.59), 20.2 (±2.25) in follow-up, 9.4 (± 2.46) First week, 15.18 (± 2.11) up to 4 week.

Pre OP V/s don I, t test 19.2 and p<0.001

Day 1 v/s 1 week, t test 2.37 and p<0.001

1 week v/s 4 week, t test 15.8 and p<0.001

In group-B

Pre-OP ND: YAG – 14.4 (± 2.52), 20.86 (±2.90) Day

Pre-OP v/s Day-1 t test 15.5 and p<0.001

20.86 (±2.90) Day-1, 19.56 (±4.10) 1 week

Day 1 v/s 1 week, t test 2.12 and p<0.03 and

19.56 (±4.16) Follow-up 1st week, 15.32 (±3.47) Follow-up 4th week

1 week v/s 4th weeks t test 11.3 and p<0.001

Table 1: Distribution of patients according to grade and type of PCO

Type of PCO	Group-A (Diabetic)		Group-B (Non-Diabetic)		Total	
	No	%	No	%	No	%
Fibrous	28	56.0	33	66.0	61	61.9
Pearl	22	44.0	17	34.0	39	39.0
Total	50	100.0	50	100.0	110	100.0
X^2 Test value p-value	$X^2 = 1.054$, p= 0.719, NS					

Table 2: Comparison of pattern of change in IDP during following-up within the group

Groups	Pre-op ND: YAG	Follow-up Day 1	Follow-up 1 week	Follow-up 4 week
IOP	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD
Group-A (Diabetics)	14.46 (±2.59)	20.20 (±2.35)	19.40 (±2.46)	15.18 (±2.35)
Comparison	--	Pre-op v/s day 1	Day 1 v/s 1 week	1 week v/s 4 week
Group- (Non-Diabetics)	14.40 (±2.52)	20.86 (±2.90)	19.56 (±4.16)	15.32 (±3.47)
Comparison	--	Pre-op v/s day 1	Day 1 v/s 1 week	1 week v/s 4 week
Paired t test	--	t=15.52 p=0.001	t=2.124 P=0.033, S01	t=11.36 p=0.000, HS

NS= not significant, S=significant, HS = highly significant

Discussion

Present comparative study of visual outcome and IOP changes in post-operative PCO cases among diabetics and non-diabetics in north Karnataka population. The grades of types of PCO study included 28 (56%) fibrous in group-A (diabetics) and 33 (66%) in Non-diabetics, 22 (44%) pearl shaped PCO in group-A, 17 (34%) in group-B (non-diabetics) Total 61% fibrous 39% pearl shaped PCO were noted (Table-1). In the comparison of follow-up In group0A (diabetics) pre-operative 14.446 (± 2.59) v/s 20.20 (± 2.25) on first day follow up t test value 19.2 and p<0.001, 20.2 (±2.25) Follow up 1day versus follow up 1st week, 19.40 (±2.46) t test 2.37 and p<0.01 (significant), 19.40 (±2.40) Follow-up 1st week v/s 15.13(±2.15) follow-up 4th week, t test was 15.8 and p<0.001 (highly significant). In group-B pre-operative 14.4 (±2.52) versus, 20.86 (±2.90) First day follow-up t test 15.5 and p<0.001, 20.86 (±2.90) 1st day follow-up v/s 19.56 (±4.16) 1st week follow-up t test 2.12 and p<0.03 (highly significant), 19.56 (±4.16) 1st week follow-up v/s 15.32 (±3.47) t test was 11.3 and p<0.001 (highly significant) (Table-2). These findings are more or less in agreement with previous studies [(6)(7)(8)].

The pulsed Nd: YAG laser has revolutionised approach to PCO membranes Laser capsulotomy has a few advantage in comparison to surgical decision as it is a non-invasive method, an OPD procedure that takes just few minutes causes no discomfort to the patient and also has an added benefit of eliminating endophthalmitis as a potential complication. Elevated Intra ocular pressure (IOP) is the most common phenomenon but transient complication following Nd: YAG laser capsulotomy[(9)].

Few elderly patients underwent Nd: YAG laser capsulectomy did not show satisfactory results it was due to age related macular degeneration cystoids macular oedema ischemic optic neuropathy and amblyopia which were un-identified before the operation[10].

In the present comparative study 24% of type-II DM patients had visual acuity ≥ 6/12 and 20% in non-diabetic patients in 1st day follow-up 26% of type-II DM had visual acuity ≥ 6/12. Hence it clearly confirms that poor visual acuity is due to diabetic retinopathy[11].

Summary and Conclusion

Present comparative study of visual out come and intra ocular pressure (IOP) in post-operative PCO cases among diabetic and non-diabetic patients. In diabetic patients satisfactory visual acuity was not observed due to diabetic retinopathy changes. Moreover few old aged patients had also poor outcome of visual acuity due to age related degenerative diseases. However the present Nd: YAG laser capsulotomy has better results as compare to other older techniques.

Limitation of Study: Owing to tertiary location of research centre, small number of patients, lack of latest techniques, we have limited findings and results.

This research paper was approved by Ethical committee of Faculty of Medical sciences Khaja Banda Nawaz University Kalaburgi, (Karnataka)

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Original Article

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Assessment of Clinical Profile, Perceptions of Polycystic Ovarian Syndrome & Its Associated Factors among Adolescents Girls Attending O&G OPD

Sushree Priyadarsini Satapathy[1], Rabinarayan Dash[2]

[1]Assistant Professor, Department of Community Medicine, BBMCH Balangir, [2]Assistant Professor, Department of O & G,BBMCH Balangir.

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Abstract

Background: Polycystic ovarian syndrome is a complex disorder wherein numerous genetic variants and environmental factors interact, combine & contribute to its pathophysiology.

Objectives: 1) To find out the differences in clinical manifestations, hormonal & biochemical parameters among adolescent girls from urban and rural area with PCOS. 2) To assess the perceptions about PCOS among the study respondents.3) To determine the association between the various factors with perception among the adolescents girls.

Methodology: It was a cross-sectional study conducted for a period of four months (Feb. to May 2022) among 236 adolescent girls (10-19 years) of age, from urban and rural area attending Obst. & Gynaec OPD of Bhimo Bhoi Medical college & Hospital (BBMCH), Balangir, Odisha.

Results: Adolescent girls from urban area 23(19.5%) had shown more proportion of PCOS Compared to their 12(10.2%) rural counterparts. The difference in clinical presentation among the respondents residing in urban and rural area was found to be significant with yates correction X^2 value =12.8481, p=0.00338 in case of acne and X^2 value = 6.843, p=0.00889 for hirsutism. The perceptions regarding PCOS disease process and its management was found to be better among adolescent girls of urban area compared to their rural counterparts. Respondents from both urban and rural had no idea regarding the long term sequel of PCOS. The difference between the level of perception with the educational qualification level of the adolescent girls was found to be significant with X^2 = 105.0399, p=0.001.

Conclusion: Awareness regarding the importance of healthy diet, lifestyle changes, Yoga, meditation, stress management to be done through proper counseling.

Keywords: Adolescents girls, Knowledge, Perception, Polycystic ovarian Syndrome.

Introduction

Most common endocrine disorder in women of reproductive age group is Polycystic ovarian syndrome. The clinical presentation includes acne, irregular or absence of menstrual periods, hirsutism.

PCOS is not only a disorder of modernised

Corresponding Author: Sushree Priyadarsini Satapathy, Assistant Professor, Department of Community Medicine, BBMCH, Balangir.

Mobile: 8763817256

E-mail: sssatapathy22@rediffmail.com

lifestyle of urban population but it is also prevalent in the rural areas where people still follow a traditional lifestyle.

There is an increase risk for various metabolic, reproductive, oncological, skin manifestations and psychological manifestations. PCOS in itself along with its associated co-morbidities reduces the quality of life and increases the out of pocket expenditures (OOPE).

In this modern era though there are so many diagnostic methods and treatment modalities available to combat PCOS but still issues contributing to delay in seeking medical is present it is due to lack of perceptions ,awareness and low educational level among the adolescent girls for which PCOS has still been an enigmatic disease among the adolescent population.

In 2012 worldwide PCOS has affected 116million women (3.4%) estimated by World Health Organization (WHO).[1] Globally, prevalence estimates of PCOS are highly variable, ranging from 2.2% to as high as 26%. In India, experts claim 10% of the women to be affected by PCOS and yet no proper published statistical data on the prevalence of PCOS in India is available. [2]

A brief systematic review reported that out of 27 surveys the pooled mean prevalence was found to be 21.27% using different diagnostic criteria.[3]

The most recent criteria that is being used for diagnosis of PCOS is Androgen Excess Society Task Force criteria 2006.(AE-PCOS 2006) which includes: 1) Presence of hyper-and rogenism (clinical and/ or biochemical), 2) Ovarian dysfunction (oligo-anovulation and/or polycystic ovaries), and 3) the exclusion of related disorders of thyroid, adrenal and Pituitary.[4]

But there has been very few comparative studies conducted to determine the difference in proportion of PCOS among Indian adolescent girls from Urban and Rural attending the hospital set up, their perceptions regarding the symptoms and its complications and the various associated factors affecting the perceptions. With this background we have conducted this study with the following

Objectives - 1) To find out the differences in clinical manifestations & Biochemical-hormonal Parameter among urban and rural adolescent girls with PCOS. 2) To assess the perception about PCOS among the study respondents. 3)To determine the association between the various factors with perception among the adolescents girls

Methodology

Study setting and Design: It was a cross-sectional study conducted for a period of four months (Feb. to May 2022) among 236 adolescent girls (10-19 years) of age, from urban and rural area, attending Obst. & Gynaec OPD of Bhimo Bhoi Medical college & Hospital (BBMCH), Balangir, Odisha.

Sample size The sample size was determined using the formula for a single population proportion based on the assumptions of 95% confidence level, 5% degree of precision and 18% the proportion of PCOS among adolescents girls.[5] Thus the calculated 'n' was 236. The estimated sample was pooled through equal contributions from each residence area i.e (urban and rural)

Sampling technique: A team of 2 faculty were the investigators who were oriented about the tool and survey in advance. The survey team scheduled their visit to the department outdoor thrice a week. On any survey day, each of the members of the team visited the department, out of all the available outdoor patients who satisfied the inclusion and exclusion criteria, two patients from rural area and 2 from urban area were enrolled for survey through simple random sampling by lot. The name of villages and town area which were the catchment area of BBMCH, Balangir were kept in hand which was obtained from Census 2011.[6]

Inclusion criteria Adolescent girls of age between 10-19 years who had attained menarche coming from urban and rural area for treatment to Obst and Gynae OPD for the first time with her medical complains and given informed consent by her or assent by her parents who had accompanied her for check-up to hospital were included for study purpose.

Exclusion criteria Females with thyroid disease, hyper-prolactinemia, and adrenal hyperplasia and those who were coming for follow up visits were excluded.

Study tool & Data collection- The survey was conducted during the initial two months followed by data compilation, analysis and project writing during the next two months. A semi-structured questionnaire was used which was validated by a pilot study on forty patients. It was administered by the research staff by face to face interview..

Ethical approval: Prior approval of the institutional ethical committee was obtained for the study. Informed written consent was ensured from the respondents. Minors and incapacitated patients assent was taken which were given by the accompanying attendants.

Data management and statistical Analysis: The data collected was analysed by using SPSS statistical package (version 21.0). Descriptive statistics were performed on the socio-demographic data and Pearson's chi-square test and Fishar exact test was used to find out the difference in the clinical manifestation, perception level among the respondents and to find out association between the perception with the various factors. To compare the biochemical –hormonal parameters between the study respondents the unpaired student t test was used. The differences between the groups were considered significant when the p value was <0.05.

Results

Mean age of the study participants was 15 ± 3 years with maximum age range of 19 years and minimum age of 11 years. All the respondents from urban area 118(100%) were un-married where as those from rural area only 1% were married. Respondents from urban area were 110 (93.2%) literate & 6.8% illiterate whereas those from rural area i.e 40 (33.9%) were illiterate. The study participants from urban area most of them belonged to middle class 64 (54.2%) followed by upper class 44 (37.3%) &10 (8.5%) were of lower SES class respectively whereas those from rural area 75(63.6%) mostly belonged to lower Class according to Modified Kuppuswamy's scale. [7]

It was observed that the proportion of PCOS in adolescent girl attending BBMCH, Balangir was 35 (14.7%). In term of proportion of PCOS among respondents based on residence, it was seen that out of 35 respondents, 23(19.5%) of the study participants were from urban area and 12(10.2%) reside in rural area.

The difference in clinical presentation among the respondents residing in urban and rural area was found to be significant with yates correction X^2 value was 12.8481, p=0.00338 in case of acne and X^2 value was 6.843, p=0.00889 for hirsutism. Oligomennorhea was the most common menstrual disorder complained by the study participants from both urban 21(91.4%) and rural 9(75%) area.

Table 1 highlighted the survey results on the perceptions of the study respondents regarding PCOS which implied that respondents from urban area 77 (65.3%) thought PCOS as a disease. Regarding the treatment modalities availability those respondents whose residence is in urban area majority of them had idea regarding the various method of treatment i.e (75.4%) whereas those participants whose residence is from rural area almost half 59(50%) could not say whether PCOS was preventable, controllable or curable The difference of the perceptions among the respondents based on residence area (urban and rural) regarding the disease process (X^2 =43.6538 p=0.0001)and the treatment modalities available (X^2 =20.291, p=0.002) were found to statistically significant. (Table 3)

Table 1: Perceptions about PCOS among study respondents (n=236)

Variables	Respondents from Urban area (n=118)	Respondents from Rural area (n=118)	Total (n=236)	Chi-Square P-Value
What do you mean by PCOS				X^2 (with yates correction) =41.1359 p=0.0001**
Natural Phenomena	8(6.8%)	2(1.7%)	9(3.8%)	
Disease	77(65.3%)	34(28.8%)	111(47%)	
Don't know	33(27.9%)	82(69.5%)	116(49.2%)	

Continue.....

What are the methods of various treatment modalities				X^2 =20.291 p=0.002**
Preventable	11 (9.3%)	2 (1.7%)	13(5.5%)	
Controllable	31(26.3%)	19(16.1%)	50(21.2%)	
Curable	47(39.8%)	38(32.2%)	85(36%)	
Don't know	29(24.6%)	59(50%)	88(37.3%)	
Does PCOS affect Pregnancy				X^2 = 59.8317 p=0.0001**
Yes	91(77.1%)	42(35.6%)	133(56.4%)	
No	13(11%)	5(4.2%)	18(7.6%)	
Don't know	14(11.9%)	71(60.2%)	85(36%)	
Any idea about long term sequels				X^2 = 2.9246 p=0.08
Yes	41(34.7%)	29(24.6%)	70(29.7%)	
No	77(65.3%)	89(75.4%)	166(70.3%)	
Does the role of life style modifications helpful				X^2 (with yates correction) = 85.6324 p=0.0001**
Yes	63(53.4%)	3(2.6%)	66(28%)	
No	24(20.3%)	22(18.6%)	46(19.5%)	
Don't know	31(26.3%)	93(78.8%)	124(52.5%)	
Does the role of Early medical help useful				X^2 (Fisher exact test) = 8.933 p=0.001**
Yes	102(86.5%)	114(96.6%)	216(91.5%)	
No	3(2.5%)	2(1.7%)	5(2.1%)	
Don't know	13(11%)	2(1.7%)	15(6.4%)	

[*figure in bracket indicate percentage; **where p is significant with a value below 0.05]

Thee association of education with the perception level among respondents which showed that who were illiterate were having no perception or idea regarding PCOS. The difference between the level of perception with the educational qualification level was found to be significant with $\mathbf{X^2}$ = 105.0399 ,p=0.001**.

Discussion

PCOS is a disorder of genetic, hormonal and metabolic abnormality that affects not only the fertility but also associated with long term complications.

It was observed in the present study that the Proportion of PCOS was 35(14.7%) which was more seen among the respondents belonging to urban area 23(19.5%) compared to rural counterpart i,e 12(10.2%)

Study by **Balaji et al and Laddad et al** had found out the prevalence of PCOS to be 18% and 17.33% in their study which was a slightly higher as compared to present study findings. [5][8]

Gupta et al had observed observed that prevalence of PCOS among urban respondents was 20% whereas among the rural group it was only 4%. [9] The variation in proportion of PCOS among the urban and rural respondents might be due to lifestyle factors, sedentary activity, decreased awareness, less accessibility to health care facilities may be the contributing factors.

In the present study we found out that 11 (91.7%) of respondents who were from rural area presented with acne and 10(83%) had hirsutism whereas the urban participants had acne (21.7%) & hirsutism (30.4%) as clinical presentation on the time of visit. In a comparative study done by **Gupta et al** it was concluded that clinical manifestations like hirsutism was seen more in urban group (20%) as compared to rural group (6%) which was different from the present study findings.[9] The respondents from urban area might be undergoing cosmetic care compared to those who reside in rural area for which acne and hirsutism were less clinical manifestation seen among urban participants compared to their counter part.

Javed et al reported that, 44% of PCOS respondents were complaining of oligomennorhea which was comparatively less proportion compared to the findings.[10].

Study by **Rasool et al AL-Lami et al and Radha et al** observed that, level of serum LH, Prolactin, FBS, serum insulin and serum. testosterone were significantly higher among women with PCOS, except FSH, rural participants diagnosed with PCOS had increased serum insulin level as compared to urban group [11] [12] [13]

In the present study we found that the respondents from urban area i.e 77(65.3%) thought PCOS to be a disease whereas more than half of the participants from rural area i.e 82(69.5%) had no idea regarding PCOS.

Jena et al, reported that out of 965 adolescents girls 25.9% were aware about PCOS and among them majority (48%) belonged to urban area whereas the awareness regarding PCOS was very low in the rural area. Diet restriction and exercise are the way to life style modifications which have positive effect on PCOS was accepted by 70% of the urban adolescent girls which was almost similar to the present study findings.[14]

Study conducted by **Vaithy A k et al** in south east coastal rural population and **Palomba et al** had observed that 90% of the adolescent girls had a very vague idea about PCOS and among them there was low awareness ratio regarding infertility, long term sequelae of PCOS like diabetes, hypertension. [15],[16] These was similar with the present study finding where we have seen that more than half of the rural participants i.e. 82(69.5%) had no idea regarding PCOS.The difference in the perception was seen it might be due to lack of knowledge, awareness and stigma.

Study by **Rao et al** reported that the educational level played a very important role those with a graduate degree were more aware and had good level of understanding regarding PCOS. [17] In our study we found out that the difference between level of perception with the educational qualification level was found to be significant with $\mathbf{X^2}$ = 105.0399 ,p=0.001** ;who were illiterate were having no perception or idea regarding PCOS whereas those with educational qualification level more than secondary or higher secondary were more aware about the disease.

Conclusion

The perception regarding PCOS, its treatment modalities, its effect on fertility & pregnancy was seen better among urban adolescent girls compared to their rural counterpart. But most of the adolescents in both the groups were unaware about the long term complications. Respondents having no educational qualification were having less awareness and knowledge (perception) regarding the PCOS.

Recommendation: Health education & campaigning through various IEC materials to increase the availability of information which will reduce the shyness or stigma among them.

Limitation: It was a hospital based study thus external validation must be limited. So a community based study must be done.

Conflict of Interest: Nil

Funding: Nil

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Original Research Article

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Pancytopenia in Pediatric Population: An Etiological and Haematological Analysis in a Tertiary Care Hospital, TS

Fakeha Firdous[1], Zuafshan Sultana[2], Anjani Devi[3], Srujana R[4], G J Vani Padmaja[5]

[1,2,4]Assistant Professor, [3]Associate Professor, [5]Professor, Department of Pathology, Niloufer hospital, Osmania Medical College, Hyderabad.

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Abstract

Pancytopenia is a haematological condition rather than a disease, where the RBC, WBC and platelets are decreased in a patients blood. If one has pancytopenia it means there is an underlying cause responsible for it .Diagnostic evaluation of pancytopenia requires detailed clinical history, physical examination, haematological investigations including thorough peripheral blood smear and bone marrow examination**.** Pancytopenia is a serious condition, which should not be ignored. Prompt treatment is required. The etiological causes vary from simple causes to life threatening conditions. So early recognition of the causes helps in improving the prognosis of the patients.

Keywords: Pancytopenia, haematological investigations, children

Introduction

Pancytopenia is an haematological condition with a triad of findings which may result from a number of disease conditions affecting the bone marrow primarily or secondarily resulting in pancytopenia[1].

Pancytopenia can be diagnosed incidentally when it is mild or it can be seen in few critically ill conditions such as in sepsis.[2]

Table no. 1: Etiology of Pancytopenia

Decreased production	Peripheral destruction	Decreased production and Peripheral destruction
Aplastic anemia-congenital and acquired	Autoimmune haemolytic, pancytopenia	Paroxysmal nocturnal hemoglobinuria
Bone marrow infiltrating conditions	Splenic sequestration	SLE Drugs leukemia
Malignancy		Hemophagocyticly mphohistiocytosis
Primary and autoimmune myelofibrosis		

Corresponding Author: Fakeha Firdous, Assistant Professor, Pathology, Niloufer Hospital, Osmania medical college, Hyderabad.

E-mail: drfakeha23@yahoo.co.in

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Granulomatous disorders		Transfusion associated graft versus host disease
Metabolic disorders		Infections
Nutritional deficiencies		
Vitamin B12		
Folic acid		
Copper		
Myelodysplastic syndrome		

Pancytopenia defined as Hb<or equal to 10g/dl, total WBC count<4000*10^9, platelet count< or equal to 150*10^9/L

The reticulated platelet count or immature platelet fraction though not used commonly, can also help distinguish if the pancytopenia is due to impaired production or increased consumption.[3]

Pancytopenia etiology in children may vary from transient bone marrow suppression because of simple viral infections to infiltration of marrow by life threatening conditions like malignancy .[5]

Bone marrow cellularity, morphology and composition in cases of pancytopenia vary according to the underlying cause.

Primary production defect is associated with hypocellular marrow.

Cytopenias resulting from defective/improper hematopoiesis, increased peripheral utilization or destruction of cells is usually associated with normocellular or hypercellular marrow.

The Pancytopenia etiology varies in patients from transient bone marrow suppression because of viral infections to infiltration of bone marrow by life threatening conditions like malignancy.[5]

Pancytopenia may be induced iatrogenically due to certain medicines, chemotherapy or radiotherapy for malignancies.[5]

The composition and cellularity in cases of pancytopenia vary according to the undertlying cause.

Primary production defect is associated with hypocellular marrow.

Cytopenias resulting from defective hematopoiesis or increased peripheral destruction is usually associated with normal or increased cellularity of the bone marrow.[1]

Our study has been initiated to identify simple treatable and also to find out reversible causes leading to pancytopenia.

Consent: Informed written consent from parents/guardians.

Conflict of interest: We authors have no conflict of interest.

Materials and Methods

Ours is a retrospective study which was carried out in our hospital and all records of patients admitted in Dept. of Pediatrics with an initial diagnosis of Pancytopenia during a duration of 1 year 7 months, between January 2021 and august 2022 were reviewed.

Cases who had history of previous blood transfusion were excluded.

A thorough clinical examination, findings, haematological parameters-CBC, retic count and peripheral smear, BMA/BM Biopsy were recorded.

The blood counts were performed on an automated cell counter [sysmex XN 1000] and abnormal findings confirmed by a hematopathologist.

All peripheral blood smears, bone marrow aspirates or trephine biopsy were processed as per standard techniques.[1]

This study has been carried out to find causes which can be easily treated and also find out the reversible causes leading to pancytopenia.

Inclusion criteria:

Children of age group- 1 to 15 years

Pancytopenia on peripheral smear.

Patients with consent [informed]

Exclusion criteria:

Children below 1 year and greater than 15 years.

Known cases of leukemias or aplastic anemia.

On treatment-chemotherapy /radiotherapy.

Past history of blood transfusion.

Not given consent

Results

In our study period of 20 months age group 0 to 15 admitted for pancytopenia were evaluated.

Table 2: Patients distribution according to sex and age.

Age	Male	Female	Total
0-5 years	5	7	12
6-10 years	11	10	21
11-15 years	7	2	9
Total	23	19	42

Out of 42 patients,23 were males and 19 were females.

Males to females ratio 1.2:1

Age range-1to 5 years -12[28.5%]

6 to 10 years-21[50%]

11-15 years-9[21.4%]

Table 3: Etiology table

S. no.	Diagnosis	Number [%}
1	Megaloblastic anemia	28.57%
2	Acute leukemia [ALL]	26.19%
3	Aplastic anemia	2.38%
4	Erythroid hyperplasia	4.76%
5	MDS	2.38%
6	Secondary deposits	2.38%
7	HLH	2.38%
8	Hypoplastic marrow	19.04%

Megaloblastic anemia was the commonest cause of pancytopenia making upto 28.5% of all cases, followed by haematological malignancies accounting for 26.19% of all cases.

Hypoplastic marrow was another important cause accounting for 19.04% of pancytopenia cases.

The other causes included:

Myeloid hyperplasia-11.9%

Erythroid hyperplasia 4.76%

Aplastic anemia-2.38%

MDS -2.38%

Secondary deposits-2.38%

HLH-2.38%

There was adry tap in 2 cases[4.76%] for which bone marrow biopsy was done.one turned out to be ALL and another one megaloblastic anemia.

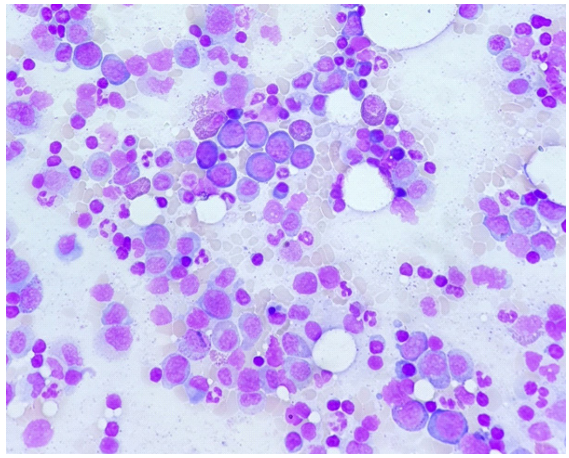

Fig 1: Megaloblastic anemia bone marrow.

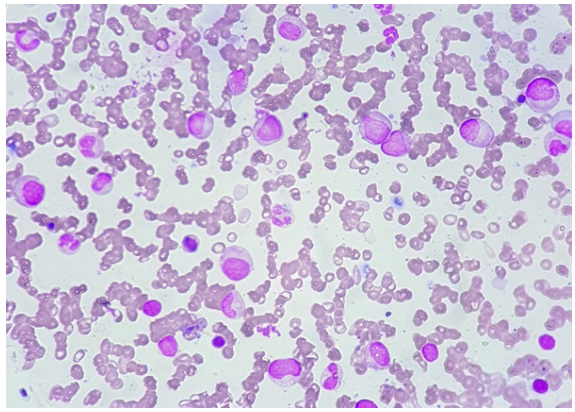

Fig 2: Myeloid hyperplasia bone marrow

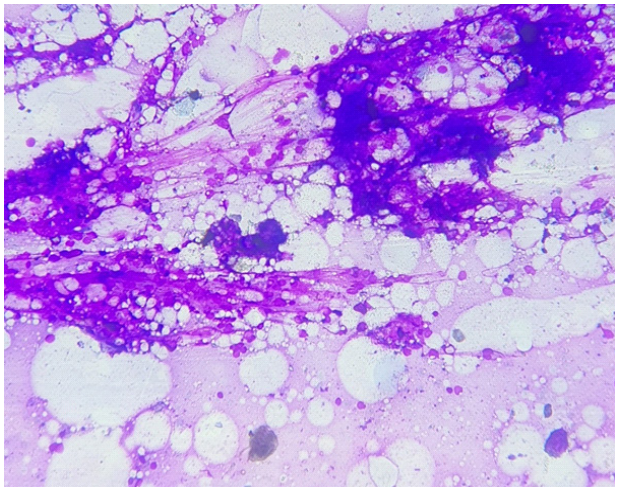

Fig 3: Hypoplastic marrow bone marrow

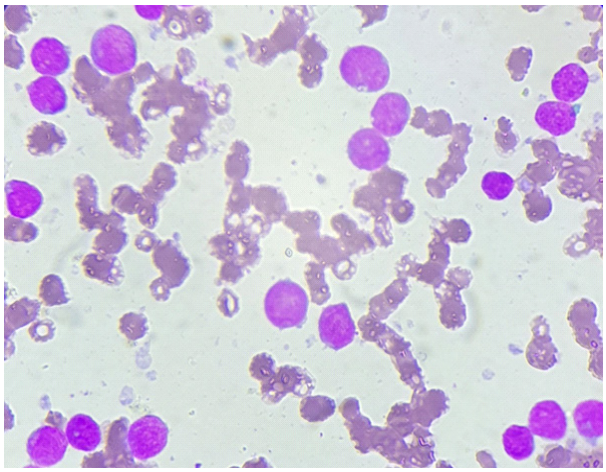

Fig 4: Acute leukemia

Discussion

On observing the results of our study, pancytopenia can be a presentation for a wide variety of illness in pediatric population.

A comparison to similar studies of pancytopenia in adults from india has been done and our study is comparable to most of them.

Megaloblastic anemia was the commonest cause of pancytopenia[28.5%]

Similar to tilak and jain et al[4]

Various studies reported megaloblastic anemia as an important cause of pancytopenia like ours.

Indian studies-bhatnagar et al[3], khunger etal[3]

And other African studies Savage et al[6]

Bone marrow aspiration was an extremely helpful investigation to come to an definitive diagnosis in majority of the cases [95.2%] and was inconclusive[dry tap] in 2 cases[4.76%]

Bone marrow biopsy was done in these 2 cases and diagnosed as ALL and megaloblastic anemia.

Male preponderance noted in our study similar to makajuetal, jha etal[7]

Myeloid hyperplasia causing pancytopenia accounting for 11.9% in our study.

Various causes include infectious etiology, reactive marrow, stress and drugs.[8]

Hypoplastic marrow causing pancytopenia accounting for 19.04% in our study. Various causes include post viral suppression, infections, medications, toxins, herbal medicines, congenital bone marrow failure syndromes.[9]

MDS causing pancytopenia accounting for 2.38% in our study diagnosed as fanconis anemia.

Secondary deposits of small round cell tumor in a27 day old female was another cause leading to pancytopenia in our study.

HLH causing pancytopenia was seen in a one year male post dengue infection.

Acute leukemia causing pancytopenia accounting for 26.19% in our study.[10]

Conclusion

Patients of Pancytopenia may present in emergency room due to thrombocytopenia as severe bleeding. These sick appearing pediatric patients can have a simple, benign and treatable underlying cause. Due to easy availability of automated hematology cell counters, megaloblastic anemia which is an important cause of pancytopenia could be easily picked up. Though Pancytopenia is an important and frequent cause which can lead to morbidity and mortality in pediatric patients, early recognition of the cause may certainly have an impact on their outcome.

Ethical clearance: taken from college ethical committee.

Source of funding: Self.

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Original Article

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Coverage of Antenatal Care Services in a Rural Area of District Nuh, Haryana

Gaurav Bhati[1], Neeraj Gour[2], Pawan Kumar Goel[2], Suraj Chawla[3], Arpit Rustagi[1]

[1]Junior Resident, [2]Professor, [3]Associate Professor, Department of Community Medicine, SHKM Government Medical College, Nalhar, Nuh (Haryana), India.

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Abstract

Background: The district Nuh has been declared as the most backward district of Haryana state and is also listed among the 108 most backward districts of India identified by the National Institute for Transformation of India (NITI) Aayog. National Family Health Survey-4 (NFHS-4) conducted during 2015-16 reported that only 6.5% of mothers utilize four antenatal check-ups in district Nuh. This study was carried out to estimate the coverage of antenatal care services in district Nuh.

Methods: A total of 300 pregnant women who were in their 1st trimester were recruited from the rural area of Primary Health Centre Nagina starting from January 2022 till December 2022. All eligible study participants were interviewed through house-to-house visits to assess the coverage of antenatal care received by them.

Results: A total of 83 (27.6%) participants were primigravida, and 217 (72.3%) were multigravida. Only 25 (8.33%) participants reported receiving full antenatal care services which include early registration of pregnancy (within 12 weeks), a minimum of four ANC visits, at least one dose of diphtheria-tetanus toxoid vaccine, and 100 days of iron & folic acid supplementation.

Conclusion: The coverage of antenatal care services received by pregnant women is low despite the availability of free government services.

Keywords: Antenatal Care; Coverage; Maternal Health; Rural

Introduction

The health of mothers is a primary concern all around the world. The World Health Organization (WHO) envisions a world where "every pregnant woman and newborn receives quality care throughout the pregnancy, childbirth and the postnatal period".[1] When it comes to global health and development, one of the most often addressed topics is the shockingly high rate of maternal death. Maternal mortality refers to deaths due to complications from pregnancy or childbirth. The maternal mortality ratio (MMR) is the most widely used indicator for comparing maternal health status. MMR still remains high even with improved access to maternal health care services. High MMR reflects poor coverage of antenatal care services, poor quality of care, and inequity to access health services. Though the number of women who

Corresponding Author: Suraj Chawla, Associate Professor, Department of Community Medicine, SHKM Govt. Medical College, Nalhar, Nuh (Haryana).

Mobile: 8607945945

E-mail: surajpgirohtak@gmail.com

died each year from complications of pregnancy has declined from 4.51 lac in 2000 to 2.95 lac in 2017 worldwide, over 810 women are still dying every day globally, while for every woman who dies, approximately 20 others suffer serious injuries, infections, or disabilities.[2] In India, it is encouraging to note that MMR has declined from 437 in 1990 to 97 per one lac live birth in 2018-2020.[3]

Routine antenatal visits may increase women's and their family's knowledge of the need of receiving medical attention during childbirth and familiarize them with local medical facilities, which enables them to more effectively seek assistance in an emergency situation.[4] Antenatal interactions can provide a window of opportunity to identify and, in some cases, avert the occurrence of unfavorable delivery outcomes. There is a huge gap in access to key health care, particularly for pregnant women and new mothers, according to the evidence. Access to antenatal care of a sufficient standard is not universally available across society.[5] During the period between 2006 and 2016, the percentage of pregnant women in India who received the recommended minimum of four antenatal consultations rose from 37.0% to 51.2%.[6]

India's healthcare industry is quite diversified, with rural areas receiving far less coverage than metropolitan ones do. In India's rural women, there is a lack of education and awareness about antenatal care. In-district Nuh, a large number of the population is residing in rural areas. National Family Health Survey-4 (NFHS-4) conducted during 2015-16 reported that only 6.5% of mothers utilize four antenatal check-ups in district Nuh.[5] This lower utilization of antenatal services among pregnant women in district Nuh is reflecting a large extent of unattended maternal health complications which in turn contribute towards high maternal mortality. Thus, this study in a rural area in district Nuh has been conducted to assess the coverage of antenatal care services.

Methods

A cross-sectional study was conducted among pregnant women who were in their 1st trimester and were residing in the area catered by Primary Health Centre Nagina which is also the field practice area of the Department of Community Medicine of Shaheed Hasan Khan Mewati Government Medical College Nuh. The data was collected for one year from January 2022 to December 2022. Pregnant women who were not residing in the area had cognitive and communication anomalies and were not willing to participate. The study was approved by the institutional ethics committee of the medical college. Written and informed consent was obtained from all the study participants.

A sample size of 285 was estimated at 95% confidence levels, a 3% margin of error with an expected prevalence of full antenatal care services utilization as 6.5%,[5] and considering 10% non-response. It was taken to the nearest roundabout of 300. Out of a total of six sub-centers of PHC Nagina, two sub-centers (sub-centers Kanker Khedli and Nagina) were randomly selected using the lottery method. On the basis of the birth rate of PHC Nagina which was 30 live birth per 1000 mid-year population, it was estimated that around 1100 pregnancies will occur in a year. All pregnant women in 1st trimester were enrolled through house-to-house visits from each village of selected Sub-centers.

As prescribed by the government of India, four antenatal check-ups are necessary for each pregnant woman between 1st to 12 weeks, 14 to 26 weeks, 28 to 34 weeks, and between 36 and term.[6] For that reason, the four house-to-house visits will be done at 13-16 weeks, 27-30 weeks, 33-36 weeks, and within four weeks post-natal each pregnant women's personal interview was conducted at her home using pretested, predesigned, semi-structured schedule, bearing a specific identification number, regarding the Socio-demographic profile and antenatal care services pattern (all four antennal check-up visits and spectrum of services received during each & every visit). The socio-economic status of the pregnant women's families was assessed using the modified BG Prasad scale updated in 2020.[7] The information collected was kept confidential and inaccessible to others.

The completed interview schedule was checked for completeness, and consistency, and was coded. Data entry was done using MS Excel 2013. Any error identified was corrected. Data were analyzed by using SPSS version 20.0 (Statistical Package for Social Science Inc., Chicago, IL, USA). Categorical data were presented as proportions (%). Numerical data were presented as means and standard deviations.

Results

A total of 300 pregnant women were recruited for the study. The response rate of the survey was 100%. The median age of the study participants was 20 years, ranging from 16 years to 29 years. The education level of participants was: illiterate among 155 (51.7%) study subjects and 145 (48.3%) were literate. The majority (88%) of study subjects belonged to low socioeconomic status (Class IV-V), and 22% belonged to high socioeconomic status (Class I-III). The majority (90.0%) of the study subjects were Muslim. A total of 83 (27.6%) participants were primigravida, and 217 (72.3%) were multigravida. Out of the total, 38.0% of pregnant women had less than two children, and 62% had more than two children. Among study subjects, 93.66% of pregnant women had less than 3 years of spacing between their last two children and only 6.33% of pregnant women had a spacing of more than 3 years between their last two children. (Table 1)

Table 1: Socio-demographic profile of pregnant women (n=300)

Characteristics	n	%
Age (Yrs)		
<20	195	65%
>20	105	35%
Education		
Illiterate	155	51.7%
Literate	145	48.3%
Socio-economic status		
High (Class I-III)	36	22%
Low (Class IV-V)	264	88%
Religion		
Hindu	30	10%
Muslim	270	90%
Gravida		
Primigravida	83	27.6
Multigravida	217	72.4%
Number of children		
<2	114	38%
>2	186	62%
Spacing between last two children		
<3 years	281	93.66%
>3 years	19	6.34%

Out of the total, 64.6% of pregnant women were having the perception that their ANC check-ups should be done at government institutions, whereas 17.3% of pregnant women were having the perception that they should visit Local dai for their ANC check-ups, and 7.3% were having the perception of utilizing private institutions for ANC check-ups. While 10.7% of pregnant women were having the perception that they should go nowhere for their ANC check-ups. The majority (55.7%) of pregnant women were having the perception that only two ANC visits are enough, 19.0% of pregnant women were having the perception that three ANC visits should be done during pregnancy, whereas only 6.7% of pregnant women had the perception that all four ANC visit are necessary. Only 10.7% of pregnant women were having the perception that there is no need for ANC check-up visits and 6.7% were having the perception that four ANC check-ups are necessary (Table 2).

Table 2: Perception of pregnant women about ANC check-ups (n=300)

Perception about	N	%
Place of ANC check-ups		
No check-ups (No-where)	32	10.7%
Village level (Local Dai)	52	17.3%
Government Institutions	194	64.6%
Private Institutions	22	7.3%
Number of ANC check-ups		
No need for check-ups	32	10.7%
Once	24	8.0%
Twice	167	55.7%
Thrice	57	19.0%
Four times	20	6.7%

All of the study subjects (100%) had at least one ANC check-up, followed by 97.66% of pregnant women who had two ANC check-ups. Less than half of the study participants had three ANC check-ups and only 8.33% of pregnant women had all four ANC check-ups (Figure 1).

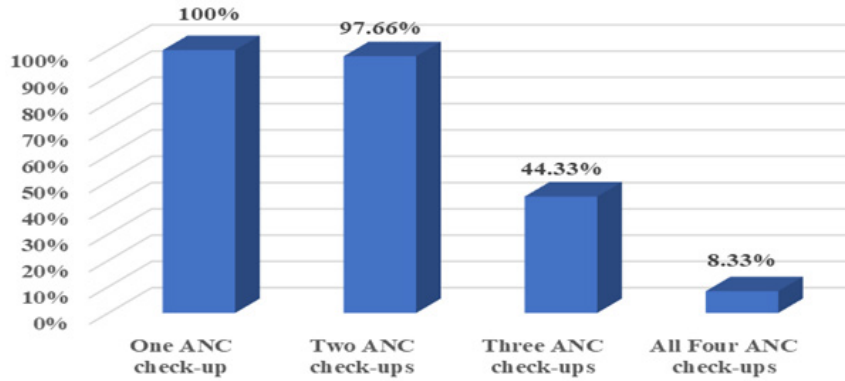

Figure 1: Number of ANC check-ups utilized (n = 300)

Only 29% of pregnant women got registered in their present pregnancy in 1st trimester. The majority (71%) of pregnant women had delayed registration in 2nd and 3rd trimesters. Out of the total 83.33% of pregnant women were fully vaccinated against tetanus and diphtheria. 15% were partially vaccinated and 1.66% of pregnant women were not vaccinated against DT. Out of the total, 99.53% and 99.06% of pregnant women adequately received iron and folic acid supplementation (IFA) in the 2nd and 3rd trimesters & out of those received, 34.27% and 19.48% of pregnant women consumed them. Similarly, 99.06% and 100% of pregnant women received calcium supplementation adequately in the 2nd and 3rd trimesters & out of the received, 32.86% and 18.83% of pregnant women consumed calcium supplementation. Out of all, 90.66% of pregnant women delivered their babies in either government or private institutions and 9.34% of pregnant women preferred to deliver at home (Table 3).

Table 3: Services availed by pregnant women during antenatal check-ups (n=300)

Characteristics	**n**	%
Registration of present pregnancy		
Early in 1st trimester	87	29%
Delayed in 2nd & 3rd trimester	213	71%
DT vaccination		
Fully Vaccinated	250	83.33%
Partially Vaccinated	45	15%
Unvaccinated	5	1.66%
IFA consumed		
During 2nd trimester	103	34.27%
During 3rd trimester	58	19.48%
Calcium tablets consumed		
During 2nd trimester	99	32.86%
During 3rd trimester	57	18.83%
Place of delivery		
Institutions delivery	272	90.66%
Home delivery	28	9.34%

Out of the total, only 8.33% of pregnant women had utilized full antenatal care services (Full antenatal care is at least four antenatal visits, at least one diphtheria-tetanus toxoid (DT) injection, and iron-folic acid tablets or syrup is taken for 100 or more days), whereas the majority (91.66%) is not utilizing the full antenatal care services.[8]

Discussion

In order to decrease maternal, neonatal, and infant mortality and increase institutional deliveries, ANC was created. In this present study, which was conducted among 300 pregnant women over a period of one year starting from January 2022 to December 2022, the utilization pattern of antenatal care services was assessed. In the present study, it was found that antenatal care services were less used by pregnant women. Due to the predominance of Islam religion in our region, the majority of study participants in the present study were Muslims. A similar finding was observed in a study carried out by Singh et al[9] but Vashisht et al[10] reported in their studies that the majority of study participants were Hindus. There is variation among the literacy levels in our country in different regions/communities. The major community in this region has a low literacy level due to which the majority of pregnant women are experiencing discrimination in education due to their parents' poor economic condition, lack of awareness, conservativeness, a feeling of social insecurity of their girls, and their early marriage.[11] This low literacy level among study participants was in coherence with the study carried out by Singh et al[9], however, Jaiswal et al[12] reported lesser illiterate women in their study.

Owing to the low illiteracy among the population, early adolescent girl marriage practices are prevalent in this region. Hence, the age of the study population was found to be lying between 16 to 29 years which is similar to findings by Singh et al[9] and Roy et al[13] who reported in their study that more than two-fifths of mothers (44.8%) were within the age range of 21 to 30 years old. Illiteracy of the population is also affecting the socioeconomic status as the majority of study subjects belonged to the socioeconomic status of Class IV and Class V. Similar findings were observed in a study carried out by Lodha N.[14]

The participation of pregnant women in this region in family planning decision-making is relatively low due to which there is low coverage of the family planning methods among study participants, the recommended spacing between two children was followed by a lesser number of participants. Hence, the majority of study subjects were multigravida in the present study which was in coherence with Rustagi et al.[15] This finding does not corroborate with Rai et al[16] where almost half of the study participants were primigravida.

The utilization of ANC services is a collective decision of the couple but in this region the pregnant women's involvement in decision-making regarding the utilization of ANC services is limited. These decisions are mostly taken by the elders in the house and due to their limited knowledge about ANC services, the pregnant women had developed the perception about the place of ANC checkups and resultantly, smaller number pregnant women had undergone all four ANC checkups (8.33%). In the present study, majority of study subjects registered their present pregnancy in the second and third trimesters while Venkateswaran et al[17] reported that almost half of the study participants registered themselves in the first trimester. There is a lack of awareness regarding the benefits of IFA and Calcium tablets supplementation among study participants due to which there is low consumption of IFA and Calcium tablets which was found similar to Rai et al.[16] In the present study, the coverage of full antenatal care services was found to be very low which was in contrast to findings of Singh et al[9], Lodha N[13], Jaiswal et al[12] and Rai et al[16] owing to very low literacy and socioeconomic of our study participants.

The present study had certain limitations, as the present study was conducted in a rural area, where religious and social customs do not allow a woman to interact with strangers, there is a possibility that they may not have disclosed accurate and complete information, and the role of their husbands was not observed.

Conclusion

Reduced knowledge of ANC was linked to lower maternal literacy levels, which was then linked to less effective ANC use. Despite the availability of government-funded primary care, a substantial frequency of poor ANC utilization was seen. The government should focus on the provision of special treatment for Muslim women through government policies for improving the level of their socioeconomic development.

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Original Research Article

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Evaluation of Operative Outcomes of Open Fractures of Distal Femur

Gaurav singh[1], Nitin Goyal[2], Neha Agrawal[3]

[1]Assistant Professor, Department of Orthopaedics, M. D. B. A. S. M. C, Deoria, [2]Assistant Professor, Department of Anaesthesiology, Muzaffarnagar Medical College, Muzaffarnagar, [3]Professor, Department of Community Medicine, NCR Institute of Medical Sciences, Meerut UP.

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Abstract

Introduction: Open fractures of the distal femur are a uncommon and intricate type of injury that typically occur in individuals who have sustained multiple traumas. These types of fractures are often accompanied by bone loss, contamination, damaged soft tissue, and a patient's overall poor health condition. The purpose of this study is to examine the outcomes of patients who were treated for open distal femur fractures using a staged protocol, which involves initial external fixation with debridement, followed by definitive fixation using an anatomical locking plate and bone grafting at a later stage.

Method: The study included a group of 20 patients of open distal femurfractures who were operated with temporary external fixator and later on converted to definitive fixation with condylar locking plate with bone grafting. These patients were operated with our staged protocol and clinical outcome was evaluated using the functional evaluation scoring system by Sander's et al and Knee Society Scoring. Out of these 20 patients, 1 was lost to follow up at 3 months and 2 others were lost to follow up at 6 months. These 3 were excluded from our study.

Results: Fracture union was seen in all 17 patients. The average time to union was 22.65±3.3 weeks. Two patients were complicated with infection and delayed union. Ilizarov application was doneto achieve union and gain length once the infection subsided.

Conclusion- Staged protocol of temporary external fixator followed by definitive fixation with condylar locking plate and bone grafting is a safe and reliable method for the management of open distal femur fractures.

Keywords: Distal Femur, Open Fractures of Distal Femur, Operative Outcomes of Distal Femur

Introduction

Fractures of the distal femur, which is the lower end of the thigh bone, are relatively uncommon, but they can cause significant health problems for patients. Although surgery is often necessary to treat these fractures, it can be challenging to perform and there is no clear consensus on the most effective type of implant to use. Despite advances in technology and research, many patients who undergo surgery for distal femur fractures still experience disability and poor outcomes. Some of these poor outcomes may be attributed to the surgical technique utilized,

Corresponding Author: Nitin Goyal, Assistant Professor, Department of Anaesthesiology, Muzaffarnagar Medical College, Muzaffarnagar.

Mobile: 90133 27026

E-mail: doc.nitin.goyal@gmail.com

as there is still much to be learned about the optimal management of these types of fractures.[1,2]

Distal femoral fractures, which make up 4-6% of all femoral fractures and approximately one-third of all femoral shaft fractures, have a dual age distribution. These types of fractures tend to occur in young males from high-energy trauma and in elderly osteoporotic females from low-energy trauma. The majority of low-energy fractures, at 85%, occur in the elderly population. The most common mechanism of injury in both instances is axial load to the leg, with rotation forces being less common. In low-energy trauma, most fractures remain extra-articular, while in high-energy trauma, over half have an intra-articular extension. Comminution, both extra-articular and intra-articular, is frequent. Open fractures occur in 19-54% of cases, with up to 80% being Gustilo type III. Additionally, approximately 1-5% of primary knee arthroplasties are complicated by periprosthetic fractures.[3,4,5,6]

Distal femoral fractures are more common in individuals over the age of 50, with around 60% of cases occurring in this age group. These fractures can present challenges in terms of fixation, as the presence of osteoporosis in older individuals can make the bones more fragile. In addition, these fractures may be accompanied by damage to the meniscus or ligaments. However, injuries to the femoral or popliteal artery, while rare, are a significant concern as they can threaten the blood flow to the entire limb. Therefore, it is important to carefully evaluate for any vascular injuries in individuals with distal femoral fractures.[7]

Open distal femur fractures are rare, complex injuries which occur in polytrauma patients and are complicated by bone loss, contamination, compromised soft tissues and poor host condition. Distal femur fractures with intra-articular extension are high velocity injuries which different methods have treated.[8]

Recent advances in emergency medical services and critical care medicine have resulted in an increasing number of polytrauma patients who survive their injuries. To promote long-term outcomes and overall wellness, many of these patients require functional orthopedic reconstruction. Effective management of extremity trauma is particularly crucial in ensuring positive outcomes for individuals who have experienced multi-system trauma.

The timing of the reconstructive process is a critical consideration to preserve the affected limbs. In addition to evaluating the condition of the muscles and bones in the affected area, the psychological state of the individual who has experienced severe trauma should also be taken into account. While immediate stabilization of the skeleton and treatment of open fractures are necessary to prevent further injury, infection, and bleeding, it may be wise to wait until the individual and the soft tissue in the area have improved before proceeding with further reconstructive surgery.[9]

Open high energy distal femur fractures with or without bone loss present unique therapeutic challenges when the pathway of limb salvage is prescribed.

In the case of severe injuries to the extremities, amputation may be the most appropriate option for reconstruction. However, it is important to also consider using a staged approach for limb salvage. Factors that must be taken into account include the extent of open fracture care, the type of skeletal stabilization used, and the strategy for soft tissue coverage and bone grafting. Complications such as nonunion, malunion, or infection can have a major impact on the recovery of patients with lower extremity injuries. Non-operative treatment is rarely used, and is typically only considered for patients who are not well enough for surgery or those with poor bone quality. There are several surgical options available, including external fixation, angular blade plate, anatomical locking plate, retrograde supracondylar nail, condylar buttress plate, dynamic condylar screw, and arthroplasty. The choice of implant will depend on the specific type of fracture. Retrograde nailing and anatomical locking plate osteosynthesis are currently the most common surgical methods used in modern practice. However, there is a lack of data in the literature regarding this type of injuries.Very few studies have been conducted on its management with variable results. Arazi et al. [10] and Kumar et al. [11] conducted a study on complex fractures treated with Ilizarov external fixator. Parekh et al. [12] conducted a study where fractures were treated with temporary

external fixation and subsequent open reduction and internal fixation. None of the studies hasshown superior results forone procedure over the other.

The study intends to evaluate patients treated for open fractures (Gustilo Grade II, IIIA, IIIB and IIIC) distal end of the femur at our institution using the staged protocol of early external fixation with debridement followed by definitive fixation with anatomical locking plate and bone grafting at a later stage.

Material and Methods

This Descriptive study was carried out Orthopaedics Department. After obtaining approval from the Institutional Ethical Committee and informed consent. FromJan 2019 to Dec 2020 ,a total of 20 patients of either sex with open distal femur fractures (Gustilo Grade II, IIIA, IIIB & IIIC) were treated with an external fixator initially and condylar plate at a later stage was included. However, patients with open distal femur fractures (Gustilo Grade I), pathological fractures, debilitated medical conditions, closed fractures and young patients with epiphysis still not fused were excluded.

Radiological outcome will be assessed with the help of X-ray appearance of the lower limb on 2^{nd} week, 6^{th} week, 3^{rd} month, 6^{th} month and 1^{st} year. Clinical outcome will be assessed on the basis of range of motion at knee, ankle and foot, limb length disparity, deformity and complication on 2^{nd} week, 6^{th} week, 3^{rd} month, 6^{th} month and 1^{st} year. Clinical unionwill be defined when the fracture site is stable and when of abnormal mobility and are absent pain. Radiographic union will be defined when plain radiographs show bone trabeculae or cortical bone crossing the fracture site. Union will be determined by union in ¾ cortices.

The data for evaluation will be retrieved from previous OPD and hospital records of the patients after obtaining their consent, and only those patients with complete records will be included in the study. The information collected will be noted in proforma and the outcome will be measured using functional evaluation scoring system described by Sander's et al.[13], Knee society score [14] and Visual analogue scale.

Statistical Analysis

Statistical analysis was performed using MS Excel (R) office 365, GraphPad prism 8.4.2 and SPSS version 25 (SPSS Inc., Chicago, IL, USA).Descriptive statistics will be analysed with SPSS version 17.0 software. Continuous variables will be presented as mean±SD. Categorical variables will be expressed as frequencies and percentages. Association between two or more variables will be done using Chi-Squared or Fisher's exact test. A p value less than 0.05 will be taken to indicate a significant difference.

Results

There were 17 patients with average age of 36.53 years ($\pm$14.569). Maximum number of cases were in the age group 20-30 years, 13 were males and 4 were females. There was clear cut male preponderance in our study. [Table-1] 15 cases had RTA as the mode of injury, and 2 cases were due to fall from height. Road traffic accidents are clearly in excess of any other mode of injury in these fractures. [Table-1] 15 patients had right-sided injury, and only 2 had left-sided injury at the final follow-up. Gustilo type I was excluded from our study from the beginning. There were 4 (23.5%) type II, 6 (35.3%) type IIIA and 7 (41.2%) type IIIB in our study. [Table-1; Figure-1] There were 2 (11.8%) type-A1, 2 (11.8%) type-A2, 1 (5.9%) type A3, 2 (11.8%) type-B1, 3 (17.6%) type-C1, 3 (17.6%) type-C2 and 4 (23.5%) type C3 fractures. [Table-1] There was 1 (5.9%) clavicle fracture, 1 (5.9%) head injury, 1 (5.9%) proximal tibia fracture and 2 (11.8%) rib fractures. [Table-1] The average time interval between initial and definitive surgery was 30.76$\pm$10.42 days. Extension lag over time following surgery shows a decreasing trend signifying improvement. Degree of flexion over a period of time following surgery, showing an increasing trend signifying improvement. The average extension lag decreased from 15.59$\pm$4.96^0 at 2 weeks to 5$\pm$4.33^0 at 1 year follow-up, showing a significant improvement. The average flexion increased from 83.82$\pm$7.18^0 at 2 weeks to 112.35$\pm$10.32^0 at 1 year follow-up. [Table-2] Pain (Sander's Score) was graded into 4 categories on a scale of 10 and measured at regular follow-ups. 94.1 % of cases had constant pain at 2 weeks, where as none had constant pain at 1 year follow-up. 70.6% had no pain at 1 year follow-up. [Table-3] Pain

(Knee Society Score) is graded on a scale of 50 into 7 categories, and measurement was done at 6 months and 1year follow-up. 5 cases (29.4%) had no pain at 6 months and 12 cases (70.6%) had no pain at 1 year follow-up. [Table-4] Shortening was calculated at initial surgery, followed over a time period, and was found to be constant (p-value-1.00). [Figure-2] Walking ability (Sander's Score) was graded on a scale of 6 and measured at regular follow-ups. None of the cases was wheelchair bound/ bedridden at 1 year follow-up (p-value-<0.001). [Table-3] Walking (Knee Society Score) was graded on a scale of 50 and measured at 6 months and 1 year. None of the cases was unable to walk or house bound at 1 year follow-up (p-value-<0.001). [Table-4] Stair (Sander's Scoring) climbing was graded on a scale of 3 and measured at regular follow-ups. 1(5.9%) case had a score of 0 at 1 year follow-up while 6 (35.3%) had no limitation (p-value-<0.001). [Table-3] Stair (Knee Society Score) climbing was graded on a scale of 50 and measured at 6 months and 1 year. 1(5.9%) case was unable to walk at 1 year follow-up and 2 (11.8%) cases could climb normal up and down at 1 year (p-value-<0.001). [Table-4]Return to Work (Sander's Score) was graded on a scale of 6, and only 1 (5.9%) was found to be unemployed at 1 year (p-value-<0.001). [Table-3] Functional evaluation was done at regular follow-ups with Sander's Scoring. No poor results were obtained at 1 year, while 1 excellent result was obtained at 1 year (p-value-<0.001). [Table-5; Figure-3] Knee Score and function score were calculated at 6 months and 1 year. Average of both the scores gave us the Knee Society Score. There was 1 (5.9%) poor result and 4 (23.5%) excellent results. Maximum number of the cases had good results i.e. 12 (70.6%) (p-value-<0.001). [Table-5; Figure-4] The average time taken for the radiological union was 22.65±3.3 weeks. [Table-1]

Discussion

Open high energy distal femur fractures, whether with or without bone loss, present significant therapeutic challenges when attempting to salvage the limb. These injuries often have a bimodal age distribution, with high-velocity injuries occurring in younger individuals and low/high energy injuries in the elderly with osteoporotic bones. The incidence of these fractures is on the rise due to an increase in road traffic accidents.

To evaluate the effectiveness of this protocol, a descriptive study was conducted, following 20 patients for 1 year, with 3 patients lost to follow-up. The majority of patients were male (76.5%) and the most common cause of injury was road traffic accidents (88.2%). The study also found that associated injuries were present in 11.8% of patients, and the most commonly used classification system was AO/ASIF.

The results of the study showed that there was a wide range of fractures present, with the majority classified as Gustilo IIIB (41.2%) and Type C3 fractures (23.5%). When compared to previous similar studies, our results showed a slightly different distribution of fracture types. The findings of this study provide valuable insights into the management of distal femur fractures, particularly when using the staged protocol with a temporary bridging fixator and a condylar locking plate.

The average time interval between initial and definitive surgery was 30.76±10.42 days with a range from 21 to 58 days as compared to a mean of 5 days and a range of 1 to 23 days in a study conducted by Parekh et al. The significant difference between the average time interval can be attributed to the inclusion of closed fractures in their study.

The average time for fracture union was 22.65±3.33 weeks compared to a mean of 16 weeks in a study conducted by Arazi et al. and an average of 39±9 weeks in a study conducted by Kumar et al.[11]

The average flexion at 2 weeks was $83.82^0 \pm 7.18^0$, at 6 weeks was $93.53^0 \pm 7.65^0$, at 3 months was $99.41^0 \pm 9.16^0$, at 6 months was $104.71^0 \pm 9.59^0$ and at 1 year was $112.35^0 \pm 10.32^0$. The 1-year average flexion was 112.350+10.320 as compared to 1050 and 1100+100 in type-C2 in the studies of Arazi et al [10] and Kumar et al [11] respectively. So, it was found to be a generalised increasing trend at every follow up.

The study reported two patients with deep infections who were managed differently. One was treated with implant removal and Ilizarov fixator, and the other with implant removal and temporary fixation with an external fixator followed by Ilizarov fixator. Both patients achieved union but had inferior final results compared to the rest of the group. The study's strength is that the same surgeon operated on

all patients and similar implants were used. However, it has limitations of a small sample size and short follow-up period. The findings can serve as information for patients and as a reference for future studies.

Conclusion

On the basis of our descriptive study for open fractures of the distal femur, we conclude that the staged protocol of temporary external stabilization and definitive fixation with condylar locking plate at a later date is a safe option with acceptable results. In cases of deep infection, where definitive surgery with plating is delayed, a more stable external fixation, i.e. Ilizaarov may be used. Cancellous bone grafting at the time of definitive surgery enhances fracture healing and decreases the chances of non-union.

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Review Article

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Laryngeal Mask Airway and Adenotonsillectomy

Grace Budhiraja[1], Navjot Kaur[2], Harsimrat Singh[3]

[1]Professor, [2,3]Assistant Professor, Department Of ENT, Adesh Institute Of Medical Sciences, Bathinda.

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Abstract

Objective: To compare the use of flexible laryngeal mask airway (LMA) and endotracheal tube (ETT) in pediatric adenotonsillectomy.

Design: Prospective randomized trial.

Setting: Tertiary care hospital.

Patients: One hundred thirty-one children (aged 2-12 years). Exclusion criteria were body mass index (calculated as the weight in kilograms divided by the height in meters squared) greater than 35 and craniofacial anomalies. Obstructive sleep apnea was the most common indication for surgery.

Intervention: Children undergoing adenotonsillectomy were randomized to use of an LMA or ETT. A standardized anesthesia protocol was used.

Main Outcome Measures: Primary outcome measure was laryngospasm. Secondary measures included anesthesia, operative, and recovery times.

Results: Sixty children were randomized to the LMA group and 71 to the ETT group. There was no difference between groups with regard to age (P = .76), ethnicity (P = .75), body mass index (P = .99), or American Society of Anesthesiologists grade (P = .46). Incidence of postoperative laryngospasm between LMA (12.5%) and ETT (9.6%) was similar (P = .77). In 10 patients, the LMA was changed to ETT intraoperatively owing to tube kinking or difficulty with visualization. Mean (SD) surgical times for LMA and ETT groups were 33.35 (13.39) and 37.76 (18.26) minutes, respectively (P = .15). Time from surgery end to extubation was significantly shorter in patients who used LMA (P = .01) by 4.06 minutes. There were no differences (P = .49) in postanesthesia care unit recovery times.

Conclusions: An LMA is an efficient alternative to ETT in pediatric adenotonsillectomy. When comparing LMA and ETT, there is no difference in rates of laryngospasm. Time to extubation is significantly shorter in patients using LMA. Before adopting the routine use of LMA in pediatric adenotonsillectomy, further study is needed to address visualization and kinking issues associated with this device.

Keywords: adenotosillectomy, laryngeal mask airway, endotracheal tube.

Introduction

Adenotonsillectomy is a common surgical procedure performed in children. One of the main goals of anesthesia during this procedure is to establish and protect the airway. Endotracheal intubation is the standard means to secure the airway in children undergoing adenotonsillectomy.[1]

Corresponding Author: Harsimrat Singh, Assistant Professor, Department of ENT, Adesh Institute of Medical Sciences, Bathinda.

E-mail: harypol278@Gmail.com

However, endotracheal intubation is not without risk. Complications of endotracheal intubation include laryngeal trauma and edema, injury to the teeth and lips, cardiovascular stimulation, and bronchospasm. Laryngospasm is another adverse event associated with endotracheal intubation; the incidence of laryngospasm in children ranges from 4% to 14%.[2]

In recent years, the laryngeal mask airway (LMA) has been used with increasing frequency as an alternative to endotracheal intubation. The LMA, a tube of flexible silicone rubber attached to an oval-shaped inflatable cuff, was first developed in England in the 1980s.[3] The LMA is inserted into the pharynx, where it forms a low-pressure seal above the laryngeal inlet. The classic LMA had a large-diameter tube that precluded the routine use of this device in head and neck surgery. The newer flexible LMA features a long, narrow wire-reinforced tube with a lower profile. The advantages of LMA include ease of insertion, minimal risk of oral and laryngeal trauma, and decreased cardiac and respiratory stimulus.

The LMA was approved for use in the United States by the US Food and Drug Administration in 1991. Indications for use of this device have expanded to include airway emergencies and elective procedures in children.[4-6] Concern for aspiration of blood and secretions and obstruction of the surgical field have limited widespread use of the LMA in pediatric adenotonsillectomy. However, the potential for decreased upper airway reflex stimulation and shorter anesthesia times makes this device an appealing option for airway maintenance in adenotonsillectomy.

The aim of the present study was to compare the use of the flexible LMA and an endotracheal tube (ETT) in pediatric adenotonsillectomy. The primary objective was to assess the incidence of postoperative laryngospasm between the LMA and ETT. We also sought to compare anesthesia, operative, and recovery times in the LMA and ETT groups. To our knowledge, this is the first study to prospectively analyze perioperative complication rates and compare operative and anesthesia times between LMA and ETT in pediatric adenotonsillectomy.

Methodology

The protocol for this prospective randomized trial was approved by the institutional review board. Before participation in the study, consent was obtained from the parents. Children older than 7 years also provided assent.

Patients were consecutively recruited from an otolaryngology practice at a tertiary care hospital. We included children aged 2 to 12 years undergoing elective adenotonsillectomy for obstructive sleep apnea or chronic tonsillitis. Exclusion criteria were body mass index (BMI; calculated as the weight in kilograms divided by the height in meters squared) greater than 35 and craniofacial anomalies. Children with asthma and gastroesophageal reflux were included in this analysis. One hundred thirty-one children met the inclusion criteria. A random number generator[7] was used to randomize 71 children to the ETT group and 60 to the LMA group. The primary outcome measure was laryngospasm. Secondary outcomes included perioperative adverse events and anesthetic, operative, and recovery times.

Anesthesia was administered according to a standardized protocol. Patients underwent premedication with oral midazolam hydrochloride, 0.5 mg/kg, to a maximum dose of 10 mg. Inhalational induction was achieved with sevoflurane and oxygen. Intravenous propofol (2.5-4.0 mg/kg) was administered before insertion of a flexible LMA or a cuffed ETT. As recommended by the manufacturer, the size of the LMA was determined according to the patient's weight. Fentanyl citrate (1-2 µg/kg) and dexamethasone sodium (Decadron; 0.5 mg/kg to a maximum dose of 10 mg) were also administered during the procedure. In the LMA group, fiberoptic examination of the airway was performed at the conclusion of surgery to assess for the presence of blood at the level of the larynx. Deep or anesthetized extubation (as opposed to awake extubation) was performed.

Demographic factors for patients, including age, sex, ethnicity, and American Society of Anesthesiologists (ASA) grade, were recorded. We calculated the BMI and used the Centers for Disease Control and Prevention BMI-for-age growth charts to categorize the children as underweight, healthy weight, overweight, or obese.[8] The tonsils were assigned a grade of 1 to 4 according to the assessment proposed by Brodsky.[9] The grading can be summarized as follows: grade 1 tonsils occupy less

than half the transverse diameter of the oropharynx; grade 2 tonsils, half the transverse diameter; grade 3 tonsils, more than half the transverse diameter; and grade 4 tonsils, the entire transverse diameter of the oropharynx (kissing tonsils).

Pulse oximetry, electrocardiography, capnography, and systolic blood pressure were monitored and recorded perioperatively. A Crowe-Davis or ring-mouth gag was used to provide surgical exposure. All children underwent tonsillectomy using electrocautery, whereas adenoidectomy was performed using a combination of sharp dissection with a curette and electrocautery. All perioperative adverse events were recorded, including oxygen desaturation and laryngospasm.

Results

Patient demographics

A total of 131 children were enrolled in the study, of whom 56 (42.7%) were female. The mean (SD) age of children in our series was 5.6 (2.4) years. The most common indication for surgery was obstructive sleep apnea (n = 106). Asthma was the most frequent comorbidity reported in the study population (n = 35). Only 2 children in this study had a medical history significant for gastroesophageal reflux disease.

Seventy-one children were initially randomized to the ETT, whereas 60 were randomized to the LMA. However, 12 children in the LMA group required intubation with an ETT. Two of these children experienced bronchospasm during mask induction and were intubated with an ETT at the discretion of the anesthesiologist. In the other 10 patients, the LMA was converted to an ETT intraoperatively owing to kinking of the tube and poor visualization. Thus, the data from these 12 patients were included in the ETT group statistics for postoperative laryngospasm. In our final analysis of postoperative complications, there were 83 children in the ETT group and 48 children in the LMA group. The 12 patients who underwent conversion from LMA to the ETT were excluded from the total anesthesia time analysis to avoid artificially elevating the time in the ETT and LMA groups.

Device placement and positioning

The intubation times for the ETT and LMA were similar (P = .67). The mean time for ETT insertion was 0.93 (1.41) minutes, whereas the time for LMA placement was 0.83 (0.84) minutes. There was no significant difference (P = .76) between the LMA and ETT with respect to the number of intubation attempts required to secure the airway.

Three complications associated with ETT placement were identified. One child was noted to have a lip abrasion after intubation. One ETT required replacement owing to kinking when the mouth gag was opened. A final patient experienced laryngospasm during an intubation attempt with an ETT.

In the LMA group, there were no complications associated with insertion of the device. Compression of the LMA tube that prevented adequate ventilation was the most common problem encountered. Kinking of the LMA occurred in 15 children when the mouth gag was opened. In 7 patients, obstruction of the LMA improved after the mouth gag was repositioned. The other 8 patients required the LMA be changed to an ETT intraoperatively. In 45 patients (93.8%), the LMA provided adequate surgical access. However, poor visualization of the surgical field necessitated converting the LMA to an ETT in 3 patients. (In 1 child, the LMA was changed because of poor visualization and kinking of the device.)

Thus, the LMA was abandoned in favor of endotracheal intubation in a total of 10 children because of obstruction or inadequate exposure. Patient factors, such as BMI category and tonsil grade, did not correlate with whether the LMA was changed to an ETT. Of interest, overweight and obese children (P = .99) and those with grade 4 tonsils (P = .37) were not predisoposed to LMA failure.

A flexible fiberoptic laryngoscope was passed through the LMA at the conclusion of adenotonsillectomy in 48 patients. Blood was noted at the laryngeal inlet in only 1 case. That patient did not experience postextubation laryngospasm or desaturation. In more than half the patients (n = 25), the fiberoptic view of the vocal cords was partially obstructed by a displaced epiglottis. The epiglottis completely blocked the fiberoptic view of the vocal cords in a single patient. However, there were no problems with ventilation during adenotonsillectomy in that child.

Anesthesia, operative, and recovery times

Surgical times between the ETT and LMA groups were not significantly different (P = .15) . When we compared the ETT and LMA, the extubation time for patients using the LMA was significantly shorter by 4.06 minutes. The total anesthesia times in the LMA and ETT groups were 67.72 (19.88) and 73.80 (22.59) minutes, respectively. Although there was a trend toward a shorter anesthesia time in the LMA group, this difference did not reach statistical significance (P = .14). The PACU recovery times were similar for both groups of children (P = .49).

Discussion

Airway management during pediatric adenotonsillectomy can be challenging. The anesthesiologist and surgeon must share the airway and protect it from blood and secretions. Compared with other surgical procedures in children, adenotonsillectomy has the highest rate of laryngospasm.[10] Endotracheal intubation has been the standard for general anesthesia. However, the LMA represents an alternative means to secure the airway during pediatric adenotonsillectomy. Ease of insertion and minimal stimulus of cardiac and respiratory response are advantages of the LMA that make this device ideal for short elective procedures in children.

Use of the LMA for adenotonsillectomy is widespread in Canada and Europe.[11] In 1993, Webster et al conducted a study of 109 children to assess the suitability of the LMA for anesthesia during pediatric adenotonsillectomy. Although the rates of laryngospasm were similar between ETT and LMA, children in the LMA group were significantly less likely to have stridor after the procedure. The need for assisted ventilation during the procedure was reduced in the LMA group.

Williams and Bailey[12] published a series that included 100 patients (adults and children) who were assigned to receive ETT or LMA during adenotonsillectomy. There was no difference in laryngospasm between the 2 groups. However, the authors concluded that recovery was less eventful in the LMA group, with significantly less airway obstruction and better airway acceptance compared with the ETT.

The current prospective randomized trial demonstrates that the LMA is a safe alternative to ETT in pediatric adenotonsillectomy. The LMA did not interfere with surgical access, and the device provided adequate protection of the airway. The LMA and ETT groups had similar rates of postoperative laryngospasm and desaturation. Demographic factors such as age, surgical indication, BMI category, and ASA grade did not affect the rates of laryngospasm and desaturation. However, the number of children with comorbid disease processes in our subject population was small. Future studies should include larger numbers of patients with comorbidities that predispose to laryngospasm and bronchospasm, such as asthma and gastroesophageal reflux. It is possible that the LMA offers an advantage to the ETT in these select groups of patients because the LMA may decrease upper airway reflex stimulation.

The most common problem associated with the use of the LMA in pediatric adenotonsillectomy was obstruction of the tube when the mouth gag was opened. Webster et al[1] reported a similar finding with 10 patients who developed obstruction on opening of the gag. The authors concluded that the obstruction was likely due to an inadequate depth of anesthesia with resultant reflex laryngeal closure. In our experience, the LMA tube was observed to kink with opening of the gag. We hypothesized that mechanical compression of the device tube was the cause of obstruction. Another potential cause of obstruction involves the displacement of the epiglottis by the LMA when the mouth gag is opened.

This is, to our knowledge, the first endeavor to prospectively compare LMA and ETT in terms of perioperative adverse events and operative, anesthesia, and recovery times in pediatric adenotonsillectomy. The strengths of this project include a large, diverse subject population and a study design featuring a standardized anesthesia protocol. There are several limitations of the present study. This project was conducted at a tertiary care medical center. Thus, the results cannot be generalized to a community hospital setting or to an ambulatory surgery center. In addition, the participating anesthesiologists had additional training in pediatrics and were experienced in the use of the LMA in children. Finally, further research is

necessary to determine the cost savings conferred by LMA vs ETT in pediatric adenotonsillectomy.

Conclusion

A flexible LMA is an efficient alternative to ETT in pediatric adenotonsillectomy. In a comparison of LMA and ETT, there were no differences in rates of postoperative laryngospasm and desaturation, and extubation times were significantly shorter in patients using the LMA. Before adopting the routine use of LMA in pediatric adenotonsillectomy, further research is needed to address the obstruction and kinking associated with this device. In the meantime, endotracheal intubation remains the standard means to secure the airway in children undergoing adenotonsillectomy.

Informed Consent: written informed consent was taken from patients .

Ethical Approval: ethical committee approval was not needed as it is review article

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Original Article

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Functional Outcome Following Internal Fixation of Intraarticular Fractures of the Distal Humerus

Harsh Pratap Shishodia[1], Ramji LalSahu[2], Ajit Jangale[3], Sidhartha Samal[4]

[1]DNB Orthopaedics, Assistant Professor, Saraswathi Institute of medical science Hapur,Uttar Pradesh, India, [2]MS Orthopaedics, Professor, Saraswathi institute of medical science Hapur Uttar Pradesh, India, [3]MS Orthopaedics, Flat no 6 Prabhu Prasad Society, Nashik, [4]DNB Orthopaedics, Associate Professor, IMS and SUM hospital Bhubaneswar, Odisha, India.

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Abstract

Objectives: To evaluate the functional outcome following internal fixation of intraarticular fractures of the distal humerus (AO Type C) with a minimum follow-up of twelve months.

Materials and Methods: This prospective study was carried out at Orthopaedics department from December 2018 to December 2022. A total of 170 consecutive patients with intraarticular fractures of the distal humerus were recruited from Emergency and outpatient department and treated with open anatomical reduction and internal fixation with plating and lag screw. Functional evaluations of elbow joints were evaluated with Broberg and Morrey functional rating index. All patients were followed for twelve months.

Results: All fractures united in average 3.2 months (range 7-19 weeks). The results were excellent in 66.47% patients and good in 22.35% patients at final follow-up. Complications found in 22.35% patients who had insignificant delayed unions which were united next 3 weeks, 7.05% insignificance malunion, 5.83% ulnar nerve neurapraxia and 5.83% patients developed elbow stiffness.

Conclusions: We conclude that internal fixation of intraarticular fractures of the distal humerus is an effective procedure with an excellent or good functional outcome in majority of the patients. Patients have a high level of satisfaction and the majority returns to their previous level of activity.

Keywords: Intercondylar fracture; Intra-articular; Distal humerus; Double plate fixation; Olecranon osteotomy.

Introduction

The incidence of intraarticular fracture of distal humerus is 0.5%-7% of all fractures and of elbow fractures[1]. These fractures are more common in young adults due to high energy trauma and in elderly as a result of low energy trauma[1]. Complications are very high following conservative treatment of these fractures and internal fixation is difficult due to osteoporosis and complexity of fractures[2]. Stable internal fixation and early mobilization can provide good results. Inadequate fixation due to osteoporosis, bone loss and severe comminution can provide unsatisfactory results[2,3]. Incidence of complications is 30% with distal humerus fractures and needs further

Corresponding Author: Sidhartha Samal, DNB Orthopaedics, Associate Professor, IMS and SUM Hospital Bhubaneswar.

Phone numbers: 8800163178

E-mail: sidhusamal46@gmail.com

surgery[4]. Both column fractures of distal humerus are fixed with a combination of reconstruction plates, locking compression plates, dynamic compression plates, screws and k- wires. Intercondylar fixation is done with a lag screw or intercondylar screw[5,6,7]. The aim of this study was to evaluate the functional outcome following internal fixation of intraarticular fractures of the distal humerus (AO Type C) with a minimum follow-up of 12 months.

Materials and Methods

This prospective study was carried out at Orthopaedics department from December 2018 to December 2022. Institutional medical ethics committee approved it. A written informed consent was obtained from all the patients. A total of 170 consecutive patients with intraarticular fractures of the distal humerus were recruited from emergency and outpatient department.

Inclusion criteria

- Age between 17 to 62 years.
- Fresh Displaced Intraarticular distal humerus fracture, By using the classification system of AO/ASIFC1,C2 & C3 type.
- We include closed intraarticular fracture, Gustilo grade 1 open intraarticular fracture treated within 12 hours of injury.

Exclusion criteria

- Extraarticular or partial articular fractures of distal humerus (AO/OTA classification types 13A and 13B).
- Intraarticular fracture of the distal humerus (type 13 C) that did not require surgical intervention.
- Gustilo grade 1 open fractures that had not had irrigation and debridement within 12 hours of occurrence.
- Gustilo grade II, IIIA, IIIB and IIIC open fractures.
- Associated vascular injury.
- Previous ipsilateral distal humeral fractures.
- Pathological fractures.
- Fractures with diaphyseal extension of 8 cm or more.
- Definitive surgery more than 21 days after injury.
- Pre-existing severe joint disease (e.g., rheumatoid arthritis).

There were 80% (136/170) males and 20% (34/170) females with an average age of 41.4 years (range, 17-62). There were 60.58% (103/170) left-sided and 39.41% (67/170) right-sided fractures. All patients were followed for twelve months. None was lost to follow-up. By using the classification system of AO/ASIF, 56.47% (96/170) fractures were type C1, 31.76% (54/170) were type C2 and 11.76% (20/170) were type C3. 18.82% (32/170) cases had grade 1 open fracture.60% (102/170) patients injured due to road traffic accident, 27.05% (46/170) from fall and 11.76% (20/170) patients from sports injury. The patients were divided in three groups according to their age for simplicity. Young age group included those patients whose age was less than thirty years. In this group, there were 25.88% (44/170) patients. Middle age group included patients, who were between the ages of 30-50 years. This group included 37.05% (63/170) patients. Old age group included patients older than fifty years. This group consisted of 37.05% (63/170). (Table II) One hundred and three fractures were treated early within 24 hours. Sixty-seven fractures (surgery was postponed until swelling had subsided) had delayed treatment (>24 hrs).Out of 170 (100%) patients, 12.94% (22/170) patients had multiple fractures else-where in the body. 17.05% (29/170) patients had associated fractures in the forearm area. None was lost to follow-up. All the patients were treated with anatomical reduction and a cancellous lag screw fixation of the articular surface of both the condyle of the humerus. The next step was to anatomically reattach the condyles to the humeral shaft. All the fractures were treated with two plates, medially with 1/3rd tubular plate, laterally with reconstruction plate. (Figure 1a, 1b, 2a, 2b, 3a and 3b) The time of operation ranges from the 1st day of injury to the 8th day of injury with the mean time of operation being 4.6 days.

Operative Techniques

All the patients were operated in lateral position with the involved extremity flexed and hanging off the operating table. The pneumatic tourniquet was used. A straight posterior incision with radial deviation across the tip of the olecranon was made. The ulnar nerve was then identified and carefully

protected.Intra-articular chevron osteotomy was performed approximately two centimeters from the tip of the olecranon with a high- speed micro-oscillating saw to cut up to the subchondral bone. The osteotomy was completed with an osteotome used as a lever to crack through the articular surface. The proximal part of the olecranon was elevated with the triceps, which provides excellent exposure as far as seven centimeters proximal to the joint line before the radial nerve is threatened. The elbow capsule was incised and the fracture fragments were identified by carefully dissecting soft tissue and muscular attachments, as necessary.

Post-Operative Care

Usually by the second postoperative day, active or active-assisted range of elbow motion exercises as pain permitted was started in patients with good bone quality and rigid osteosynthesis. Longer immobilization (>3 weeks) was used when the bone quality was poor and the stability of the osteosynthesis was questionable. No continuous passive motion machines were used. After the postoperative 6th week, resisted exercises were started and normal daily activities resumed. Strenuous physical exercise was only allowed after radiological evidence of union.

Assesment of the Patients

Assessment was done in follow-up clinic for postoperative patients by a surgical team. Results were analyzed using clinical & radiographic evaluation at a final follow-up of 12 months. The clinic-radiological results of our study were based on the criteria of union, non-union delayed union or malunion[8]. Fractures considered to be united normally if union was observed clinically as well as radiologically till 12 weeks of fixation. A delayed union was diagnosed if the fracture healed between 12 and 24 weeks; nonunion was considered to be present if the fracture was not clinically or radiologically united after 24 weeks post injury or sooner if implant failure was associated with displacement of the fracture. The quality of reduction was graded (A to C), based on the postoperative radiographs. Grade A was an anatomical reduction, grade B a step or gap of the articular surface of <2 mm and grade C involved a step or gap of more than 2 mm. The quality of reduction was based on the immediate post- operative plain radiographs and operative findings. Functional evaluations of elbow joints were evaluated with Broberg and Morrey functional rating index. (Table I) [9]The grading scale was weighted as follows: normal motion, 40 points; no pain, 35 points; normal strength, 20 points; and normal stability, 5 points.

Results

The clinico-radiological results of our study were based on the criteria of union, nonunion[8,] delayed union or malunion. (Table III) The patients were followed according to their clinical status. All fractures united in average 3.2 months (range 7-19 weeks). 66.47% (113/170) patients had union in 45 to 90 days, 22.35% (38/170) patients in 90 to 150 days, in younger age group, union occurred between 4-6weeks, in middle age group, between 6-8 weeks and in older age group, between 8-12 weeks. The results were graded according to the range of motion, excellent postoperative results (Extension < 15, Flexion 130) were observed in 66.47% (113/170) patients and good results (Extension < 30, Flexion 120) were observed in 22.35% (38/170) patients at final follow-up. 7.05% (12/170) patients had fair results (Extension < 40, Flexion 90-120), and 5.83% (7/170) patients had poor results (Extension < 40, Flexion <90). Non-union was not seen in this study.

Functional evaluations of elbow joints were evaluated with Broberg and Morrey functional rating index. (Table I) [9]The grading scale was weighted as follows: normal motion, 40 points; no pain, 35 points; normal strength, 20 points ; and normal stability, 5 points (Table I).

Complications found in 22.35% patients who had insignificant delayed unions (which were united next 3 weeks) and 7.05% insignificance malunion. 5.83% (7/170) patients had symptomatic olecranon wire prominence and created pain during elbow movement. These wires were removed after 3 to 4 weeks when callus formed at the fracture site. 7.05% (12/170) patients developed an early superficial wound infection. This infection subsided spontaneously with three weeks antibiotic treatment. There were seven cases of ulnar nerve neurapraxia, which resolved. 7.05% (12/170) cases developed

moderate osteoarthritic changes at the elbow joint. 5.83% (7/170) patients had only pain with activity, but a "poor" result due to elbow stiffness. During this study, complications like vascular injury, compartment syndrome, myositis ossifications, significant non-union were not red.

The results were excellent in 66.47% (113/170) patients, good in 22.35% (38/170), fair in 7.05% (12/170) and poor in 5.83% (7/170) patients at final follow-up (Table IV). In subjective overall assessment 66.47% (113/170) patients were full satisfied and 22.35% (38/170) patients were satisfied with the result of treatment.

Table 1. Broberg and Morrey functional rating index

Variable	Points value
Motion	
Degree of flexion (0.2 3 arc)	27
Degree of pronation (0.1 3 arc)	6
Degree of supination (0.1 3 arc)	7
Strength	
Normal	20
Mild loss (appreciated but not limiting, 80% of opposite side)	13
Moderate loss (limits some activity,	5
50% of opposite side)	0
Severe loss (limits everyday tasks, disabling)	
Stability	5
Normal	
Mild loss (perceived by patient, no limitation)	4
Moderate loss (limits some activity)	2
Severe loss (limits everyday tasks)	0
Pain	
None	35
Mild (with activity, no medication)	28
Moderate (with or after activity)	15
Severe (at rest, constant medication, disabling)	0
Excellent 95-100 points	
Good 80-94 points	
Fair 60-79 points	
Poor 0-59 points	

Table 2. Age and sex variations in study group (*n*=170)

Age	Male	Female	Total
Less than 30	36	8	44
30-50	49	14	63
More than 50	51	12	63
Total	136	34	170

Table 3: Percentage of cases who had unions, malunions,delayed unions, or non-unions in study group (*n*=170)

Fracture healing	Total cases	% of cases
Union	113	66.47%
Non-union	0	0%
Delayed union	38	22.35%
Malunion	12	7.05%

Table 4: Outcome of results in study group (*n*=170)

Out comes	No.	%
Excellent	113	66.47%
Good	38	22.35%
Fair	12	7.05%
Poor	7	5.83%

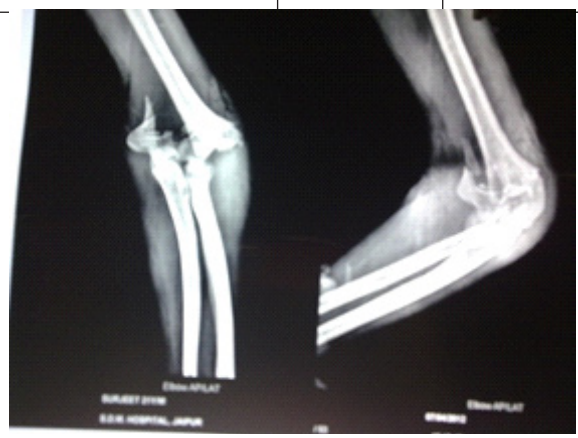

Figure 1a. Preoperative anteroposterior and lateral radiograph of intraarticular fracture of lower end of humerus of 43 years old man.

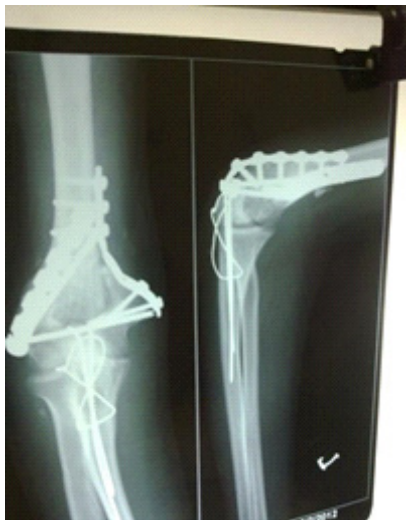

Figure 1b. Post operative anteroposterior and lateral radiograph of intraarticular fracture of lower end of humerus treated medially with 1/3rd tubular plate and laterally with reconstruction plate and a lag screw inserted through the articular surface of lower end of humerus.

Discussion

Treatment of intraarticular distal humerus fractures is difficult and needs a great deal of experience with them[10]. Displaced intraarticular fractures of the distal humerus can be treated successfully with anatomical reduction, stable fixation, & early elbow mobilization[11,12]. Several different surgical approaches have been described[13,14]. The posterior approach through an olecranon osteotomy is most often used[11,15,16]. This approach provides excellent visualization of the distal articular fragment and exposure for plate fixation[17]. In our study, all the intraarticular fractures of the distal humerus were operated by the posterior approach through an olecranon osteotomy. Articular restoration of distal humerus is the most essential step for the stabilization of the two columnar fragments. Several fixation methods have been used for the fixation of humerus condyle to humerus metaphysic such as single plate, Y shaped plate, double K- wire and K-wire with tension band wiring[18,19]. The objective is to facilitate biomechanical reconstruction of two column structure of the distal humerus. Bilateral plate fixation was done in all 170 cases in our study. Fracture reduction and stable fixation was satisfactory in all cases and post operative mobilization was also satisfactory.

Several complications have been reported following surgical fixation of type c distal humerus fractures. These include joint stiffness, heterotropic ossification, infections, nerve injury, nonunion and delayed union[20,21]. Kundelet et al. found 49% heterotopic ossification and 33% nerve injuries in their study[20]. In our study, 5.83% (7/170) cases had elbow pain during movement due to olecranon wire prominence. These wires were removed after 3 to 4 weeks when callus formed at the fracture site. Superficial wound infection was seen in 7.05% (12/170) cases. The infection subsided spontaneously with 3 weeks antibiotic treatment. Ulnar nerve neuropraxia was seen in 7 cases which resolved. Moderate osteoarthritis around elbow joint was seen in 7.05% cases. 5.83% cases had poor result due to elbow stiffness. During this study, complications like vascular injury, compartment syndrome, myositis ossifications, and significant non-union were not seen. On comparison, it is blow the rate of reported by Beck et al. this is due to intraoperative protection of ulnar nerve. Saragaglia et al. reported postoperative 13% heterotopic ossification in type c distal humerus fractures[21]. In our study, heterotopic ossification was not seen due to early mobilization. 22.35% insignificant delayed union which was united in next 3 weeks and 7.05% insignificant malunion. We did not encounter nonunion at the olecranon osteotomy and at distal humerus postoperatively. In contrast to the findings of distal humeral nonunion in previous reports[22,23], no instances of fixation failure were detected in this study. Presumably this was a reflection of strong bilateral plate fixation and satisfactory fracture reduction. This is due to early mobilization of elbow joint. Healing ensued in all of these patients following decrease in the level of exercise intensity. We achieved bone union in an average of 3.2 months. All the fractures united without implant failure. All our cases achieved union within four months. Nonunion or delayed union is not a problem in these fractures as shown by previous studies [24-28]. The operative treatment in expert hands has yielded 75-85% excellent to good results. In the singh et al series, they treated 25 adult patients with distal humeral fractures both articular as well as extra articular, age ranging from 22-59 years. They obtained 96% of excellent to good results, 4% of fair and no poor results which are similar results

reported with the use of precontoured LCP by other authors[29,30,31]. In our series, excellent to good results were seen in 88.82% patients. 88.82% patients were satisfied with the results of treatment.

A potential limitation of our study was the absence of a control group treated by a different modality. Thus, we cannot actually determine if any other method of treatment would have led to different results. Nevertheless, our results are better than those of the previous studies in which other plates have been used.

We suggest locking recon plate and locking compression plate technology can be useful to get better results for articular fractures with osteoporotic bone.

Conclusion

We found that the olecranon osteotomy approach with double plate fixation was efficacious for the treatment of type C distal humerus fractures. Early mobilization was possible in the majority of cases, which may be a prerequisite for satisfying functional results. Complications were minimal and healing satisfactory.

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Original Article

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Reflections of Health Care Professionals During COVID-19 Pandemic: A Qualitative Approach Towards Inclusiveness of Ethics in Medical Education

Jarina Begum[1], Samhitha Gundakaram[2], Syed Irfan Ali[3], D Lakshmi Lalitha[3]

[1]Professor & HOD Community Medicine, Manipal Tata Medical college, Jamshedpur, Jharkhand, MAHE, [2]Intern, GEMS & Hospital, Ragolu, Srikakulam, AP, [3]Professor in department of Community medicine, Manipal Tata Medical college, Jamshedpur, Jharkhand, MAHE, [4]Professor, Biochemistry and Dean of GEMS and Hospital, Srikakulam.

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Abstract

Introduction: COVID19 pandemic has taught innumerable lessons of which ethical challenges have played a major role. There are no strict guidelines for health care professionals concerning ethical practices in India, the present study highlights the perception, challenges in this aspect by reflecting on the pandemic situation.

Objectives: 1.To identify and discuss the various challenges of ethical practice among health care professionals. 2. To evaluate the perceptions of health professionals towards ethical practices.

Method: A mixed research was conducted to identify the challenges, evaluate the perception among health care professionals while practicing ethics through a semi structured questionnaire.

Results: The mean age was 23.46 yrs. and majority 73% have faced challenges like ethical dilemmas during the pandemic. Around 88% of the participants have never attended any training on bioethics. Majority (92%) perceived the current teaching learning system inadequate for tackling dilemmatic situations. The ethical reflections were analysed by thematic analysis with emergence of 8 themes which are - Informed consent, truth telling, confidentiality, Communication, Doctor patient ratio, Leadership, Decision making, Conflict Management.

Conclusion: Majority encountered various new challenges and perceived the current practice of ethics to be inadequate. Also recommends regular opportunities of ethical reflections, & continuous teaching, training program for effective ethical practices by health care professionals.

Key Words: Ethical dilemma, health care professionals, Covid-19 pandemic, themes, ethical practice, Ethical reflections

Introduction

Ethics address questions about the feasibility and desirability of actions to benefit society.[1] Over the past few months, health professionals (HPs)have been confronted with the pandemic situation that includes both the need & fear of population along with constraints of the world. Although the struggle

Corresponding Author: Jarina Begum, Professor and HOD Community Medicine, MTMC, Jamshedpur, Jharkhand, Manipal Academy of Higher Education (MAHE)

Phone numbers: 9618162611

E-mail: jarina.begum@manipal.edu & dr.jarina@gmail.com

over the duty to care with an unknown level of risk was spine chilling, HPs were at the forefront to deal with every dilemmatic situation whether its breaking a bad news or giving the best available treatment. [2,3] HPs were ignorant about the importance of ethical practices until the covid-19 crisis, attributed to the ill-equipped medical schools in India for bioethics training and traditional medical education curriculum focusing on scores, with no opportunity for ethical reasoning, no exposure to contrasting ethical opinions or ethical reasoning. Therefore there is an urgent need for asystem with scope of critical reflection, new knowledge production & imminent action.[4,5]

The present study is planned to highlight the ethical concerns by the health care professionals through reflecting on dilemmatic situations during the pandemic to improve the clinical practice of ethics.

Objectives

1. To identify and discuss the various challenges of ethical practice among health care professionals.
2. To evaluate the perceptions of health professionals towards ethical practices.

Methods and Methodology

A Mixed method of research was conducted in a cross section of health professionals (Physicians including Interns, Post graduates and senior residents) who were on duty during the covid-19 pandemic. A sample of 62 between the age group of 23-45 years were selected through convenient sampling after taking their consent, excluding incompletely filled forms and those who were reluctant to share sensitive information. After ethical committee approval a pre-validated (validation by 6 subject experts) self-administered questionnaire was distributed to all participants. The questionnaire comprised of 3 sections with 7 Mcqs of demographic & other details, 5 questions related to their perception on ethical practices in 5 point likert scale and rest 10 open ended questions based on their ethical reflections under the headings of what happened (the challenges faced and how those have been tackled within each of the four major categories of i.e, autonomy, justice, beneficence, non-maleficence), so what (what is the effect on HPs, patient, & health care system),& what next (how we can improve ethical practices at individual and administrative level). The data thus collected was analysed using percentage, proportions, & themes. The responses were printed out as transcripts and read thoroughly to generate codes, group them into categories and search for provisional themes by 4 separate coders. The themes were then finally identified, reviewed, and defined to publish it on paper.

Results (Findings)

80 participants were selected and 18 were excluded attributed to incomplete forms. The mean age was 23.46 yrs and majority were males (64%) doing their internship (84.6%). Most of them were hostelers (78%) belonged to Rural (84%) background.

73% encountered ethical dilemmas during COVID 19 posting. Around 88% have never attended any workshops, CME or training on bioethics. [Figure 1]

92% have either strongly agreed or agreed to inadequacy of current teaching learning system for bioethics, only 27% were confident in tackling ethical dilemmas, 34% were aware of guidelines, risks & benefits related to bioethics, 86% wanted bioethics to be mandatory part of the curriculum.

47% opined ethical dilemmatic situations were administrative responsibility attributed to lack of training on bioethics, unawareness towards the hidden curriculum on ethical practices in medical education, ignorance & exhaustiveness of the system. [Figure-2]

The qualitative data collected from the participants through open ended questions based on their reflection and experiences with regard to usual ethical practices, ethical dilemmas encountered, challenges faced, and suggestions for improvement. The transcribed data was coded by 4 separate coders, reviewed and rereviewed before defining final 8 themes under 4 categories(Autonomy, Beneficence, non-maleficent and Justice). It resulted in emergence of seventeen sub-themes submerged in 8 themes such as I) Informed consent, II) truth telling, III) confidentiality IV) Communication V) Doctor patient ratio VI) Leadership VII) Decision making VIII) Conflict Management. [Table-1]

Table 1: The Categories, themes & subthemes emerged out of thematic analysis:

SN	Categories	Themes	Sub themes
1.	Autonomy	a) Informed consent b) truth telling c) confidentiality	Non-Satisfaction Lack of Understanding Gender discrimination Age gap Stigma Empathy
2.	Beneficence	Communication Doctor patient relationship	Resource management Non-cooperation Trust
3.	Non maleficent	Leadership Decision making	Idiopathic situations, sudden death, Unawareness Ignorance
4.	Justice	Conflict Management	Casualty Triage Critical, ambiguous, uncertain situation Communication Transparency

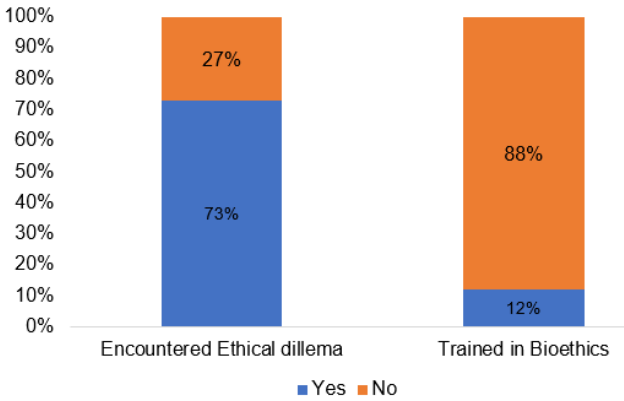

Figure-1: Experience of Heath care Professionals on practice of ethics

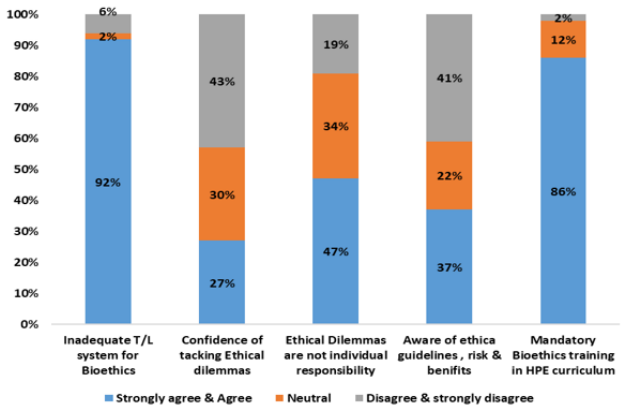

Figure 2: Perception of Health care professionals on current ethical practices

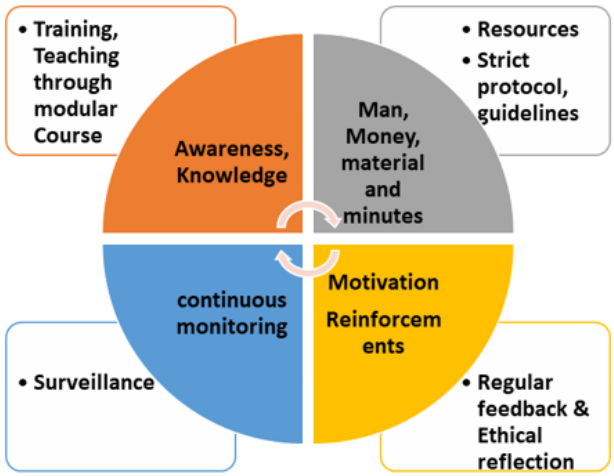

Figure-3: Suggestions for improved ethical practices as perceived by Health care professionals

1. Autonomy:

Theme-1: Informed consent: It is required for a medical or surgical procedure, or for research, are that the patient or subject must be competent to understand and decide, receives & comprehend a full disclosure, acts voluntarily, and consents to the proposed action.[6] Doctors on duty faced major problem while taking consent from patients and their relatives attributed to inability to make the patient understand the pros and cons, ignorance, and non-satisfaction from patients' side as well.

Theme-2: Truth telling: Truth-telling is a vital component in a physician-patient relationship; without this component, the physician loses the trust of the patient. An autonomous patient has all the right to know his/her diagnosis, prognosis, also an option to forgo this disclosure. Likewise, physicians also recommended to respect patient preferences.[6] Many health care professionals found truth telling difficult attributed to current violence against doctors and ever-changing medicine practice leading to lack of empathetic approach to patient care.

Theme-3: Confidentiality Physicians are obligated not to disclose confidential information given by a patient to another party without the patient's authorization. However, sharing necessary of medical information for the care of the patient from the primary physician to consultants and health-care team comes under exception.[6] Although it seems easy and convenient current pandemic situation compelled the heath care professional to breach the confidentiality sometimes where patients did not wish to disclose their covid status attributed to stigma, discriminations based on gender or age.

3. Beneficence:

Theme-4: Communication: Communication is an act of sharing information from sender to receiver. An effective communication occurs when communicator respects others' views, disagreements, listens carefully, speaks, or writes clearly. [7] The present study revealed that doctors have faced challenges while using soft skills especially communication. Failing which during the pandemic the health care professionals were captured in situations like burnout attributed to infodemic and fear of getting infected.

Theme-5: Doctor patient relationship:

The present heath care system entirely relies on doctor–patient relationship. It is the medium in which data are gathered, diagnoses and plans are made, compliance is accomplished, and healing, patient activation, and support are provided [8] However the decreasing ratio of doctor: patient during pandemic, increase demand of health care due to case overload, lack of resources, standard protocols and pandemic crisis created chaos in the health system.

3. Non-Maleficence

Theme-6: Leadership:

Goleman said, Leaders need an inner focus to be aware of their own feelings, values and intuitions, and to manage themselves well. A leader also involves others for building trust, care and respect among each other– the art of leading itself.[9] Leadership position is very tricky, and many times confused with highest position in the hierarchy. An effective leader has to have required soft skills which is not taught in undergraduate or post graduate MBBS curriculum making the position of a doctor critical in unknown, sudden difficult situation. The health care professionals have perceived lack of leadership skills as the reason behind people's ignorance and prevailing unawareness during the pandemic.

Theme-7: Decision making:

Trewatha & Newport defines decision making process as the selection of a course of action from among two or more possible alternatives to arrive at a solution for a given problem".[10] We as the leader of a health care team must weigh the pros and cons, discuss all possible solutions. This is where the dilemmatic situations arise putting a health care professional in trouble where he/she must choose one over another.

So many times, dilemmatic situations make this process difficult. Such as unknown disease like Covid 19, treatments based on trial-and-error methods, with equal ratio of risks and benefits to the patients.

4. Justice:

Theme-8: Conflict Management:

Conflict is always a part of human existence irrespective of the persons and units or organizations involved. Sometimes conflict brings advantages when it is properly handled but it also leads to disadvantages when wrongly handled. Conflict management is done by collaborating, accommodating, competing, compromising, and avoiding.[11] As per the perceptions of health care professionals, many unknown and known conflicts raised at workplace, some resolved and some not, which has resulted a clouded judgement, a false sense of fairness and transparency, which must be

tackled by appropriate training, regular feedback, and standardised policies/protocols.

Effective practice of ethics is minimal at present & the system needs lot of improvement as perceived by the participants. Suggestions given by participants were awareness, training for healthcare professionals on bioethics, continuous process of ethical reflection to learn from it along with resources and manpower enhancement. Minor group have stressed upon surveillance on healthcare professionals, dedication, and self-practice of ethics. [Figure 3]

Discussion

Present study observed a varied perceptions of heath care professional towards ethics and its practice. Hospitals must move fast to set up their decision-making frameworks regarding crisis situations like covid-19 pandemic and transparently communicate to the communities. Maccaro et. al. observed that despite the increased awareness of interdisciplinarity many use ethics with slight competence. However, the uncertainty related to pandemic will be alleviated by developing international regulations to act as a moral compass in crisis situations. [12,13]

In this study ethical challenges were discussed in terms of 8 categories and 17 themes. Similar challenges related to ethical issues were notices in high-prevalence countries around the world, during the pandemic. Skapetis, Law and Rodricks applied current ethical principles to present a unique set of challenges faced by a country with lower prevalence of COVID-19. [14]

In the present study various ethical challenges were highlighted, while sorting the patients during triage, allotting bed after admissions, taking up leadership role, making decisions during a conflicting situation. Similarly, many perceived current medical teaching & training programs on bioethics as inadequate. Studies have listed various new challenges like provision of timely health services, safeguarding vulnerable people, urgent needed remedy yet with, principles of bioethics. Likewise various other challenges such as dealing with COVID-19 patients who no longer have access to their doctors; adhering to ethical criteria when assigning risky duties to healthcare professionals; and making life and death decisions while allocating scarce resources, handling informed consent, the special needs of paediatric patients, engaging communities, mitigating concerns about discrimination and the effects of structural inequities etc[15,16]

According to ethicists enhancing medical outcomes takes precedence as a resource allocation principle in emergency triage of extremely restricted resources. Therefore, shared responsibility, and resolution of ethical disputes with appropriate guideline by relevant international and national organisations could help responding the crisis without jeopardising human rights, individual and community well-being. [17, 18]

This study observed few unique ethical dilemmatic situations which had impacted the patient and doctors adversely. They were raised while providing recommended treatment, drugs, vaccines to patients while in scarcity, personal protective equipment kits to physicians duringit's unavailability, lack of psychological counselling for doctors while in stress and burnout in the context of Covid-19 crisis. The pandemic has transformed, clinicians' usual clinical ethics by a framework of public health ethics. Allocation of resources and provision of care in hotspot cities highlight necessitated careful ethical analysis, and made the system evolved to face the crisis. [19, 20]

The health care professionals suggested solutions for better handling crisis situation in future, such as training on bioethics, documenting ethical reflections regularly, opportunity for ethical reasoning by exposure to real time critical situations and provision of effective feedback system, routine monitoring and surveillance of events related to ethics, stringent ethical guidelines by organizations along with opportunities for appropriate resource management etc. During outbreaks, ethical considerations, such as health privacies, policy implementation, evaluation, re-evaluation and amendments are extremely essential. Similarly, ethical frameworks to build trust, solidarity and guide decision-making with continuous evolvement is also equally important. [21,22]

Conclusion

The study concluded that majority perceived the current practice of ethics to be inadequate, associated with various challenges such as taking informed

consent, truth telling, maintaining confidentiality, communicating effectively, availing resources, show casing leadership skills, making decision or managing conflicts, while dealing with crisis situations. The study recommends regular opportunities of ethical reflections, appropriate resource management, effective feedback system and teaching, training program for effective ethical practices by health care professionals.

Limitations: small sample size, inclusion of only health care professionals and self-administered questionnaire with majority of qualitative component in the research.

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Original Research

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Necrotizing Fasciitis: A Vicious Soft Tissue Infection: Review Article

J. Ajin Manovah[1], J.A. Jayalal[2], Mohamed Rafeek[3], M.R. Vivek[4]

[1,3,4]Assistant Professor, [2]Professor, Dept. of Surgery, Kanyakumari Govt Medical College, Asaripallam, Nagercoil, Tamilnadu, India.

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Abstract

Background: Necrotizing fasciitis is rapidly progressive, lethaldestructive inflammation with polymicrobial infection and secondary necrosis. Though it is a disease described from the Hippocratic era, there is an increase in the incidence of necrotizing fasciitis. The most important factors determining the outcome of the disease are early diagnosis and aggressive debridement.

Materials and Methods: Cross-sectional descriptive study was conducted in a tertiary care teaching hospital's surgical ward. A total of 50 patients, diagnosed with necrotizing fasciitis based on the criteria set were included in the study. After detailed clinical and laboratory evaluation, appropriate and adequate surgical and medical interventions were administered and were followed to note the outcome.

Results: The majority of patients were over 40 years old and 74% of them were male. 72% of them had fever, 88% of them had tenderness. 68% of the patients had involvement of the lower extremities. Trauma was the predominant triggering factor and diabetes, the most commonly associated predisposing disease present in 72% of patients. 84% of the infections were polymicrobial and E. coli was isolated from 74% of them. 4 patients succumbed to the disease and 6 patients needed amputations as a life-saving measure. Acidosis and hypoalbuminemia were the most common independent predictive factors for mortality. Once sepsis is overcome and the granulation tissue is formed, the wound is covered with an SSG or flap cover.

Conclusion: The aggressive and destructive course of necrotizing fasciitis could lead to morbidity and mortality. Early recognition, aggressive debridement are the essential steps for recovery. Though broad-spectrum antibiotics started as empirical therapy to avoid the catastrophe of septic shock, appropriate antibiotics should be started as the disease is often polymicrobial. Acidosis, truncallocation, leucocytosis and decreased albumin were found to be factors strongly associated with mortality.

Key words: Necrotizing fasciitis, debridement, polymicrobial

Introduction

Necrotizing fasciitis represents a group of life-threatening, rapidly progressing bacterial infections associated with necrotic changes affecting the superficial fascia, subcutaneous tissue and deep fascia. This most aggressive form of necrotizing soft tissue infection is associated with a high mortality rate and can extend rapidly to the whole limb within hours[1,2]. The first surgeon to give a clear description of necrotizing fasciitis was Joseph Jones[1], a surgeon

Corresponding Author: M.R. Vivek, Assistant Professor, Dept. of Surgery, Kanyakumari Govt Medical College, Asaripallam, Nagercoil, Tamilnadu, India.

E-mail: drvivekmr@gmail.com

in the Confederate Army of the United States in 1871. The disease affected 2642 soldiers with a mortality rate of 46 % during the Civil War and was notified as "hospital gangrene". These lesions were referred as Fournier gangrene, acute hemolytic streptococcal gangrene, gas gangrene (clostridial myonecrosis), acute dermal gangrene, Meleney ulcer, suppurative fasciitis and synergistic necrotizing cellulitis.

Wilson in 1952 called it necrotizing fasciitis based on his observation of 22 patients who presented with edema, necrosis of subcutaneous fat and fascia without affecting the underlying muscles[3].

Necrotizing fasciitis has a varied presentation from mild to fulminant causing mortality in 6-76% of patients affected. A delay in diagnosis and the resultant delayed operative debridement often enhance mortality[4]. A high index of suspicion is warranted for the identification of red flag signs and the early prediction of fatal complications[5].

If adequate suspicion is not given, a delay in diagnosis will result. Another group of people may present without any underlying signs but with toxic features due to sepsis. Features ofedemasets in with tenderness. Skin surface will develop vesicles, bullaeand crepitus. The patches of discoloration with dusky blue lesions and gangrene sets in within four to five days. Along with the local signs, the disease will invoke systemic manifestations with altered mental status, tachycardia, dyspnoea, decreased urine output, fever, chills, hyperglycemia and metabolic acidosis[6].

It is a synergistic infection with aerobic, anaerobic or mixed flora[7]. Giuliano et al in 1977 grouped this into two microbiological groups of Necrotizing fasciitis. Currently necrotising fasciitis is classified on the basis of the involved microbes into the following four types

- Type I polymicrobial
- Type II Group A streptococcal
- Type III Gram-negative monomicrobial infection, mainly by *Clostridium* species. Marine organisms such as *Vibrio vulnificus* or *Aeromonashydrophilia* will also cause NF.
- Type IV fungi like Candida and Zygomycetes in immunocompromised patient

Pathogenesis:

Group A beta-hemolytic Streptococcus (GABS) is a major cause of monomicrobial infection with an underlying cause such as diabetes, atherosclerotic vascular disease or venous insufficiency with edema[8]. This monomicrobial Necrotizing fasciitis is more commonly reported in the extremities, abdomen, groin and perineum. The surface protein expression and toxin production are the main bacterial factors determining the severity. M-1 and M-3 surface proteins, enhances the adherence of the streptococci to the tissues and also protect the bacteria from phagocytosis by neutrophils.

Management:

Wong et al in their retrospective study, revealed significantly increased mortality if there is a delay in surgery of more than 24 hours[4]. Treatment with IV Immunoglobulin and hyperbaric oxygen therapy was attempted with varied outcomes. Negative suction drainage is used in many centres.

Materials and methodology

A prospective cohort database analysis of the results of patients diagnosed and treated for necrotizing fasciitis between January 2021 and December 2022 in Kanyakumari Government Medical College. It is a descriptive-analytical study. Institutional ethical approval was obtained and bioethical principles of research were followed. Written consent was obtained from all participants of the study.

Inclusion criteria:

Adult patients (12 to 80 years old)with a suspected or proven diagnosis of necrotizing fasciitis with the following features,

- Classic triad of symptoms: local pain, swelling and erythema.
- Tachycardia (>100 beats/min)
- Fever.
- Hypotension (SAP < 100 mmHg)
- Tachypnoea (>20/min).
- Temperature greater than 38 ◦C.
- Heart rate greater than 110 beats/min.
- Urine output less than 30 mL/h.

- Mental confusion and disorientation regarding time, place and person.

Total number of patients included in this study was 50.

Treatment:

All patients were subjected to a complete blood count, coagulation profile, blood chemistry, blood culture for bacteria, a chest X-ray and electrocardiogram.

Radical and aggressive debridement is done by surgical procedure on an emergency basis within 2-6 hours of the diagnosis. Tissue culture has been done and pending report, broad spectrum cephalosporin injection is started. Depending upon the general condition and status of shock, patients are either managed in the intensive care unit or in the ward setting.

The collected information was entered and the Statistical package for social science (SPSS) program was used for data analysis. Study parameters including demographic profile were described using percentages for categorical variables and in the median, for continuous variables. The chi-square test was used for categorical variables at a 95% confidence interval. $P < 0.05$ is taken as a significant value.

The clinical and microbiological profiles of the patients were analyzed in relation to age, sex, clinical features, site of infection, risk factors, etiological factors, microbial characteristics and treatment outcome.

Results

In our study, 74 % of people were in the age group above 40 (odds ratio = 3.4, $P < 0.05$). The Males were affected more with the ratio of Male: Female was 3:1, as out of 50 patients in the study 37 were male.

Table 1: Demographic pattern

Factors	Category	Number (%)	Male	Female
AGE	12-25	3 (6%)	2	1
	25-40	10 (20%)	7	3
	40-50	12 (24%)	8	4
	>50	25 (50%)	20	5
		50 (100)	37	13

The median time taken by the patients to report to the hospital was 8 days and it ranged from 4 to 15 days. The median number of debridement performed per patient was 5. Four of the patients (8%) couldn't recover and succumbed to the disease. Major amputation was done in 6 patients and minor amputation in 7 patients. Mean duration of hospital stay of these patients was 19 days. 21 patients were treated with SSG and in 3 patients flap cover is given. 10 patients received treatment in intensive surgical care and in 15 patients vacuum therapy is used.

Table 2: Outcome and mode of treatment

Factors	Number	Frequency %
Recovery	46	92
Mortality	4	8
Major Amputation	6	12
Minor Amputation	7	14
SSG	21	42
Flap coverage	3	6
Vacuum therapy Dressing	15	30
ISCU Care	10	20
Mean Hospital stay	19 days	

In our study, the most common site involved was the lower extremity (68%) followed by the upper extremity (14%).5 (10%) wounds were over the perineum and in the buttock.2(4%) patients had the infection over the head, neck and back.

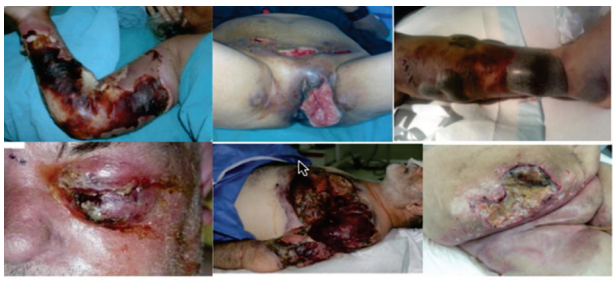

Fig 1: The different sites involved.

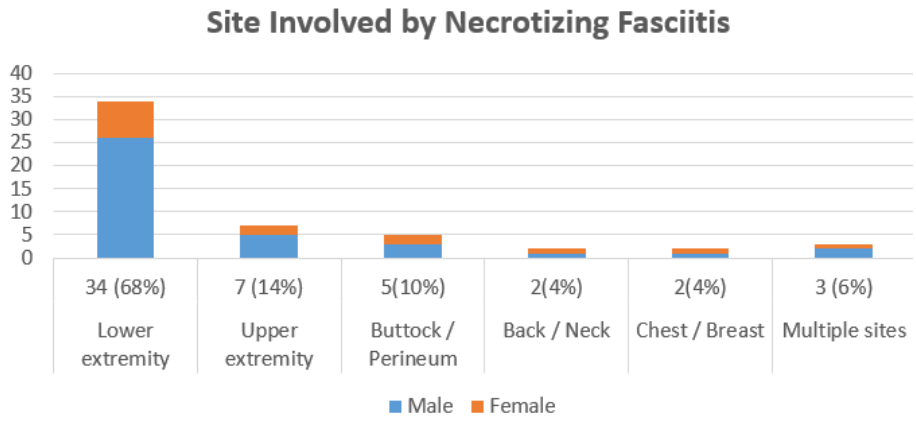

Fig 2: The different sites involved

In ten of the patients, a definite history of triggering factors was not noted. However 17 patients (34%) had a history of trauma and 10 patients (20%) had pre-existing soft tissue infection.5 patients had associated diabetic foot and infected burn wounds was there in two patients. One patient had a snake bite lesion, 2 had insect bite and 3 of them had previous surgery.

Most of the patients had concomitant diseases which was predisposing this dreaded infection. 72% had diabetes mellitus, 40% had history of alcohol intake, 24% had smoking, 20% had chronic kidney disease and another 20% had cardiovascular disease. 16% had peripheral vascular disease and 4% had portal hypertension.

Table 3: Laboratory findings of study participants

Category	Factors	N (%)	95 % CI
Biochemical Tests	Anaemia	32(62)	49.1 – 77.1
	Leucocytosis	48(96)	86.2 – 99.5
	Hyperglycaemia	31(62)	47.1 – 75.3
	Creatinine > 2mg	15(30)	40.5 – 74.4
The pattern of microbes	Polymicrobial	42 (84)	70.8 – 92.8
	Monomicrobial	8(16)	7.1 – 29.1
	Aerobic	50	98-100
Microbial Organism	E.coli	37	49.1 – 77.1
	Staphylococcus	24	40.5 – 74.4
	Streptococcus	22	38.4-70.4
	Proteus	11	9.8 – 39.1
	Klebsiella	10	9.1 – 30.1

Ten factors were taken as predictive indicators of severity and assessed for correlation with mortality. It includes the age of the patients above 40 years, metabolic status of diabetes, associated hypotension, the lesion located in the trunk, biochemical factors like anaemia mg/dL), leucocytosis, thrombocytopenia, acidosis, hypoalbuminemia, increased creatinine levels.

Table 4: Risk factors for mortality in patients with necrotizing fasciitis

Factors	Patients number/%	Positive on deceased patients in %	P-value
Age ≥ 40 yr.	37 (74%)		0.178
Acidosis(pH < 7.35)	32(64)	76.5	0.002
Leucocytosis(> 12 × 109/L)	48 (98%)	67.6	0.039
Truncal location	4 (8%)	23.5	0.036
Hypoalbuminemia(< 30g/L)	25 (50%)	67.6	0.004
Anemia(< 10mg/dL)	32(64%)	20.6	0.152
Thrombocytopenia(<100x10^9/L)	4(8%)	0.6	0.149
Hypotension	10(20%)	8.8	0.496
Diabetes mellitus	31(62)	17.6	0.953
Creatinine(> 2mg)	15(30%)	47.1	0.093

Discussion

According to the demographics of the patients in our study, the majority were over the age of 40, with a male-to-female ratio of 3: 1. Wilson et al in 1952 reported an increased incidence of necrotizing fasciitis in patients over the age of 40 years[9].

Though the commonest factor triggering or initiating disease is trauma, in 10 patients (20%), there was no triggering factor. Madumita et al. stated in their study that trauma of various kinds is the predisposing initiator for the development of necrotizing fasciitis[10].

In our study, diabetes was present in 72% of patients. The immune compromise, microangiopathy, diabetic vascular disease and neuropathy all accentuate the progression of the disease. People who have the habit of taking alcohol in excess and are associated with cirrhosis weaken the intestinal-portal route barrier, which enhances the entry of bacteria into the systemic circulation and renders patients susceptible to various infectious diseases such as NF. In their study, Gupta Y et al[11] reported a high incidence of necrotizing fasciitis in diabetics. In their study, MchenryCR et al[12] highlighted the role of alcoholism and cirrhosis in accelerating the progression of this disease.

The most common anatomical site involved in the disease in our study is the lower limb, both right and left, in 34 (68%) patients. Most of the Indian studies also depict the same picture [13]. However, there have been reports of a high incidence in the perineum in Western countries [14].

In our study, in 100% of the blood cultures, there was growth, and most of the growth patterns were polymicrobial. The commonest organisms isolated were E. coli (74%), followed by Staphylococcus aureus 24 (48%). The most common organisms isolated in the monomicrobial infection were Beta-hemolytic Streptococcus. In the majority of the published literature, it is evident the pattern of infection is polymicrobial however, the most common organism isolated was shown as Staphylococcus aureus[15]. Harikrishnan et al and Madhumita et al in their studies, have reported E. coli as the most common organism[11]. S. aureus and S.pyogenes are two more high-yielding bacteria. Variation in the isolates between studies is most probably due to the use of different antibiotics and culture techniques.

Aggressive, radical surgical debridement involving all the involved tissues is the essential treatment and it is effective when it is done as soon as the disease is suspected[16]. Amputation may be required when there is extensive involvement of an extremity that results in septic shock and leads to further complications[17]. Six patients in our study had amputations as a life-saving measure, while seven others had minor amputations.

When sepsis is fully controlled, care must be given to the nutrition and electrolyte balance to enhance recovery. Wounds that had extensive slough and discharge were subjected to negative suction therapy and responded well. 15 of our patients received vacuum-assisted dressings. Birbal et al published a series of cases comparing conventional therapy to vac-assisted wound dressing for NF and found significant improvement[18].

After the infection has been controlled and healthy granulation tissue starts appearing, the wound can be covered using either a split skin graft or flaps. In our study, 21 patients (42% of the total) received SSG and 3 patients underwent flap surgery with a good outcome. Long-term mortality rates for necrotizing fasciitis survivors are higher, according to Cheng NC et al[19]. More research is needed to identify the cause and pathogenesis of the disease.

In our study using regression analysis, it was found that acidosis and hypoalbuminemia are the independent factors strongly associated with high mortality. It is also noted that other factors like truncal location and leucocytosis are also important predictive factors. Liu et al discovered that there may be more than one comorbidity, with thrombocytopenia and anemia being the most common. Also mentioned was the 24-hour delay from the onset of symptoms to surgery and an age greater than 60 was independently associated with mortality[20]. Elliott et al found that age > 60 years, female gender, increased creatinine levels, the delay in first debridement from admission, the body surface area of the disease and multiple organ failure on admission will significantly increase the risk of death[21].

Conclusion

The aggressive and destructive course of necrotizing fasciitis could lead to lethal morbidity and mortality. Early recognition, aggressive treatment and radical debridement are the steps to recovery. Though antimicrobial therapy with broad-spectrum antibiotics started as empirical therapy to avoid the catastrophe of septic shock, based on the tissue culture, adequate appropriate antibiotics should be started as the disease is often polymicrobial. Acidosis and decreased albumin were found to be factors strongly associated with high mortality. Other possible factors include truncal location and leucocytosis.

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Original Research Article

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Knowledge, Attitude, and Practices about Biomedical Waste Management among Healthcare Personnel in Primary Healthcare Centers in Western Maharashtra

Kale Kalpana M[1], Patil Ashok G[2], AswarNandkeshav R[3], Kamble Navnath T[4], Mujumdar Harshawardhan N[5]

[1]Associate Professor, [2,4,5]Post Graduate Students, [3]Professor, Department of Community Medicine, Government Medical College, Miraj, Maharashtra, India.

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Abstract

Background: The absence of proper waste management, lack of awareness about the health hazards of biomedical wastes, and poor control of waste disposal pose the most critical problems. It is essential for healthcare workers to have the knowledge, practice, and safe method for biomedical waste handling. Our objective is to assess the knowledge, Attitude, and Practices (KAP) about BMW management among healthcare workers working at PHC in rural health areas.

Methods: The present community-based cross-sectional study was carried out among the healthcare personnel in primary healthcare centers in randomly selected Taluka of Western Maharashtra. For this questionnaire-based cross-sectional study, a questionnaire was designed which includes,relevant aspects of BMW Management like knowledge about various types of biomedical waste, its disposal in various color-coded bags, and its transport. Through the one-to-one interview, information was obtained as per the questionnaire. Data entry was done in a Microsoft Excel sheet and analysis was done. Proportion & percentage were used to interpret the result.

Conclusions: There was a lack of knowledge regarding segregation & transmission of diseases through BMW among sanitary staff. It also shows that enough precautions were not being taken for preventing needle stick injuries among nurses and sanitary staff.

Keywords: Biomedical waste, Knowledge, attitude and practice, Healthcare workers.

Introduction

The World Health Organization (WHO) defines medical waste as waste generated by healthcare activities. A large amount of Biomedical waste (BMW) is generated during diagnosis, treatment, or immunization of human beings or animals in research activities, during the production and testing of biological.[1]

The absence of proper waste management, lack of awareness about the health hazards of biomedical wastes, and poor control of waste disposal pose the most critical problems. It is the duty of every healthcare person working in a healthcare institution to take all steps to ensure segregation, safe handling & disposal of biomedical waste, without causing any

Corresponding Author: Kamble Navnath T., Post Graduate students, Department of Community Medicine, Government Medical College, Miraj, Maharashtra, India.

E-mail: navnathkamble40@gmail.com

adverse effect on human health and the environment. It is estimated that 10-25% of the healthcare waste generated is hazardous & causes serious health problems.[2]

Health workers are directly involved in the collection, transport, and disposal of BMW and are at high risk of getting the infection. They are usually unskilled and have little knowledge about the segregation and disposal of biomedical waste.[3] Therefore excellent hygiene practices and continuous monitoring and training are important aspects ofthe hospital waste management system. Training programs must be developed for doctors, health assistants, nurses, paramedical staff, and other waste handlers periodic training programs should be implemented to refresh and update their knowledge and skills to ensure a sound waste management system.[4]

Duringthe covid-19 pandemic, increase biomedical waste generation and improper treatment have posed an alarming situation.[5]The waste is deposited either inside the hospital grounds or outside in the community bin for further transportation and disposal along with the municipal solid waste. The improper, Careless, and indiscriminate disposal of this biomedical waste by healthcare workerscan contribute to the mixing of infectious and noninfectious waste. These cause the spread of serious diseases such as hepatitis and AIDS (HIV) among healthcare workers and in the community.[6]

The Government of India released the first BMW management guidelines in the year 1998, which were subsequently amended from time to time, and the Latest guidelines were published in the year 201. Despite this, the majority of the health facilities in India fail to operationalize the existing BMW management guidelines.[7]

It is essential for healthcare workers to have the knowledge, practice, and safe method for biomedical waste handling. Hence this study was undertaken to assess the knowledge, Attitude, and Practices (KAP) about BMW management among healthcare workers working at PHC in rural health areas.

Objectives:

To assess the Knowledge, Attitude, and Practices (KAP) about BMW management among the healthcare personnel in primary healthcare centers in Western Maharashtra.

Material and Methods

The present community-based cross-sectional study was carried out among the healthcare personnel in primary healthcare centers in randomly selected Taluka of Western Maharashtra from 16 July to 15 August 2022. For the present study, one taluka from Western Maharashtra was purposively selected. There were 8 primary health centers in this taluka, and all these PHCs were considered for this study. There were a total of 72 medical personnel consisting of doctors 16, health assistants 16, nurses 8, lab technicians 8, and sanitary staff 24, all of are included in the present study. For thisquestionnaire-based cross-sectional study, a questionnaire was designed which includes,relevant aspects of BMW Management like knowledge about various types of biomedical waste, its disposal in various color-coded bags, and its transport. Their attitude about the proper disposal of BMW and practices they follow for BMW disposal. Information was also obtained about the various hazards due to improper BMW disposal. Through the one-to-one interview, information was obtained as per the questionnaire. Data entry was done in a Microsoft Excel sheet and analysis was done. Proportion & percentage were used to interpret the result. Verbalconsent was obtained from all the participants for participation in the study and Confidentiality was maintained throughout the study.

Observation and Result

Table 1: Basicscharacteristricsof study subject (n- 72)

Parameters	Frequency	Percentage
Working status		
Doctors	16	22.22
Health assistants & Nurses	24	33.34
Lab technicians	8	11.11
Sanitary staff	24	33.34
Sex		

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Male	33	45.83
Female	39	54.17
Working in the hospital since		
< 1 yrs	11	15.27
1 -5 Yrs	19	26.38
> 5yrs	42	58.34
Received any training for BMW management		
Yes	56	77.78
No	16	22.22
Nature of employment		
Temporary	19	26.3
Permanent	53	73.7

Table 1 shows the basic characteristics of the study participants. In the present study, 22.2% (16) were doctors, 33.3% (24) were health assistants, 11.1% (8) were lab technicians and 33.4% (24) were the sanitary staff.45.8% (33) were male and 54.1% (39) were female participants. 58.3% (42) of health workers were working in the hospital for more than 5 years. 77.7% (56) of health workers received training in biomedical waste management. The 26.3% (19) health workers were temporary,while 73.7% (53) were permanent.

Table 2: Knowledge among healthcare personnel regarding BMW (n-72)

Knowledge regarding BMW	**Doctors**	**HA and Nurses**	**Lab. Tech**	**Sanitary Staff**	**Total**
	Frequency (%)	**Frequency (%)**	**Frequency (%)**	**Frequency (%)**	**Frequency (%)**
Know about biomedical waste	14 (87)	19 (79)	3 (37)	23 (95)	59 (81.9)
Biomedical waste management rules	15 (93.75)	21 (87.5)	7 (87.5)	16 (66.67)	59 (81.9)
Biomedical coding of waste containers	16 (100)	22 (91)	8 (100)	17 (70.83)	63)87.5)
Number of color-coded bags	12 (75)	23 (95.8)	7 (87)	24 (100)	66 (91.7)
BMW storage	16 (100)	23 (95.8)	6 (75)	24 (100)	69 (95.8)
Sharpes, syringes disposal	9 (56.2)	21 (87.5)	4 (50)	21 (87.5)	55 (76)
Healthcare waste is hazardous	16 (100)	24 (100)	7 (87.5)	24 (100)	71 (98.6)
Transmission of diseases through biomedical waste	16 (100)	22 (91.66)	7 (87.5)	13 (54.16)	58 (80.5)

Table 2 shows, the knowledge of health personnel regarding BMW management. 59 (81.9%)of healthcare workers knew biomedical waste management. 15 (93.7%) doctors, 7 (87.5) Laboratory technicians, 21 (87.5%)HA and nurses, and 16 (66.6%) sanitary staff knew the biomedical waste management rules. 91.7% (66) of healthcare workers had good knowledge about color-coded bags. 100% of doctors and HA and nurses knew that healthcare waste is hazardous. All doctors and 91% of HA and nurses knew that biomedical waste is a source for the transmission of infectious.

Table 3: Attitude among healthcare personnel regarding BMW (n-72)

Attituderegarding BMW	Doctors	HA and Nurses	Lab. Tech	Sanitary Staff	Total
	Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)
In favor of strict implem-entation	16 (100)	22 (91.6)	7 (87.5)	24 (100)	69 (95.8)
Waste management is a teamwork	11 (68.7)	19 (79.1)	4 (50)	23 (95.8)	57 (79.1)
Segregation of waste at the source	14 (87.5)	20 (83.3)	7 (87.5)	15 (62.5)	56 (77.7)
Disinfection of hospital waste before disposal	15 (93.7)	18 (75)	6 (75)	17 (70.8)	56 (77.7)
Waste management is a part of my responsibility	13 (81.2)	17 (70.8)	3 (37.5)	19 (79.1)	52 (72.2)
PPE is a must while handling biomedical waste	15 (93.7)	16 (66.7)	7 (87.5)	13 (54.1)	51 (70.8)
Upgradation BMW management knowledge is mandatory	16 (100)	20 (83.3)	6 75)	16 (100)	66 (91.7)

Table 3 shows, the attitude of health personnel regarding BMW management. The majority,>95.8%of healthcare personnel show a positive attitude and are in favor of strict implementation. 57 (79.1%) consideredthat biomedical waste management is teamwork. 7 (87.5% and 20 (83.3% of laboratory technicians and health assistants and nurse shows a positive attitude toward the segregation of waste at the source. 15 (93.7% doctors and 18 (75%) HA and nurses showed a positive attitude toward the disinfection of hospital waste before disposal. 51 (70.8%) of health workers were in favor of the use of PPE as a must while handling biomedical waste. All doctors and sanitary staff want the upgradation of biomedical waste management knowledge.

Table 4: Practice of healthcare personnel regarding BMW (n=72)

Practice regarding BMW	Doctors	HA and Nurses	Lab. Techni.	Sanitary Staff	Total
	Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)
Disposal in specified color-coded containers	16 (100)	19 (79.16)	6 (75)	13 (54.16)	54 (75)
Disposal of sharps in puncture-proof containers	15 (93.7)	18 (75)	7 (87.5)	12 (50)	52 (72.2)
Reporting of injuries due to improperly disposed sharps	3 (18.7)	4 (16.67)	2 (25)	5 (20.83)	14 (19.4)
Disposal of blood bags in an appropriate container	7 (43.7)	23 (95.8)	2 (25)	14 ((58.3)	46 (63.8)
Vaccinated against hepatitis-B	5 (31.2)	11 (45.8)	1 (12.5)	9 (37.5)	26 (36.1)
Disinfection before disposal	11 (68.7)	19 (79.1)	4 (50)	17 (70.8)	51 (70.8)
wear gloves while handling biomedical waste	16 (100)	24 (100)	7 (87.5)	21(87.5)	68 (94.4)
Maintaining BMW records	15 (93.7)	23 (95.8)	3 (37.5)	19 (79.1)	60 (83.3)

Table 4 shows, the practice of health personnel regarding BMW management. 54 (75%) out of 72healthcare workers practice disposal in specified color-coded containers. 93.7% of doctors practice disposal of sharp puncture-proof containers while only 12 (50%) of sanitary staff practiced it. Only 14 (19.4%) of healthcare workers report injuries due to improperly disposed sharps. 7 (43.7%) doctors, 2 (25%) laboratory technicians, and 14 (58%) sanitary staff practice the disposal of blood bags in an appropriate container. 68 (94.4%) of healthcare workers wear gloves while handling biomedical waste.

Discussion

The present study was conducted among healthcare personnel at primary health centers to study their knowledge, attitude, and practice about biomedical waste management. The total 72 study participants included doctors 22.2%, health assistants and nursing staff 33.3% laboratory technicians 11.1%, and sanitary staff 33.3%. 45.8% were male and 54.1% were female participants. 58.3% of health workers working in the hospital for more than 5 years. 77.7% of health workers received training in biomedical waste management. 26.3% and 73.7% of health workers were temporary and permanent respectively.

In the present study, 81.9%of healthcare workers knew about biomedical waste management. 93.7% of doctors, 87.5% of HA and nurses, and, 66.6% of sanitary staff knew the biomedical waste management rules. 91.7% of healthcare workers had good knowledge about color-coded bags. All doctors and HA and nurses knew that healthcare waste is hazardous. All doctors and 91% of HA and nurses knew that biomedical waste is a source for the transmission of diseases. VaneshM[3]In their study reported that 90.7% of doctors and 91.7% of nurses knew the knowledge of biomedical waste management rules. The study conducted by Pandave H[9] shows 70% and 77% of healthcare workers knew biomedical waste management and color-coded bags used in biomedical waste management respectively. Rajesh K in their study found, 89% of health care personnel knew that BMW is the cause for the transmission of infections.[10]

In the present study, The majority (>95.8%) of healthcare personnel show a positive attitude and are in favor of strict implementation. 79.1% of healthcare workers consider biomedical waste management to be teamwork. 87.5% and 83.3% of laboratory technicians and health assistants and nurse shows a positive attitude toward the segregation of waste at the source. 93.7% doctors and 75% HA and nurses show a positive attitude toward the disinfection of hospital waste before disposal. 81.2% and 70.8% doctors and HA and nurses consider waste management as a part of my responsibility. 70.8% of health workers were in favor of the use of PPE as a must while handling biomedical waste. All doctors and sanitary staff want the upgradation of biomedical waste management knowledge. Our findings are consistent with the study conducted by Malini A[2] 100% of doctors and 82.5% of nurses consider waste management as teamwork. 100% of doctors and 89.6% of nursing staff, and consider waste management to be a part of my responsibility. Arjun S[8] In their study shows, segregation of waste at source was practiced in 53.33% at phc, while in our study, it is 56%.

In our study, 54healthcare workers practice disposal in specified color-coded containers. 93.7% of doctors practice disposal of sharp puncture-proof containers while only 50% of sanitary staff practice it. Only 19.4% of healthcare workers report injuries due to improperly disposed sharps. 43.7% of doctors, 25% of laboratory technicians, and 58% of sanitary staff practice the disposal of blood bags in an appropriate container. 94.4% of healthcare workers wear gloves while handling biomedical waste. Anirban Din their study shows 39.8% of healthcare workers are in favor of using PPE while handling biomedical waste and 43.5% are in favor of maintaining BMW records[5]. Padave Hin their study reported that 100% of housekeeping staff were in favor of wearing gloves, following color coding for segregation of waste, and using puncture-proof plastic containers to collect shapes of biomedical waste.[9]

Conclusion

This study shows that there was a lack of knowledge regarding segregation & transmission of diseases through BMW among sanitary staff. It also shows that enough precautions were not being taken

for preventing needle stick injuries among nurses and sanitary staff. Lack of proper and complete knowledge about biomedical waste management impacts practices of appropriate waste disposal and prevention of diseases transmitted through it requiredstrict implementation of biomedical waste management rules in the health care setup and compulsory periodic training about the handling of BMW for health care workers.

Ethical clearance: taken from institutional ethics committee of the institution.

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Original Article

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Menstrual Hygiene Knowledge and Practices among Adolescent School-Girls in Haldwani, Uttarakhand: Probing the Association with School Environment

Kanakmeet Kaur Anand[1], Sadhana Awasthi[2], MohdNajmul Aqib Khan[3], Harpreet Singh[3], Rupali Gupta[4], Kunal Chaudhary[1]

[1]Post Graduate Resident, Department of Community Medicine, Government Medical College Haldwani, [2]Professor and Head of Department, Department of Community Medicine, Government Medical College Haldwani, [3]Assistant Professor, Department of Community Medicine, Government Medical College Haldwani, [4]Senior Resident, Department of Community Medicine SGRRI&MHS patel nagar Dehradun.

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Abstract

Background: Menstruation is one of the most significant social, and psychological changes that a female experiences. A mixture of incomplete and erroneous information about the safe and hygienic menstrual practices, as well as improper menstrual management at home or school can be a significant barrier to girls' school attendance and educational experience quality. Menstrual hygiene being a multi-sectoral public health issue needs to be dealt in integration with education, health, women and child development and water sanitation hygiene (WASH).

Objective: To assess the knowledge and practices towards menstruation and menstrual hygiene among adolescent girls and its association with the school environment.

Method: This study was an analytical cross sectional study, conducted among the 850 adolescent girls of government and private schools in Haldwani. Data was analyzed using SPSS (version 16).

Results: More than half of the participants from government and private school showed average knowledge and practices regarding menstruation and menstrual hygiene. Facilities in school related to menstrual hygiene management was found to be associated with menstrual hygiene practices among the study participants. ($p<0.05$)

Conclusion: These findings indicate the need for education about safe and correct menstrual hygiene practices. School environment related to menstrual hygiene management should be improved and strengthened as per the need of adolescent population.

Key words- Menstrual hygiene, School environment, Menstrual Hygiene Management

Corresponding Author: Kanakmeet Kaur Anand, Post graduate resident, Department of Community Medicine, Government Medical College Haldwani.

Contact no. 9690360182

E-mail: kanakmeet.anand@gmail.com

Introduction

Adolescence is defined as the age between 10-19 years.[1] There are 242 million adolescents aged 10-19 in India comprising 18% of the total population and among them 116 million are girls.[2] Menstruation is one of the most drastic change which affects a girl physically, socially and psychologically. Absence of correct knowledge due to different socio-culture beliefs can bring confusion and affects a girl emotional and psychological status. It can result into negative attitude towards menstruation and affects her menstrual hygiene practices.[3] Lack of access to clean, effective absorbents; inadequate facilities to change, clean and dispose of absorbents; lack of access to soap and water; and lack of privacy at home or school will results into higher rates of school drop-outs and school absenteeism among the adolescent girls.[4] Poor Menstrual Hygiene Management indirectly will create an obstacle in the achievement of the Sustainable development goals: Physical health and psycho-social well-being for women and girls, quality education for girls, gender empowerment and equality.[5]

"SchoolHealthProgram" launchedbyGovernment of India, Rashtriya Bal Swasthya Karyakram (RBSK) and Rashtriya Kishor SwasthyaKaryakram (RKSK) are various initiatives taken which aims to strengthen the preventive and promotive aspects of health in environment of schools in line with the overall approach of Ayushman Bharat.[6]

Correct knowledge about menstruation and menstrual hygiene will eventually result into correct menstrual hygiene practices among the adolescent girls. Current study aimed to assess the knowledge and practices towards menstruation and menstrual hygiene among adolescent girls and its association with the school environment.

Materials and Methods

It was a school-based analytical cross-sectional study conducted from February 2022 to August 2022 among 850 adolescent girls of ten government and ten private schools (12-19 years of age) in Haldwani block of Uttarakhand. Multistage sampling with probability proportional to size was used for the selection of schools and participants. Pre-tested, semi-structured, self-administered questionnaire in preferred language was used. The sample size was calculated on the basis of prevalence of school absenteeism due to poor management of menstrual hygiene among adolescent girls= 50.6% in a study conducted by Bali et al.[7], among adolescent girls. Using $N = (Z1-\alpha/2)^2pq/d^2$, where: N = sample size, Z = Z statistic for a level of confidence (1.96), p = expected prevalence or proportion, q= 1-p, d = precision 7% (relative) at 95% confidence interval and with addition of 10 percent non- response rate, 850 sample size was obtained. Adolescent girls between (12 to 19 years of age) who attained menarche and gave the consent were included in the study. The permission for conducting the study was taken from Principal of each school and consent from parents/ guardians of each study participant.

The knowledge score was generated using 6 items and practice score was derived using 7 items from the questionnaire about menstruation and menstrual hygiene. Each correct answer received one mark, while each incorrect response received none. Finally, the score was classified as poor, average, or good. Ethical clearance was obtained from Institutional Ethics Committee, Government Medical College, Haldwani, Uttarakhand.

Statistics

The data was entered in MS Excel and analyzed by using SPSS version 16. Descriptive analysis was executed for each of the variables in the form of frequency and percentage. Chi square test was used to find out association between qualitative variables and t-test for quantitative variables. p value <0.05 was considered significant.

Results

In our study, a total of 850 participants (12-19 years of age) were evaluated. Most of the participants were middle- adolescent and belonged to nuclear family.

Table 1: Knowledge regarding menstruation and menstrual hygiene among the study participants (N=850)

Variable	Government School(n=425)	Private School (n=425)	Total (n= 850)	p-value*
Knowledge about menstruation before menarche				
Yes	248 (58.1)	306 (72.0)	554(65.1)	<0.001
No	178 (41.9)	119 (28.0)	297(34.9)	
Cause of menstruation				
Normal physiological process	114 (26.8)	268 (63.1)	382(44.7)	<0.001
Due to some food	5 (1.2)	00	5 (0.58)	
Cleans the body	238 (56)	90 (21.2)	328(38.5)	
Punishment of god	4 (0.9)	4 (0.9)	4 (0.47)	
It is a disease	00	4 (0.9)	4 (0.47)	
Don't know	64 (15.1)	59 (13.9)	123(14.4)	
Organ of menstruation				
Uterus	195 (45.9)	321 (75.5)	516 (0.7)	<0.001
Bladder/ Stomach/ Kidney	78 (18.4)	24 (5.6)	102(12.0)	
Don't know	132 (35.8)	80 (18.8)	212(24.9)	
Menstrual cycle repeats after how many days				
After 15 days	8 (1.9)	8 (1.9)	16 (1.8)	0.048
After one month	362 (85.2)	389 (91.5)	751(88.3)	
After 2-3 month	37 (8.7)	12 (2.8)	49 (5.7)	
Don't know	18 (4.2)	16 (3.8)	34 (4.0)	
Duration of normal menstrual period				
<2 days	52 (12.2)	32 (7.5)	84 (9.8)	< 0.001
2-7 days	316 (74.4)	281 (66.1)	597(70.0)	
>7 days	57 (13.4)	112 (26.4)	169(19.8)	
Hygienic absorbent to be used				
Sanitary napkins	293 (68.9)	373 (87.8)	666(78.3)	<0.001
Cloth	28 (6.6)	10 (2.2)	38 (4.4)	
Both	104 (24.5)	42 (10.0)	146(17.1)	

* chi-square test applied

Majority of the participants (69% from government and 89% from private school) answered sanitary napkins as a hygienic absorbent. Significant association was observed between type of school and sound knowledge about menstruation, such as knowing menstruation before menarche, the cause and organ of menstruation, the normal duration of menstruation, the number of days before the menstrual cycle repeats, and the hygienic absorbent to be used during the menstrual cycle ($p<0.05$), as a higher proportion of students from private schools provided the correct answers (Table 1).

Table 2: Knowledge level regarding menstruation and menstrual hygiene among the study participants (N=850)

Grades of score	Government school (n=425)	Private school (n=425)	p-value
Good	16 (3.8)	48 (11.3)	<0.001
Average	236 (55.5)	289 (68.0)	
Poor	173 (40.7)	88 (20.7)	
Mean Score (SD)	5.05 (2.07)	6.10 (1.91)	<0.001

Majority of the participants from government and private school had average level of knowledge. Poor knowledge was reported in higher proportion among government school participants. Mean knowledge score was found to be greater among private school participants. Independent t-test showed a significant difference in the mean score of knowledge between government and private school participants ($p < 0.05$) (Table 2)

Table 3: Practices regarding menstrual hygiene among the study participants (N=850)

Variables	Government School (n=425)	Private School (n=425)	Total (N= 850)	p-value*
Absorbent used during menstruation				
Sanitary napkins	293 (68.9)	373 (87.8)	666 (78.3)	<0.001
Cloth	28 (6.6)	10 (2.2)	38 (4.4)	
Both	104 (24.5)	42 (10.0)	146 (17.1)	
Method of disposing absorbent in house				
Throw in open drains, open grounds, gutter nearby	18 (4.2)	8 (1.9)	26 (3.0)	<0.001
Throw them into dustbin with regular waste	152 (35.8)	182 (42.8)	334 (39.2)	
Throw in separate dustbins	129 (30.4)	203 (47.8)	332 (39.0)	
Burry it underground	18 (4.2)	8 (1.9)	26 (3.0)	
Burn it	93 (21.9)	20 (4.7)	113 (13.2)	
Throw them in latrine / commode	15 (3.5)	4 (0.9)	19 (2.2)	
Material used for wrapping absorbent before disposal				
Paper	91 (21.4)	100 (23.5)	191 (22.4)	0.77
Plastic polythene	139 (32.7)	136 (32.0)	275 (32.3)	
Paper and Plastic both	186 (43.8)	177 (41.6)	363 (42.7)	
Nothing	9 (2.1)	12 (2.8)	21 (2.4)	
Average number of absorbent used per day				
One	32 (7.5)	20 (4.7)	52 (6.1)	0.222
Two	195 (45.9)	184 (43.3)	379 (44.5)	
Three	139 (32.7)	157 (36.9)	296 (34.8)	
Four or more	59 (13.8)	64 (15.1)	123 (14.4)	
How often do you clean your genitalia during menstrual cycle				
Only During bathing	85 (20)	116 (27.3)	201 (23.6)	<0.05
Every time after toilet	332 (78.1)	309 (72.7)	641 (75.4)	
Do not clean	8 (1.9)	00	8 (0.9)	
Do you wash your hands after changing absorbent				
Yes	416 (97.9)	417 (98.1)	833 (98.0)	0.806
No	9 (2.1)	8 (1.9)	17 (2.0)	
Taking bath during periods				
Yes	404 (95.1)	409 (96.2)	813 (95.6)	0.77
No	21 (4.9)	16 (3.8)	37 (4.3)	

* chi-square test applied

A significant relationship was also observed between the type of school and correct menstruation practices, such as the type of absorbent used during menstruation, the proper method of disposing of absorbent at home, and the frequency of cleaning the genitalia during the menstrual cycle ($p<0.05$), as a higher proportion of students from private schools had these practices correct. (Table 3).

Table 4- Practice level regarding menstrual hygiene among the study participants (N=850)

Grades of score	Government School (N=425)	Private School (N=425)	Total -850	p-value
Good (6-7)	120 (28.2)	177 (41.6)	297 (34.2)	<0.001
Average (4-5)	248 (58.4)	224 (52.7)	472 (55.5)	
Poor(1-3)	57 (13.4)	24 (5.6)	81 (9.5)	
Mean Score(SD)	4.76 (1.21)	5.21 (0.97)		<0.001

Good level of practice was shown by 28 percent of participants from government school while 41 percent of private school. Majority of the participants from both type of school showed average score in menstrual hygiene practice level. Chi-square and Independent t-test showed a significant difference in the practice level and mean practice score among the participants of government and private school ($p<0.001$) (Table 4).

Table 5: Association of Menstrual Hygiene Practice with school environment (N=850)

Variables	Menstrual Hygiene Practice							
	Government School (n=425)				Private School (n=425)			
	Poor N(%)	Fair N(%)	Good(%)	p-value	Poor N(%)	Fair N(%)	Good N(%)	p-value
Provision of emergency sanitary pads in school								
Yes	40 (13.1)	169 (55.4)	96 (31.5)	0.048	24 (8)	148 (49.2)	129 (42.9)	0.002
No	17 (14.2)	79 (65.8)	24 (20)		00	76 (61.3)	48 (38.7)	
Provision of water facility in school								
Yes	57 (14)	230 (56.5)	120 (29.5)	0.001	24 (6.5)	189 (51.1)	157 (42.4)	0.06
No	00	18 (100)	00		00	35 (63.6)	20 (36.4)	
Provision of soap facility/ hand-wash facility in school								
Yes	38 (13.2)	158 (55.1)	91 (31.7)	0.066	12 (5.9)	112 (54.9)	80 (39.2)	0.621
No	19 (13.8)	90 (65.2)	29 (21)		12 (5.4)	112 (50.7)	97 (43.9)	
Any counseling session/ help regarding menstrual issue or safe disposal in school								
Yes	40 (13.2)	164 (53.9)	100 (32.9)	0.003	20 (7.5)	161 (60.3)	86 (32.2)	<0.001
No	17 (14)	84 (69.4)	20 (16.5)		4 (2.5)	63 (39.9)	91 (57.6)	
Gender separated toilet facility in school								
Yes	52 (13.8)	213 (56.6)	111 (29.5)	0.138	24 (5.9)	212 (51.8)	173 (42.3)	0.164
No	5 (10.2)	35 (71.4)	9 (18.4)		0-	12 (75)	4 (25)	
Dustbins present in or near the toilet for waste disposal								
Yes	30 (10)	180 (59.8)	91 (30.2)	0.004	8 (2.8)	148 (51.2)	133 (46)	<0.001
No	27 (21.8)	68 (54.8)	29 (23.4)		16 (11.8)	76 (55.9)	44 (32.4)	
Total	57	248	120		24	224	177	

Most of the school environment factors like provision of emergency sanitary pads, water facility in toilets, counselling sessions or help and presence of dustbins in or near the toilet came out to be significantly associated with correct menstrual hygiene practices among the participants of both type of schools ($p<0.05$). (Table 5)

Discussion

27% and 64% participants from government and private school respectively knew menstruation as a normal physiological process. Similar to this findings, regarding the causes of menstruation was noted in the study done by **Mamilla et al(2019)**[8]and by **Shoor et al(2017).**[9]

Uterus as an organ of menstruation was rightly known by 46% and 75% of the participants from government and private schools respectively. This finding simulates with the study conducted by **Wagh et al(2018)**[10] in urban Nagpur where it was found to be 68%. Contrary findings were seen in the study of **Mamilla et al (2019)**[8] and **Bali et al (2020)**[7]where it was 20% and 4% respectively.

In the present study, more than two-third (78%) of the respondents were using sanitary pads. This result is in accordance with **NFHS-5 data**[11], which stated that 64.5% adolescent girls are using sanitary napkins. Similar finding were seen in the study by **Sangha NK et al(2022)**[12] and **Shetty et al. (2021)**[13]. Opposite finding were seen in the study conducted by **Bali et al. (2020)**[7]in urban slum of Madhya Pradesh.

Throwing of used absorbents in the dustbins were reported by 60% and 80% participants of government and private schools respectively in our study. Similar finding were obtained in studies by **Sangha et al**[12].

In the present study we found that more than half of the participants of both the schools had average level of knowledge practice regarding menstrual hygiene. Poor level of knowledge was scored by 40% participants from government school while 20% participants from private school. Double the number of participants from private school scored good in practice score as compared to government school. These findings were not comparable with the studies of **Mahajan and Kaushal(2022)**[14] and **Gupta et al.(2019)**[15]**. Mahajan and Kaushal (2022)**[14] also observed that 19%, 69%, 12% samples had poor, fair and good score regarding menstrual hygiene practices respectively.

Conclusion

In our study we observed average knowledge and practice level regarding menstrual hygiene among a major proportion of participants. School environment of the adolescent girls showed significant association with the practices related to menstrual hygiene. This study adds to the literature in focusing impact of school environment and facilities required by adolescent girls to adopt correct and hygienic menstrual practices**.**

Recommendations:

Based on our findings of the study, it can therefore be suggested that efforts are needed to provide facilities related to Menstrual Hygiene Management including provision of sanitary pads when required, basic water and soap facility, presence of dustbins in or near the toilets to dispose of the menstrual waste and sensitization of young population to basic hygiene by regular teaching activities in schools.

Limitations:

The respondents might not have disclosed all answers due to the sensitive nature of the topic. This study didn't enquire about the knowledge of teachers and parents regarding this important issue. In-depth interview could be performed to address the sensitive and unaddressed problems in adolescent life.

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Conflict of interest: Nil

Ethical approval: The study was approved by the Institutional Ethics Committee

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Original Research Article

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Comparative Study of Plating Versus Closed Square Nailing in Forearm Fractures in Andhra Pradesh Population

Kiran Kumar Tapal[1], B Bhanu Pratap[2]

[1,2]Assistant Professor, Department of Orthopaedics Vishwa Bharathi Medical College Penchikalapadu RT Nagar, Kurnool, Andhra Pradesh.

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Abstract

Background: Fracture of forearm bones impair the supination and pronation movements of proximal and distal end of the forearm. Restriction of these movements leads to difficulty in activities of daily living.

Method:60 patients were included in the study out of which 30 were treated with plating and screws and 30 were treated with closed square nailing method. The functional outcomes of both patients were compared.

Results: 32 (53.3%) had right side forearm fracture, 28 (46.6%) had left side fracture, 28 (46.6%) had RTA, 32 (53.3%) had indirect injuries, 16 (53.6%) Nailing, 21 (70%) DCP had excellent results, 7 (23.3%) nailing and 2 (6.6%) DCP had poor results.

Conclusion: In the present study it was concluded that plating has good functional end results and is the best technique to treat fracture of forearm bones. Bone is a highly elastic tissue with good healing potential and hence it requires proper tightening and moulding to facilitate proper movements.

Keywords: Road Traffic Accident (RTA), Dynamic compression plate (DCP), Hadden criteria, Nailing, Andhra Pradesh

Introduction

The forearm bones radius and ulna, in combination with proximal and distal radio-ulnar joints allows supination and pronation movements that are important to all of us in usual activities of daily living. Fracture of forearm bones may result in severe loss of function unless properly treated [(1)]. Severe loss of function may result even though adequate healing of the fracture occurs. Hence proper and ideal method of treatment is necessary to get back stability as well as normal range of function. It is difficult to achieve a satisfactory closed reduction of displaced fractures of the forearm bones and if achieved.[(2)(3)] it is hard to maintain. Unsatisfactory results of closed treatment have been reported to range from 38% to 74%. For this reason, open reduction with internal fixation is routine except for un-displaced fractures. Fractures of both bones or displaced isolated fracture of radius or ulna should be treated by open reduction, plate fixation and cancellous bone grafting whenever there is bone loss[(4)]. Hence attempt was made to evaluate the functional out come in plating versus inter medullary nailing and compare the results considering the bony union and functional range of movements.

Corresponding Author: B Bhanu Pratap, Assistant Professor, Department of Orthopaedics, Vishwa Bharathi Medical College Penchikalapadu RT Nagar, Karnool Andhra Pradesh.

E-mail: bhanu7123@gmail.com

Material and Methods

60 (sixty) patients aged between 20 to 40 years who suffered fracture of both bones forearm and visited to department of orthopaedics at Vishwa Bharathi Medical College hospital penchikalapadu RT Nagar, Kurnool, Andhra Pradesh were studied.

Inclusive Criteria: Patients aged above 18 years and below 70 years. Diaphyseal fracture of ulna and radius patients fit for surgery and given the consent in writing.

Exclusion Criteria:

- Fracture of forearm bones in children and adolescents,
- Pathological fractures.
- Patients unfit for surgery and significant co-morbidities affecting bone healing.
- With associated dislocation or intra-articular extensions.
- Open fracture patients
- Segmental fractures

Method: Every patient underwent clinical and radiological examination at the time of admission. Type, site, displacement, rotation and angulations of fractures were determined.

Open reduction and internal fixation by plates and screws was the choice of treatment for all unstable diaphyseal fractures but some of the patients who refused for plating, under went well fitting intra medullary fixation by square nail.

Pre-operatively, the patients were prepared and operative procedures were carried out under strict aseptic precautions. Tourniquet was used in all the cases.

Patient lies on his back with limb resting on the side table. One shot of injectable antibiotic was given half an hour before skin incision. For plating in both bones separate incisions were made, for ulna subcutaneous incision was made and for radius both henry's and Thompson approach was used. Intra medullary-square Nails were used for fixation in the nailing group.

Follow up – At follow up, examination was recorded, then clinical and radiological examination was carried out.

It was a prospective study betweenMay-2018 to March-2022

Statistical analysis: Functional End results of fractures were studied and classified with percentage. The statistical analysis was carried out in SPSS software.

Observation and Results

Table-1: Demographic profile

- The ratio of male and female was 2:1.
- side of fractures – 32 (53.3%) right side, 28 (46.6%) left side
- Mode of injuries – 28 (46.6%) Road traffic accident, 32 (33.3%) indirect injures

Table-2: Functional End results of present study As per Haddan etal Criteria

- Excellent – 16 (33.3%) Nailing, 21 (70%) DCP
- Good – 7(23.3%) Nailing, 4 (13.3%) DCP
- Fair – 3 (10%) Nailing, 3 (30%) DCP
- Poor – 4 (13.3%) Nailing, 2 (6.6%) DCP

Table 1: Demographic profile of patients in adults

Total No. of patients: 60

Details	No. of patients (60)	Percentage (%)
Side of forearm fractures Right side	32	53.3
Left side	28	46.6
Mode of Injures (a) RTA (Road Traffic Accident)	28	46.6
(b) Indirect Injuries	32	33.3

Table 2: Functional End results of present study (As per Haddanetal criteria)

Results	Present study		
	Nailing	DCP	Haddanetal
Excellent	16 (33.6%)	21 (70%)	60 (54.50%)
Good	7 (23.3%)	4 (13.3%)	29 (26.4%)
Fair	3 (10%)	3 (10%)	11 (10.0%)
Poor	4 (13.3%)	2 (6.6%)	10 (9.10%)
Total	30 (100%)	30 (100%)	110 (100%)

DCP = Dynamic compression plate

Discussion

Present study of plating versus closed square nailing in forearm bone fracture in Andhra Pradesh Population. The demographic profile had 32 (53.3%) right side, 28 (46.6%) left side. The mode of injury was 28 (46.6%) RTA, 32 (53.3%) indirect injuries (Table-1). The functional end results of present study was 16 (53.3%) Nailing, 21 (70%) DCP had excellent, 7 (23.3%) nailing, 4 (13.3%) DCP had good, 3 (10%) nailing, 3 (10%) DCP had fair, 4 (13.3%) Nailing, 2 (6.6%) DCP had poor results (Table-2). These findings were more or less in agreement with previous studies [5][6][7].

The disadvantage for nailing was more immobilization time required than plating, range of motion was observed after 2 months. After 2 months supination and pronation movements were possible with continuous physiotherapy in nailing patients [8].

If canal is narrow and nail could not be inserted then open reduction was done.[9]. Olecranon bursitis was observed in patients when the nail was left more than 5mm outside. Radiation exposure to surgeon is more in single nailing procedure than plating fixation [10].

The chances of re-fracture are less in nailing as compared to plating. Removal of implant nail could be done on local injection and also cost effective. Two nails could be inserted in a single fractured bone of forearm.

Intra medullary nails are subjected to smaller bending loads than plates and are likely to fail by fatigue. The reason is that, they are closer to mechanical axis than usual plate position which is on the external surface of the bone [11].

Intermedullary nails act as a load sharing device in fractures with cortical contact. Stress shielding with resultant osteopenia commonly seen with plate and screws, is minimised with intramedullary nails.

It is reported that, open reduction and compression plate fixation have become treatment of choice for diaphyseal fractures of forearm bones in adults [12][13]. Compression plate fixation gives a high rate of union, low rate of complications and the satisfactory return of rotation of forearm. Thus excellent results were observed in plating technique. The advantages of the screw fixation are the reduction is done under direct vision; the plates are applied so that there is a compression at the site of fracture. Bone grafting can be done if needed. The fixation being rigid, post operative immobilisation in a cast is not needed. The rigid fixation of plates and screws helps in primary bone union as compared to secondary union seen with intramedullary nails.

Summary and Conclusion

In the present study it was observed that, plating gives rigid fixation ensures early return of function, less immobilisation time and avoids use of external bracing.

Operative technique of plating is more demanding due to meticulous soft tissue dissection required for exposure.

Nailing is more biological fixation, gives smaller surgical scar, cost effective and could be easy implant removed. It requires image guidance and more radiation exposure to surgeon in multiple nailing.

Ultimately the surgeon is an ideal person to decide the methods to treat the fracture of elbow joint.

Limitation of Study: Owing to the small number of patients, the results are limited and need further larger studies. Long term follow up is need.

This research paper work approved by Ethical committee of Vishwa Bharathi Medical College Penchikalapadu RT Nagar, Kurnool, Andhra Pradesh-518467

Conflict of Interest: No

Funding: No

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Case Series

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Cytohistological Evaluation of Unusual Male Breast lesions: A Case Series from a Tertiary Care Centre

Madhumita Paul[1], Manisha Mahata[2], Sajeeb Mondal[3], Rajashree Pradhan[4], Bidisha Chakraborty[5]

[1]Senior Resident (Demonstrator), [2]Assistant Professor, [4]Associate Professor, [5]Senior Resident, Department of Pathology, College of Medicine & Sagore Dutta Hospital, [3]Associate Professor, Department of Pathology, Rampurhat Government Medical College & Hospital.

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Abstract

Introduction: Pathologic lesions of male breast are not as common as its female counterpart.

In this study we have reported six cases of unusual pathological lesions of male breast presenting clinically as breast lump studied by Fine Needle Aspiration Cytology (FNAC) with histologic correlation.

Method: 6 male patients were studied who presented to us with breast lump and had FNAC done with subsequent histopathological correlation.

Result: Out of 6 cases, 3 were fibromatosis (desmoid-type), 2 cases of invasive carcinoma involving both breasts with axillary lymph node metastasis and 1 case of complex fibroadenoma were reported. In all of the above cases definitive diagnosis was given on FNAC with subsequent histopathological confirmation except for fibromatosis in which the diagnosis was benign breast lesion on FNAC.

Conclusion: FNAC being a fast and cheap diagnostic tool proves to be a reliable diagnostic method for evaluation of breast lumps at an earliest with excellent histologic reproducibility.

Keywords: Complex fibroadenoma, Fibromatosis, FNAC, Male breast lumps.

Introduction

Pathologic lesions of male breast are not as common as its female counterpart. Majority of the lesions are gynecomastia and carcinomas. Other rare lesions include fibroepithelial tumors, papilloma, duct ectasia and others.[5] Prevalence of gynecomastia varies from 32% to 65% in respective age groups.[2] Carcinomas rarely occur in male breasts, approximately 1% of all malignancies in men. Since, clinically it resembles gynecomastia & other benign lesions, urgent identification & discrimination of these two contrasting pathological entities is warranted.[1]Although, open surgical biopsy is the gold standard diagnostic procedure for palpable lesions, in recent times FNAC & CNB, both have become established diagnostic tool for evaluation of palpable breast lesions.[12]. FNAC is a cheap, fast and

Corresponding Author: Rajashree Pradhan, Associate Professor, Department of Pathology, College of Medicine & Sagore Dutta Hospital.

Mobile: 7980217205

E-mail: pradhanrajashree99@gmail.com

reliable diagnostic tool that provides prompt and precise diagnosis economically & conveniently.[13,9]

Thus, with this study we aim to cytologically evaluate various pathological lesions affecting male breasts and then to validate its diagnostic accuracy with their respective histopathological diagnosis.

Materials and Methods

1. Place of Study: Department of Pathology, CMSDH, Kolkata
2. Inclusion Criteria: Male patients presented with palpable breast lump are included in the study
3. In this case series, FNAC of the breast lump followed by core needle biopsy and histopathological study were done.

FNAC smears were stained with Leishman and Pap stain

Histopathology sections were stained with H&E and were examined under light microscope.

Findings

Case 1

62 years male patient presented with a firm lump in the left breast measuring 4cm x 3cm, gradually increasing in size for last 2 years with restricted mobility.

Case 2

Our second case was a 25 year old boy presenting with an ill-defined, firm, diffuse sub-areolar lump measuring 2.5cm x 2cm in the left breast for 3 months.

Case 3

Third case was a 67-year-old male presenting with a firm, button-like swelling in the left breast measuring 2cm x 2cm for 1 month.

FNAC of the above three cases showed small clusters of ductal epithelial cells showing mild to moderate atypia along with bland spindle-shaped cells with hyperchromatic nuclei in an abundant fibrofatty stroma. Scattered inflammatory cells are seen in the background. Diagnosis was given as benign breast lesion possibly Gynecomastia. (Figure 1)

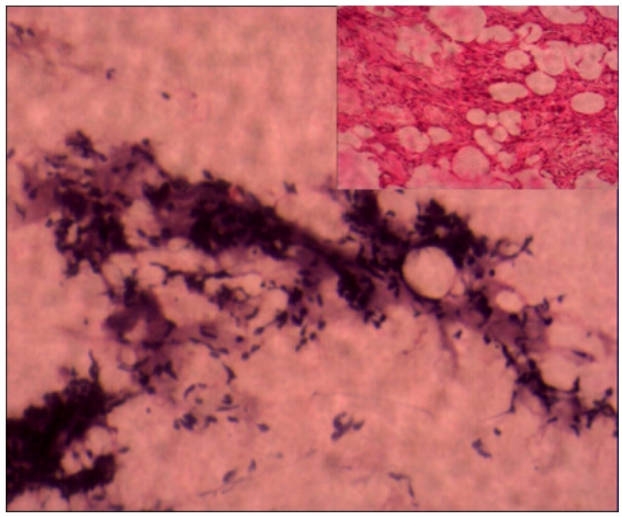

Fig 1 showing cytology & histopathology (inset) of Desmoid (Fibromatosis) (H&E, Low power)

However, considering the cellular atypia and abundant fibrofatty stroma in the background, urgent biopsy and histopathology study was suggested.

Lumpectomy was received which on histopathological examination showed long, sweeping and intersecting fascicles of bland spindle cells. Focal areas showed mild nuclear atypia. Highly collagenous areas were also seen. The peripheral margin was infiltrative with presence of adipose tissue trapping and collagen trapping. Few lymphoid aggregates forming follicles were seen at the periphery. To one side of the tumor, there was presence of compressed TDLU. No evidence of any malignancy was noted. Diagnosis was given as **Fibromatosis (desmoid-type)** of male breast. (Figure 1, inset)

Case 4

Our fourth case was a 49-year-old male patient presenting with a firm lump measuring 6cm x 5cm in the retro-areolar region of the right breast.

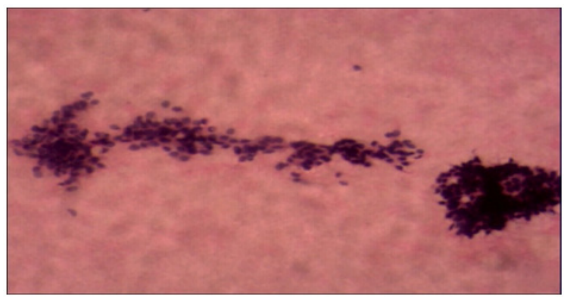

Figure2a: FNAC smear of Proliferative Breast Disease (Low power, H&E)

FNAC report was given as Proliferative breast disease (Figure 2a) with cystic apocrine change and focal atypia.

However, urgent biopsy and histopathology study was suggested for confirmation and categorization.

Core-needle biopsy showed apocrine papillary cystic lesion with underlying stromal Osseo fibrous metaplasia.

Lumpectomy specimen was received and histopathological examination (Figure 2b) was done which showed features of fibroadenoma admixed with features of papillary apocrine hyperplasia and cysts >3mm in size. Final diagnosis was given as **Complex Fibroadenoma**.

Case 5 & 6

Our fifth case was a 55 years male presenting with a hard lump measuring 5cm x 4cm in the left breast and fixed to the overlying skin & hard swelling involving the right breast measuring of 3cm x 2 cm in size.

Our sixth case was a 65 years old male presenting with a hard lump measuring 3.5cm x 4cm in the left breast and multiple hard swellings with skin ulceration and fixed to the underlying structures.

In both the cases there is axillary lymph nodes enlargement.

FNAC smears from both the cases showed moderate cellularity with clusters of atypical cells. Cells had high N:C ratio, moderate amount of cytoplasm and irregular nuclear margin. Smears from axillary lymph nodes show metastatic deposits. Cytology report was given as invasive breast carcinoma with axillary lymph node metastasis. (Figure 3, inset) Advice for urgent biopsy & histopathological examination for confirmation and categorization were given.

We had received modified radical mastectomy (MRM) specimens of both the cases for histopathological examination.

Sections from the growth in both the cases showed highly pleomorphic ductal epithelial cells arranged predominantly in solid and nested pattern with variable mitoses. Areas of come do-necrosis seen. The surrounding stroma showed marked fibrosis and elastic tissue deposition. Lympho-vascular invasion was present. Diagnosis was given as **Invasive carcinoma of breast-No Special type**. (IC NST), Histological grade -2 in both the cases, & pathological stage $\mathbf{P^{TNM}}$ **(P** T2N1MX). (Figure 3)

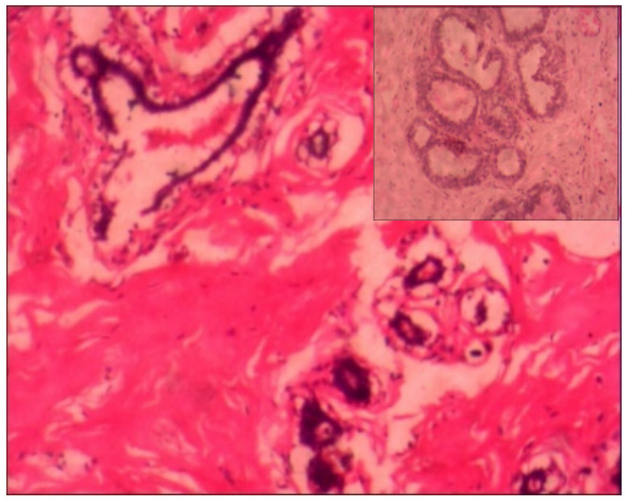

Figure 2b: Histological sections showing fibrocystic change, apocrine metaplasia (lower inset) & gynaecomastia (upper inset) (Low power, H&E)

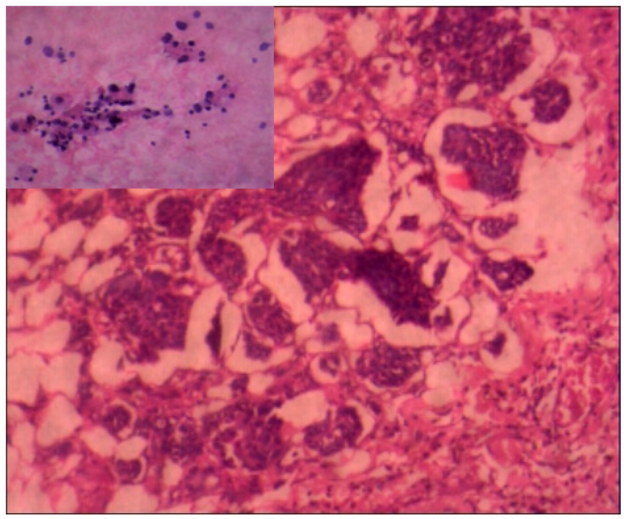

Figure 3: Cytology (inset) & histopathology of carcinoma breast (H&E, Low power)

Discussion

FNAC of breast is a common diagnostic tool which is used as a part of the diagnostic triad that includes clinical breast examination and radiological evaluation (ultrasonography & mammography) in addition to FNAC. The diagnostic accuracy is close

to 100% when all three modalities favor a benign or malignant disease.[14]

In this case series, we have described spectrum of male breast lesions diagnosed by FNAC. We have reported 6 cases of male breast pathology.

Our first 3 cases were **Fibromatosis (desmoid-type)** of male breast. It is a locally infiltrative lesion without metastatic potential.[11] Mammary fibromatosis is rare with an incidence of 0.2% that of mammary carcinoma.[3] It occurs at a wide range of ages and is much more common in females. Women are diagnosed twice as often compared to men which gives a clue to a role of hormonal influence.[8] In contrast, case of male breast fibromatosis diagnosed in FNAC is relatively uncommon in the literature. There are only 8 reported cases of male breast fibromatosis in literature.[7] Since the condition is very rare, so its diagnosis and treatment are especially very challenging in affected male patients. Once the suspicion of fibromatosis is raised in FNAC, treatment typically includes surgical excision with wide margins since fibromatosis is locally aggressive and recurrences have been associated with positive surgical margins.

Immunohistochemically, β-catenin has been identified as a specific marker for breast desmoid-type fibromatosis which shows nuclear expression in sporadic and familial cases in 80% patients. Combination of positive β-catenin and negative CD34 markers support the diagnosis of fibromatosis.[8,6]

Our fourth case was diagnosed as complex fibroadenoma. Complex fibroadenomas are a sub-type of fibroadenoma which are bigger in size and tends to occur in older patients (median age-47 years). They have slightly increased risk of breast cancer in comparison to simple fibroadenomas.

They usually present with one or more of the following features:

a) Papillary apocrine metaplasia
b) Sclerosing adenosis
c) Cysts measuring>3mm
d) Epithelial calcifications

The fifth and sixth case were that of bilateral breast carcinoma with axillary lymph node metastasis. Out of this one case was presented with multifocal nodules in the breast.

Breast malignancies of male breast comprises of 0.5%-1% of all breast malignancies in both sexes and is responsible for <0.1% of men dying from any malignancy.[15] Earlier studies on male breast pathologies revealed 2.5%-28.4% cases to be of malignant nature.[10,4] Invasive carcinoma-No Special Type is the most common male breast malignancy representing 85% of the cases followed by papillary carcinoma.

Male breast cancers are more aggressive with frequent bilateral breast involvement and multiple ipsilateral and contralateral axillary lymph node deposit. Prompt and early diagnosis is very much helpful for better patient management and clinical outcome.

Conclusion

To conclude, in this case series we have emphasized the utility of fine needle aspiration cytology (FNAC) for evaluation of male breast lesions pre-therapeutically for differentiation between the benign and malignant lesions at the earliest for better patient management with the advantage of few manageable complications of the FNAC procedure and which can be done on outpatient basis.

Conflict of Interest- Nil

Source of Funding - No financial support received

Ethical Clearance: Our study was approved by institutional ethics committee Written informed consent was taken from all the male patients participating after providing proper explanation of the procedure.

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Original Research Article

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Spectrum of Lymph Node Lesions in Surgical Patients Diagnosed by FNAC and Histopathology

Manish Kumar Singh[1], Ashutosh sanga[2]

[1]Assistant Professor, Department of Pathology, Venkateshwara Institute Of Medical Sciences, Gajraula, [2]Assistant Professor, Department of General Surgery, Venkateshwara Institute of Medical Sciences, Gajraula.

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Abstract

Introduction: Lymphadenopathy is seen commonly in patients attending the medical outpatient departments. FNAC is an easy and rapid diagnostic test. FNAC gives early direction to treatment protocol to be followed.

Aim: To study the different cytological spectrum associated with various lymphadenopathy and different lesions with respect to age and sex.

Materials and Methods: In our study, all cases of peripheral lymphadenopathies who had come to the cytology department for FNAC over a period of 3 years from 1st July 2020 to 1st July 2022 were included. It was a retrospective study.

Results: During a course of three years a total of 100 cases were received and were studied. Of these 6 cases were inconclusive due to unsatisfactory and haemorragicsmears; 83 cases were benign and 11 cases were neoplastic. The ages of patients were from 6 months to 65 years. Males were 54 and females were 46 in number. Reactive (27 cases), granulomatous (30 cases), Tuberculosis (4 cases), suppurative (14 cases), necrotic (5 cases), lymph node with filariasis (2 cases), metastasis (8 cases), lymphomas (3 cases).

Conclusion: FNAC is an easy, quick and good test to offer rapid diagnosis for lymphadenopathies and guide towards appropriate and timely treatment without the need of biopsy.

Keywords: FNAC, Lymphadenopathy, Benign, Neoplastic, Reactive, Granulomatous, Metastasis.

Introduction

Lymphadenopathy is seen commonly in patients attending the medical outpatient deparments.[1] The spectrum of diseases varies from an inflammatory process to a neoplastic lesion.[2]

FNAC is an easy, quick and appropriate test for diagnosing lymphadenopathy.[3] The knowledge of the spectrum of lymphadenopathy in a given geographical region is important for making a definitive diagnosis. Tuberculosis is a common cause of lymphadenopathy and should be considered in every case of granulomatous lymphadenopathy unless proved otherwise.[4]

Corresponding Author: Ashutosh Sanga, Assistant Professor, Department of General Surgery, Venkateshwara Institute of Medical Sciences, Gajraula.

Mobile: 9665289560

E-mail: manish.hathras@gmail.com

FNAC has pivotal role in the evaluation of peripheral lymphadenopathy and it can be used as an alternative to excision biopsy.[4]

Material and Methods

The retrospective study was done at pathology department, over a period of 3 years from 1st july 2020 to 1st july 2022. A total of 100 cases of peripheral lymphadenopathy those that were palpable on examination were included, non-palpable were excluded.

In each instance a brief history and physical examination along with evaluation of relevant investiation if available, was carried out. The FNAC procedure was performed by a cytopathologist using a needle attached to 10ml syringe. The aspirated material was immediately smeared onto slides. Few slides were immediately immersed in 95% ethanol and remaining air dried.

The air dried smears were routinely stained by Giemsa stain & alcohol fixed smears stained by PAP method. Special stains like Ziehl-Neelson for AFB were done whenever required.

All the stained smears were evaluated by cytopathologist. Diagnosis was based on cytological features and clinico-cytological correlation. At the end of the study data were analysed.

Results

Out of 100 patients with peripheral lymphadenopathy, the ages of patients were from 6 months to 65 year in which 54% were males and 46% were females.

Six cases were inconclusive. 83 cases were inflammatory and 11 cases were neoplastic.

Among the non-neoplastic lymph node lesions, granulomatous lymphadenitis (30 cases) was the most common followed by reactive lymphadenopathy (27 cases), Suppurative –necrotic lesions (19 cases), micro filarial lymphadenitis (2 cases), tuberculosis (4 cases). Among the neoplastic lymph node lesions commonest was metastasis (8 cases), lymphoma (3 cases).

It has been noted that cervical lymph nodes were involved most commonly (84%) followed by axillary (3%), inguinal (2%) and generalized (1%).

The ages of patients were from 6 months to 76 years. The youngest patient with lymphadenopathy was diagnosed as Suppurative lymphadenitis and the oldest patient was diagnosed with metastatic adenocarcinoma. Metastatic deposits were more common in the extremes of ages. Tuberculosis and granulomatous pathology were more common in the 10-40years.

Granulomatous lymphadenitis was diagnosed by the presence of epithelioid cell granulomas as Granulomatous Lymphadenitis in Giemsa stained smear at 400X magnification. Ziehl Neelson stain was negative for AFB. This formed the predominant pathology. Reactive lymph node hyperplasia was diagnosed by the presence of a polymorphous population of lymphoid cells composed of centrocytes, centroblasts, small lymphocytes and immunoblasts along with tingible body macrophages. Suppurative lymphadenitis was diagnosed by the presence of sheets of neutropils.Necrotic lymphadenitis was marked by extensive areas of necrosis. Ziehl Neelson stain was negative for AFB.

Tuberculosis was diagnosed when AFB was positive in Zeil Neelson stain as Acid Fast Bacilli Positive bacilli in lymph node aspirate in ZN stain in oil magnification (1000x)

Microfilaria was noted in lymph node aspirate as shown in fig. 3 (microfilaria in lymph node aspirate in Giemsa stained smear at magnification of 400x)

Non-Hogkins lymphoma was diagnosed by the presence of a monomorphic population of lymphocytes scattered singly in a highly cellular smear and the absence of RS cell (Non Hodgkin's lymphoma on FNAC lymph node on Giemsa stained smear at magnification of 200x)

Hodgkins lymphoma cannot be ruled out was diagnosed based on presence of granulomas and R-S like cells scattered in a reactive background. So biopsy was advised for further confirmation.

Metastatic deposits were diagnosed based upon cytological patterns and cellular details. Majority were from Squamous cell carcinoma as depicting squamous cell carcinoma metastasis in lymph node aspirate on Giemsa stain at magnification 200x followed by adenocarcinoma .

Discussion

Lymphadenopathy is a commonly seen clinical condition requiring quick and accurate diagnosis so that a proper treatment regimen can be started at the earliest. FNAC is a completely safe, quick and appropriate method for early diagnosis of lymphadenopathy reducing the need of excision biopsy.[1]

In the present study 100 cases of palpable peripheral lympadenopathyfor a period of three years were studied retrospectively.

Aspirates were inconclusive in six cases due to unsatisfactory smears. The causes for unsatisfactory smears were scanty cellularityor hemorrhagic smears. Aspirates were benign in 83% and metastatic deposits were found in 8% and lymphoma in 3%. The pattern of lesion varied from nonneoplastic lesion like granulomatous, reactive

suppurative, necrotic, tubercular, microfilarial to neoplastic lesions like metastatic lymphadenopathy and lymphomas.

In our study cervical lymph nodes were involved mostly (84%) followed by axillary lymph nodes (7%). In a study done by Gayathri etal cervical group was the most commonly involved(74.6%) followed by axillary lymph nodes.?1;Comparison of current study with other studies evaluating the causes for lymphadenopathy is depicted in the table 6.

In a study done by PanditAA et al male to female ratio was equal our study was almost similar with slight male predominance. (M:F::1.1:1).?2;

In Granulomatous pathology was the most common cause of lymphadenopathy in our study similar to study done by Mir Attaullahetal.?3;

Study done by Badge et al showed 32% cases of granulomatous lymphadenitis. The granulomatous cases showed the presence of granulomas composed of epithelioid cells, histiocytes and lymphocytes but were negative for Acid fast bacilli on ZN stain. And those positive for AFB were diagnosed as tuberculosis.[4]In our study maximum cases were reported as granulomatous. (30%) based on similar cytological features. while suppurative cases showed only sheets of neutropils and no granulomas.[4]

In our study squamous cell carcinoma was the most common metastatic malignancy followed by adenocarcinoma similar to a study done by PramodPathyetal in which squamous cell carcinoma was the most common metastatic malignancy followed by adenocarcinoma and poorly differentiated carcinoma.[5]

In a study done by Dr. Ripunjaya Mohanty et al cervical group was the most common to be involved by metastasis with squamous cell carcinoma being the most common histological type [6]

In our study majority of patients with metastatic squamous cell carcinoma in lymph nodes were above 50years. The finding of the study supported that metastatic squamous cell carcinoma is frequent after age of 40 years.[7]

Lymphoproliferative disorders were diagnosed in only 4 cases and formed a very small percentage of the total pathologies reported which correlated with study done by Ramanan D et al in 2016 who also reported 4% cases.[8]

In a study done by Akanksha Misra et al in 2017 Non-Hodkins lymphoma was diagnosed in 2.5 % cases.[9] while in our study Non-Hodkins lymphoma was diagnosed in only 1% cases.

Tuberculosis is the commonest cause of lymphadenopathy in developing countries and should be considered in every case of granulomatous lympadenopathy unless proved otherwise.[10]In their study, Khajuria et al found tuberculosis as the most common diagnosis.?1;° while in our study TB cases formed only 4% cases based on AFB stain positivity on Zeihl Neelsons staining.

The most commonly affected lymph nodes were cervical followed by supraclavicular, axillary, inguinal and post auricular in a study done by Sheela M et al in 2017.[11]In our study also cervical was the commonest group involved.

In our study the highest number of cases were seen in 11-20years while in another study by Silas et al highest number of cases were in ages 10-14 years. [12]and in another study by Mishra et al most common etiology of affected lymph nodes was tuberculous lympadenitis.[13]

In a study done in 2014 by Bhavani et al, the most common causes of cervical lympadenopathy were tuberculosis, reactive hyperplasia and metastatic malignancies particularly squamous cell carcinoma. [14] while in a study done by Devi Thaker et al in 2017 reactive hyperplasias were the most commonly found lesion in lymphadenopathies.[15]In our study most common cause was granulomatous followed by reactive and suppurative and then metastasis and lymphomas.

Conclusion

FNAC is an easy and rapid diagnostic test for diagnosing inflammatory as well as neoplastic lesions. It is safe and appropriate tool for providing definite diagnosis in lymph nodes aspirates where biopsies can be avoided. The knowledge of cytological patterns of various lesions of lymph nodes in an area helps in better approach to the diagnosis. FNAC is suitable for developing countries with financial constraints where it can minimize the economic burden and avoid the need for excision biopsy.

Informed Consent: written informed consent was taken from patients .

Ethical Approval: ethical committee approval was taken from the Institutional Committee Of Ethics, VIMS (VIMSE/2022/12-91) .

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Conflict of Interest: there was no conflict of interest

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Original Research Article

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Effect of Propofol, Sevoflurane, and Isoflurane on Postoperative Cognitive Function Following Laparoscopic Cholecystectomy in Elderly Patients

Megha Singh[1], Robina Makker[2], Gurpreet Kaur Atwal[3]

[1]Resident, [2]Professor and Hod, [3]Assistant Professor, Department of Anaesthesiology, Shri Guru Ram Rai University Dehradun, Uttarakhand.

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Abstract

Cognition refers to the mental action or process through which an individual acquires knowledge solves problems and makes decisions for the future. In other words, cognition may be defined as the mental processes which account for the daily activities carried out by an individual. Deficits in these mental processes tend to affect the memory, attention, verbal and non-verbal learning, visual and auditory processing, and motor functioning of an individual, thereby resulting in cognitive impairment. Memory is classified into two types, that is, explicit memory and implicit memory. Explicit memory involves the conscious recall of the information received in the past while implicit memory refers to the information or knowledge which is unconsciously and effortlessly recalled.

Keywords: cognition, memory, mental, motor function.

Introduction

Cognition refers to the mental action or process through which an individual acquires knowledge solves problems and makes decisions for the future. In other words, cognition may be defined as the mental processes which account for the daily activities carried out by an individual. Deficits in these mental processes tend to affect the memory, attention, verbal and non-verbal learning, visual and auditory processing, and motor functioning of an individual, thereby resulting in cognitive impairment [1]. Memory is classified into two types, that is, explicit memory and implicit memory. Explicit memory involves the conscious recall of the information received in the past while implicit memory refers to the information or knowledge which is unconsciously and effortlessly recalled [2].

It was described by Bedford for the first time in 1955 that some elderly patients suffered from post-operative cognitive dysfunction (POCD) after being subjected to anesthesia and surgery [3]. Later, several researchers carried out studies to determine the impact of the commonly used medications to induce anesthesia before operations such as propofol, sevoflurane, and isoflurane on the implicit and explicit memory of patients. Most of the studies indicated that these medications bring about a negative impact

Corresponding Author: Megha Singh, Resident, Department Of Anaesthesiology, Shri Guru Ram Rai University Dehradun, Uttarakhand.

Mobile: 9760882940

E-mail: meghaa.singh@yahoo.com

on the cognition or mental processes of elderly patients [4].

Sevoflurane came to be in use in surgical departments in the year 1970. Relatively insoluble in blood, sweet-smelling, fluorinated methyl isopropyl ether is highly effective in rapid induction and recovery from anesthesia [5]. Exposure to sevoflurane cause neurodegeneration, thus bringing about major changes in the behavior of an individual, causing anxiety and spatial memory deficits. On the other hand, propofol, which was introduced in surgeries in the late 1980s is a short-acting induction agent which offers patients a rapid recovery even after infusions a long period. The major impact of this agent is found to be the decreased level of consciousness in the patients. Isoflurane is another common inhalation anesthetic agent used which causes the relaxation of muscles and reduces pain in patients. Exposure to isoflurane may lead to respiratory issues, hypotension, nausea, and vomiting in the postoperative period. In this regard, it can be stated that the anesthetic medications used during induction and maintenance are most likely to affect their cognitive ability.

Material and Methods

The study was conducted after clearance from the Board of Studies and after the approval of the institution's Ethical Committee in the Department of Anaesthesiology as well as informed consent from all the patients in SGRRIM&HS, Patel Nagar, Dehradun during the period 2020-2023. A double-blinded, prospective study was conducted, involving 90 ASA (**American Society of Anesthesiologists)** I and II aged more than 60 years patients posted for laparoscopic cholecystectomy.

Methodology

Written informed consent was taken from all the patients. A detailed pre-anesthetic evaluation was carried out to rule out the presence of any significant co-morbidity. All patients were kept nil orally from 8 h before surgery and pre-medicated with tablet alprazolam 0.25 mg and tablet ranitidine 150 mg orally on the night before. The selected patients were randomly divided into three groups by computer-generated randomized number and then by picking sealed envelope and divided into three groups of 30 patients each to receive Propofol infusion (Group A), Sevoflurane inhalation (Group B) and Isoflurane inhalation (Group C) for maintenance of anesthesia. A thorough pre-operative check-up, general and systemic examination, and routine investigations were done. Cognitive functions were assessed preoperatively (1 hour prior) by the Rivermead behavioral memory test, California verbal learning test, and by asking the name of the surgeon and anesthesiologist.

In the operating room, baseline heart rate (HR), electrocardiography (ECG), non-invasive blood pressure (NIBP), and pulse oximetry (SpO2) were recorded in all patients. All patients were given an injection of glycopyrrolate 4 µg/kg and an injection of midazolam 0.025 mg/kg via the intravenous route. Injection fentanyl 2 µg/kg IV was given to all patients just before induction. In both groups, induction was done with the injection of propofol 2-2.5 mg/kg of body weight till initial loss of verbal contact, and after checking for ventilation injection of vecuronium 0.1 mg/kg IV was administered. Endotracheal intubation was done after 3 mins of intermittent positive pressure ventilation with an appropriate-sized cuffed endotracheal tube. Group A patients were maintained on N_20/O_2 (60/40%) and propofol infusion at the rate of 50-100 µg/kg/min titrated to maintain adequate depth of anesthesia.

Group B patients were maintained on N_2O/O_2 (60/40%) and sevoflurane 1 -1.5% to achieve adequate depth of anesthesia. In addition, 25-100µg of fentanyl was given when Mean Arterial Pressure (MAP) and HR were 20% higher than baseline. Group C patients were maintained on N_2O/O_2 (60/40%) and isoflurane 1- 1.5% to achieve adequate depth of anesthesia. In addition, 25-100 µg of fentanyl was given when Mean Arterial Pressure (MAP) and HR were 20% higher than baseline. After stopping Injection Propofol, sevoflurane, and isoflurane were.

Injection neostigmine 0.05 mg/kg IV and injection glycopyrrolate 0.008 mg/kg IV were used for the reversal of neuromuscular blockade. Extubation was done after the return of spontaneous breathing and adequate motor recovery. Postoperatively injection of tramadol 100 mg sos is given.

Hemodynamic parameters ((HR, SBP, DBP, and MAP) were recorded and compared every 15 mins till the completion of surgery.

Recovery characteristics were recorded as:

a) Time from discontinuation of anesthetic agents to spontaneous breathing and eye-opening.

b) Time from discontinuation of anesthetic agents to an adequate response to verbal commands.

c) Time to extubation after discontinuation of anesthetic agents.

d) Time from discontinuation of anesthetic agents to orientation (to time, place, and person).

e) Modified Aldrete scoring was recorded every 15 minutes for one hour postoperatively. Patients required nine or more points for eligibility to discharge from the recovery room.

f) VAS score for postoperative pain was recorded every 30 mins for two hours in the recovery room.

Cognitive functions were assessed both preoperatively (1 hour prior) and postoperatively (after 2 hours) as:

1. River mead Behavioural Memory Test (RBMT): An animal was shown preoperatively to all patients and patients were asked to identify this animal postoperatively.
2. California Verbal Learning Test (CVLT): To check verbal memory, patients were checked whether they could rename five fruits postoperatively which they told preoperatively
3. Digit span test(DST)- Patients were asked to repeat four, five, or six-digit numbers to assess numerical memory.
4. Patients were asked to recall the names of the anaesthesiologist and surgeon both preoperatively and postoperatively.
5. MMSE SCORE – evaluated before surgery to know if there was any pre-existing cognitive dysfunction. The same was evaluated after the reversal of anesthesia.

Inclusion Criteria:

1. ASA grade I and II, elective cases
2. Age group: more than 60 years
3. Both sexes.
4. Education till high school.

Exclusion Criteria

1. Age less than 60 yrs.
2. ASA grade III and higher.
3. Allergy to the used drugs.
4. Patients receiving treatment with anti-anxiety drugs, anticonvulsants, and antipsychotics, patients with known psychiatric illness, drug or alcohol abuse, patients having chronic pain syndrome, Alzheimer's disease or presenile dementia, pregnant and lactating women, history of jaundice in the past.
5. Patients refusal
6. The patient's education level is below high school.

Results

The frequency distribution of Age interval, where 70 subjects were found in 61-70 Years i.e., 67.70%, 17 subjects were found in 71-80Years i.e., 18.90%, and 3 subjects were found in >85 Years i.e., 3.30%.

The frequency distribution of **Sex**, where 62 subjects were found to be Female i.e., 68.90%, and 28 subjects were found in Male i.e., 31.1%.

The frequency distribution of cases concerning ASAgrading, in ASA 30(33.33%), 60(66.66%) subjects were found in Grade-I and Grade II.

In the comparison of Sex between DRUGS-GROUP, the result was found not Significant as the P-value is >0.05.

In the comparison of AGE INTERVAL between DRUGS-GROUP, the result was found not Significant as the P-value is >0.05.

In the comparison of Variables between DRUGS-GROUP, the result ofMean Age, Mean Height, Mean Weight, and Mean BMI were found not Significant as the P-values are >0.05.

The comparison of HR between DRUGS-GROUP, the result of Mean HR at PRE-OP, at T0, and T15 were found not Significant as the P-values are >0.05 and the result of Mean HR at T30 and at POST-OP were found statistically significant as the p-values are <0.05.

In the comparison of HR between DRUGS-GROUP, the result of Mean HR at T30 between Group B with Group A was found statistically significant as the p-value is <0.05, the result of Mean HR at POSTOP between Group B with Group A was found statistically significant as the p-value is <0.05 and the result of Mean HR at POSTOP between Group A with Group C was found statistically significant as the p-value is <0.05.

In the comparison of SBP between DRUGS-GROUP, the result of Mean SBP at PRE-OP was found not Significant as the P-values are>0.05and the result of Mean SBP at T0, T15, T30, and at POST-OP were found statistically significant as the p-values are <0.05.

In the comparison of SBP between DRUGS-GROUP, the result of Mean SBP at T0 between Group B with Group A was found statistically significant as the p-value is <0.05, the result of Mean SBP at T0 between Group B with Group C was found statistically significant as the p-value is <0.05, the result of Mean SBP at T15 between Group B with Group A was found statistically significant as the p-value is <0.05, the result of Mean SBP at T15 between Group B with Group C was found statistically significant as the p-value is <0.05, the result of Mean SBP at T30 between Group B with Group A was found statistically significant as the p-value is <0.05, the result of Mean SBP at T30 between Group B with Group C was found statistically significant as the p-value is <0.05 and the result of Mean SBP at POSTOP between Group B with Group A was found statistically significant as the p-value is <0.05.

In the comparison of DBP between DRUGS-GROUP, the result of Mean DBP at PRE-OP was found not Significant as the P-values are>0.05 and the result of Mean DBP at T0, T15, T30, and at POST-OP were found statistically significant as the p-values are <0.05.

The comparison of DBP between DRUGS-GROUP, the result of Mean DBP at T0 between Group B with Group A was found statistically significant as the p-value is <0.05, the result of Mean DBP at T0 between Group B with Group C was found statistically significant as the p-value is <0.05, the result of Mean DBPat T15 between Group B with Group A was found statistically significant as the p-value is <0.05, the result of Mean DBP at T15 between Group B with Group C was found statistically significant as the p-value is <0.05, the result of Mean DBP at T30between Group B with Group C was found statistically significant as the p-value is <0.05, the result of Mean DBP at T30 between Group B with Group C was found statistically significant as the p-value is <0.05, the result of Mean DBP at POST OPbetween Group B with Group A was found statistically significant as the p-value is <0.05 and the result of Mean DBP at POST OP between Group B with Group C was found statistically significant as the p-value is <0.05.

The comparison of Spo2 between DRUGS-GROUP,

The result of Mean Spo2 at PRE-OP, at T0, at T15, at T30, and POST-OP were found not significant.

The comparison of Variables between DRUGS-GROUP, the result of Mean Spontaneous breathing (min), Mean Eye opening (min), Mean Response to commands (min), and Mean Orientation to stating the name (min) were found statistically significant as the p-values are <0.05.

Mean SPONTANEOUS BREATHING (MIN)

- Statistically significant between Group B and Group A as the p-value is <0.05,
- Statistically significant between Group B and Group C as the p-value is <0.05,
- Statistically significant between Group A and Group C as the p-value is <0.05,

Mean EYE OPENING (MIN)

- Statistically significant between Group B with Group A as the p-value is <0.05,
- Statistically significant between Group B with Group C as the p-value is <0.05,
- statistically significant between Group A with Group C as the p-value is <0.05

Mean RESPONSE TO COMMANDS (MIN)

- Statistically significant between Group B with Group A as the p-value is <0.05,
- Statistically significant Between Group B with Group C as the p-value is <0.05,

Mean EXTUBATION (MIN)

- Statistically significant between Group B with Group A as the p-value is <0.05,
- Statistically significant between Group B with Group C as the p-value is <0.05,
- Statistically significant between Group A with Group C as the p-value is <0.05,

Mean ORIENTATION TO state NAME (MIN)

- Statistically significant between Group B with Group A as the p-value is <0.05,
- Statistically significant between Group B with Group C as the p-value is <0.05
- Statistically significant between Group A with Group C as the p-value is <0.05

Mean RBMT - Statistically insignificant (p>0.05) between drugs-group postoperatively.

Mean CVLT - Statistically insignificant (p>0.05) between drugs-group postoperatively

Mean of DST - Statistically insignificant (p>0.05) between drugs group postoperatively.

Mean Recall test - Statistically insignificant (p>0.05) between drugs group postoperatively.

Mean MMSE test - Statistically significant (p<0.05) between drugs group postoperatively.

Mean MODIFIED ALDRETE SCORE - statistically significant (p <0.05) at 15 MIN postoperatively between drugs group.

Discussion

Laparoscopy surgeries are widely used due to their higher advantage in terms of less incisional pain, shorter incision length, early recovery, shorter hospital stay, and less incidence of ileus compared to open surgeries. However, Postoperative Cognitive Dysfunctions (POCD) such as impairments in recent memory, concentration, language, comprehension, and social integration curb the increased advantages of laparoscopy. Surgical trauma and general anesthetics are observed to be major determinants of post-operative impairments in attention, memory, reaction time, and consciousness. The factors such as glucocorticoid levels, pre-existing cognitive impairment, neuroinflammation, age, brain hypoperfusion, hypoxia, and genetic aspects also potentially cause post-operative cognitive dysfunction.[5] There are mainly three types of Cognitive dysfunctions post-surgery namely short-term cognitive disturbance, Delirium, and true Post-operative cognitive dysfunction (POCD) in which cognitive dysfunction may last for weeks, months, or even longer. The post-operative cognitive dysfunction causes a delay in functional recovery which in turn lead to a prolonged hospital stay. This is vital in the case of surgeries such as laparoscopic cholecystectomy where there is a short discharge time after anesthesia. Furthermore, it is evident from the previous literature that general anesthetics such as propofol and sevoflurane cause cognitive dysfunction. Although the effectiveness of anesthetics is extensively studied, there is scant literature on the effect of different types of anesthetic agents on postoperative cognitive dysfunction. Against this backdrop, our study was conducted to study the occurrence of POCD by using general anesthetic agents specifically Propofol, Sevoflurane, and Isoflurane, and to compare the effect of these agents on postoperative cognitive functions among the elderly.

Conclusion

The present study findings suggest the desirable outcome with the use of sevoflurane against propofol and isoflurane among elderly patients for laparoscopic cholecystectomy concerning postoperative cognitive

function. Hence, it is imperative to consider geographical and socio-demographic characteristics and target population in the choice of general anesthetic agent.

In conclusion, the use of sevoflurane in comparison to propofol and isoflurane among elderly patients for laparoscopic cholecystectomy had better outcomes concerning postoperative cognitive function.

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Original Article

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Clinical Profile of Paediatric Patients Admitted with Dengue Fever in a Tertiary Care Hospital of North India

Mousin Mustafa Batt[1], Aditya Gupta[2], Anirodh[3], Mohammad Irfan[4]

[1]Lecturer, [2],[4]Senior Resident, [3]Junior Resident, Department of Paediatrics, Government Medical college Jammu.

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Abstract

Background: Dengue, a viral disease transmitted by mosquitoes, is the fastest spreading mosquito-borne illness in human history, with its global incidence increasing 30-times over the past fifty years. This is a prospective study with the aim to study clinical manifestation of dengue in children diagnosed admitted in a medical college Hospital in Jammu, India.

Methods: The study was conducted on 300 children admitted as dengue fever in a tertiary care hospital from October 2022 to December 2022. Paediatric patients who were admitted with symptoms like fever, headache, myalgia, vomiting etc. were evaluated with other clinical features (warning signs of dengue fever, signs of haemorrhage, signs of plasma leakage and signs of shock) and the other causes of fever other than Dengue were rule out.

Results: Sixty three percent (63.3%) of patients were adolescents (age >10 Years) and most common symptom was fever (83%) while as bleeding manifestations was seen in 9.3% and Dengue Shock Syndrome 7.7% patients.

Conclusion: Study emphasizes that being the disease with panic, can be well managed to go beyond just a fever into haemorrhage and shock by timely identification clinically and laboratory methods and followed by appropriate intervention.

Keywords: Children, Dengue, haemorrhage

Introduction

Dengue, a viral disease transmitted by mosquitoes, has rapidly become the most widespread and fastest-growing disease of its kind among humans. Over the past five decades, its global incidence has increased by a staggering 30-fold. Dengue is a significant public health threat in tropical and subtropical regions worldwide, with nearly half of the global population residing in countries where the disease is endemic. According to the World Health Organisation (WHO), it is estimated that 50-100 million new dengue infections occur each year in over 100 endemic countries, and the number of countries reporting the disease is steadily rising[1].

As per the global outlook, dengue has been classified by the World Health Organisation (WHO) as one of the 17 neglected tropical diseases, as outlined in their initial report on neglected tropical diseases in 2010[2]. While the complete global impact of the disease remains uncertain, the trends are worrisome in terms

Corresponding Author: Mohammad Irfan, Senior Resident, Department of Paediatrics, Government Medical college Jammu , Jammu and Kashmir.

E-mail: darirfan53@gmail.com

of their impact on human health and the economy. Each year, hundreds of thousands of severe cases of dengue arise, resulting in 20,000 deaths. The economic burden is also significant, with a loss of 264 disability-adjusted life years (DALYs) per million population annually[3,4].

Around 1.8 billion people, which is more than 70% of the global population at risk for dengue, reside in countries within the World Health Organization (WHO) South-East Asia Region (SEAR) and Western Pacific Region. These regions account for nearly 75% of the current global burden of dengue. Among the 11 countries in SEAR, 10, including India, are endemic for dengue[5].

In India, the first isolation of dengue virus was reported in 1945, with the first evidence of dengue fever occurring in 1956 in Vellore district, Tamil Nadu. The first outbreak of dengue haemorrhagic fever (DHF) was reported in Calcutta, West Bengal, in 1963. Dengue cases have been reported from 35 out of the 36 states/union territories (UTs) in India, with recurring outbreaks of dengue fever (DF) and DHF in various states/UTs[6].

One of the most severe outbreaks of DF/DHF occurred in Delhi in 1996, with 10,252 cases and 423 deaths reported (total for the country being 16,517 cases and 545 deaths). In 2006, India witnessed another outbreak with 12,317 cases and 184 deaths. The incidence of dengue has been increasing in recent years, with 28,292 cases reported in 2010, 50,222 cases in 2012, and 75,808 cases in 2013 - the highest since 1991. However, the case fatality ratio (CFR), which is the proportion of deaths among reported cases, has declined from 3.3% in 1996 to 0.4% in 2010, and further to 0.3% in 2013 after the development and circulation of national guidelines on clinical management of DF/DHF/dengue shock syndrome (DSS) in 2007[7].

This was a prospective study aimed to study clinico-epidemiological profile of dengue fever among paediatric patients in a tertiary care hospital of Jammu, J&K.

Methods

The study was conducted as a prospective study with prior approval from institute ethics committee of Government medical college Jammu. Study involved 300 cases of dengue fever admitted to our tertiary care hospital from October 2022 to December 2022. The case definition was based on consent, compatible clinical history, and examination using the criteria set by the World Health Organisation (WHO), confirmed by positive serology for dengue fever.

Paediatric patients who were admitted with symptoms such as fever, headache, myalgia, vomiting, etc., were evaluated for other clinical features, including warning signs of dengue fever, signs of haemorrhage, signs of plasma leakage, and signs of shock. Laboratory investigations, including hemoglobin (Hb), total leukocyte count, differential leukocyte count, platelet count, packed cell volume, liver function tests, and renal function tests, were conducted. Blood coagulation profile, including Prothrombin Time and activated Partial Thromboplastin Time, were also assessed. Radiological investigations, such as chest X-ray and abdominal ultrasound, were performed. Other investigations, such as Widal test for typhoid fever and blood culture, were carried out to rule out other causes of fever.

Serological investigations, including Dengue NS1ag, IgM, and IgG for Dengue were conducted to confirm dengue fever. Patients who exhibited clinical features, laboratory evidence, and were positive for dengue serology were classified according to the WHO classification, and their outcomes were recorded. Other possible causes of fever, such as malaria, enteric fever, and respiratory infections, were excluded through appropriate testing methods.

Results

Fifty eight percent (175/300) patients were adolescents and 63% were males (190/300) with male female ratio of 1.7:1. Most common symptom observed was fever (99.3%) followed by vomiting (58.7%), myalgias (37.3%), pain abdomen (33.0%). Most common abnormal laboratory finding was thrombocytopenia present in 40% of patients followed by leukopenia (35%), Anemia (32%), Raised liver enzymes (22%) and Raised haematocrit (>45%) in 14% of patients. We observed in our study that thrombocytopenia was most common abnormal laboratory finding in dengue fever patients.

Ns1 Ag was positive in 94% and Dengue IgM was positive in 10.7% patients. Eight percent (8.3%) patients had mixed positivity for NS1 Ag and Dengue IgM. Abnormal USG findings were present in 49.2% (148) patients. Most common sonological sign seen was gall bladder wall edema (18%) while as Ascites and pleural effusion was seen in 16 % and 15 % patients respectively.

Eighty three percent (249) patients were diagnosed with dengue fever showing only the sign of undifferentiated fever fulfilling WHO criteria for Dengue Fever, while as Dengue haemorrhagic fever was seen in 9.3% patients and dengue shock syndrome in 7.7% patients. Average hospital stay in our study was 5.2 days and mortality in our study was 0.3% (1/300) .

Discussion

Maximum numbers of cases in our study were seen in the group >10 years of age (34.02%) and the least affected age group was infants. More involvement in adolescent children can be explained by diurnal adaptation of *Aedes* mosquito in stored water. These children work in open field. This makes them prone to repeated attacks by *Aedes* mosquitoes. There was no significant difference in male:female ratio in our study (3.4:1) similar with other studies[8].

In our study fever was present in all cases. Abdominal pain, vomiting, retroorbital pain, and abdominal distension were seen commonly. This goes with previous study[9]. Bleeding in dengue is multifactorial. The most common bleeding manifestations in both severe and nonsevere dengue were petechiae, purpura, and ecchymosis. Gastrointestinal bleeding was significantly seen in severe dengue cases. Haematemesis was the most common bleeding manifestation reported in other Indian studies. Convulsion due to infection is very rare. Various factors apart from thrombocytopenia lead to bleeding in dengue. They are decreased platelet function, fibrinogen consumption, prolongation of PT/PTT, and vasculopathy[10]. In our study, in the majority of the patients tourniquet test was found to be negative, whereas studies in other countries, especially Southeast Asian countries, report tourniquet test positivity as the commonest bleeding manifestation[11]. Low proportion of positive tourniquet test in Indian studies may be due to the darker skin colour in Indian children[12]. Leukopenia was seen, which was similar to two other studies[10,12]. The earliest haematological abnormality is a progressive decline in total WBC count in patients of dengue[13]. Leukopenia was not significantly related with severe dengue cases which were against some results [14]. In our study thrombocytopenia was seen to be more in those with severe dengue. There were a low proportion of children with evidence of haemoconcentration in our study group. The percentage increase in haematocrit is an accurate indicator of vascular permeability and plasma leakage. But it was also reported in previous studies that in some cases the fluid leakage does not achieve a high degree haemoconcentration even if the patient is in shock; this explains our findings. In some DF patients the rise of PCV could have been due to dehydration as a result of poor intake and vomiting[15]. There are no clear-cut guidelines for haemoconcentration in the Indian population. SGOT raise more than SGPT in dengue may be due to involvement of myocytes. Value more than 1000 IU/L is seen in severe dengue. Very high levels of SGOT and SGPT indicate severity of the disease along with morbidity and mortality. This differs from the pattern seen in viral hepatitis[16]. Ascites and pleural effusion were common presentations.

There was less mortality in the present study group, whereas mortality rate was high in earlier previous studies. This could be due to delay in recognition of epidemic in previous years or delay in seeking medical attention. Early diagnosis and improved case management of dengue fever are required to bring down case fatality rate.

Conclusion

Dengue fever commonly affects the male and young population. Fever, vomiting and myalgia are common presenting complains but in the recent few years, the world has seen varied clinical presentation of the dengue fever in different epidemics, even in the same regions and even with the period of times. Where some known features are still manifesting, few atypical features are noted from several parts of world. So a continuous sero-epidemiological surveillance and timely interventions are needed to identify the cases and use of vaccines& mosquito control measures to prevent epidemics. Hence its complications, outbreaks and mortality can be minimized.

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Original Article

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Prevalence of Self Medication in Medical Students

Muskan Jaiswal[1], Sachin Gupta[2], Neetu Kumar[3], Vinod Narkhede[4]

[1]Intern MBBS, Chirayu Medical College and Hospital, Bhopal, India, [2]Associate Professor, MD Community Medicine, Chirayu Medical College and Hospital, Bhopal, India, [3]Associate Professor, MD Pathology, Chirayu Medical College and Hospital, Bhopal, India, [4]Professor, MD Community Medicine, Chirayu Medical College and Hospital, Bhopal, India.

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Abstract

Self-medication is defined as obtaining and consuming drugs without the advice of a physician & not based on authentic medical information. It leads to irrational use of drugs, increased drug resistance which may lead to serious health hazards. The present study is undertaken to assess prevalence of self-medication and associated factors among medical students and their knowledge regarding self medication .A prospective, cross-sectional study was carried out among 251 medical students by using modified semi-structured questionnaire. Statistical analysis was carried out by SPSS version 23 and Chi square test was used to see the associations. Result showed that 79.3% students take self medication. Among them, maximum student were from 4th year i.e. 84%. Study found that students take self medication but mostly they completed full dose of antibiotics and are well known about mechanism of action, therapeutic dosage & adverse reactions. Maximum students thought self medication as an acceptable practice.

Key words: Medical Students, Prevalence, Self Medication

Introduction

Self-medication is defined as obtaining and consuming drugs without the advice of a physician either for diagnosis, prescription or surveillance of treatment[1].This includes acquiring medicines without a prescription, resubmitting old prescriptions to purchase medicines, sharing medicines with relatives or members of one's social circle or using leftover medicines stored athome[2].Self-medication is a behavioral response of human beings in which, an individual uses drugs to treat self-diagnosed minor symptoms or disorders having the potential to do good as well as harm as it involves use of drugs. It is widely practiced worldwide in urban and rural population including developing countries like India because many drugs are dispensed over the-counter without prescription and it provides a low cost alternative for people[3]. It might be due to number of factors like socioeconomic status, lifestyle, ready access to drugs, and greater availability of medicinal products which are existing in developing countries[4].

According to WHO guidelines responsible self-medication can help prevent and treat diseases that do not require medical consultation and reduce the increasing pressure on medical services for relief of minor ailments especially when resources are

Corresponding Author: Sachin Gupta, Associate Professor, MD Community Medicine, Chirayu Medical College and Hospital, Bhopal, India.

Mobile: 7038918177

E-mail: callsachingupta@gmail.com

limited[5]. It has become a serious ailment raising the concern of incorrect diagnosis and drug reaction as well. Being future medical practitioners, Self Medication has a special impact in medical students. Otherwise self medication if not based on authentic medical information can lead to irrational use of drugs, wastage of resources, and increased resistance of pathogens and can lead to serious health hazards such as adverse drug reaction and prolonged morbidity.[6]

The self-medication practice among doctors develops during their undergraduate training as obvious from some studies of self-medication among medical students.[7]For medical undergraduates such practice has special significance as they are exposed to knowledge about diseases and drugs. In developing countries like India, easy availability of wide range of drugs coupled within adequate health services result in increased proportion of drugs used as self Medication[8-9].Therefore, the present study was undertaken with the following objectives: To know the prevalence of self-medication and associated factors among medical students & to assess the knowledge of self medication among medical students.

Material and Methods

Study design & Study participants:

It is a cross sectional study which was performed among the undergraduate medical students (Bachelor of Medicine and Bachelor of Surgery; MBBS) at Chirayu Medical College & Hospital, Bhopal, India. With the intake of 150 students per year; around 600 students of four batch years study in the college at a given time.

Sample size & Selection criteria

Students from all four academic batch years were selected by simple random sampling. Each batch year students were enlisted and students from each batch were selected thus a final sample size of 251 medical students.

Study period

The data collection was done from 15th July 2019 to 30th September 2019.

Variables

We identified all possible subset of variable among study population and carried out pilot study to find the suitability of the selected variables. The variables identified were as follows Age, academic year.

Definitions

Self medication- Self-medication is defined as obtaining and consuming drugs without the advice of a physician either for diagnosis, prescription or surveillance of treatment.

Study tool

In the questionnaire there are multiple choice or open response questions regarding the demographic characteristics and Self medication 3 months prior to the study was noted. A pretested, modified and semi-structured questionnaire was used for the data collection from the students. Prior to administering the questionnaire, the students were addressed regarding the purpose and process of data collection. All the tools are well validated and reliable. Enquiry about personal data (age, sex etc), general question about self medication, and then specific questions of medication used and reason for usage was done. Questions about frequency of self medication cause and a recorded side effect if any was noted. Specific questions of knowledge about self medicated drugs were also asked.

Study procedure and ethical considerations

Survey was conducted among the students at suitable time and opportunity. A pilot testing of questionnaire was done for standardization and for further validation with 10 students before the actual survey in which they had no difficulty filling in the questionnaire; later their responses were included in the final data analysis. Each selected student was asked to fill out a structured questionnaire after obtaining an informed consent in English and Hindi language. All the participants were informed about the purpose of the study. Forms were distributed manually among all the students. Students were given a time period of 20 - 30 minutes to fill the form completely. Before filling up the questionnaire students were guided through questionnaire to fill it up. Forms were scrutinized before collection, to

look for any left or improperly filled entries. Study was conducted after the clearance from Institutional Ethical Committee (IEC) of Chirayu Medical College &Hospital, Bhopal. Confidentiality of the data of participants of the study was maintained.

Statistical analysis

For categorical variables the frequency and percentage s were calculated, while for continuous variables mean and standard deviation were calculated as a descriptive statistic. Chi -square test (x2) and A one-way ANOVA was used as a test of significance to see the association between two non parametric variables. Microsoft Excel software and Statistical Package for Social Sciences (SPSS) version 23 were used for data analysis. Significant level was considered ≤5 %.

Observations and Results

In present study, 79.3% students take self medication and out of them, 39.7% males and 60.3%females. Among them, 66.6% were in 1st year MBBS, 83.8% 2nd year, 81.5% 3rd year and 84% in 4th year. (Figure 1)

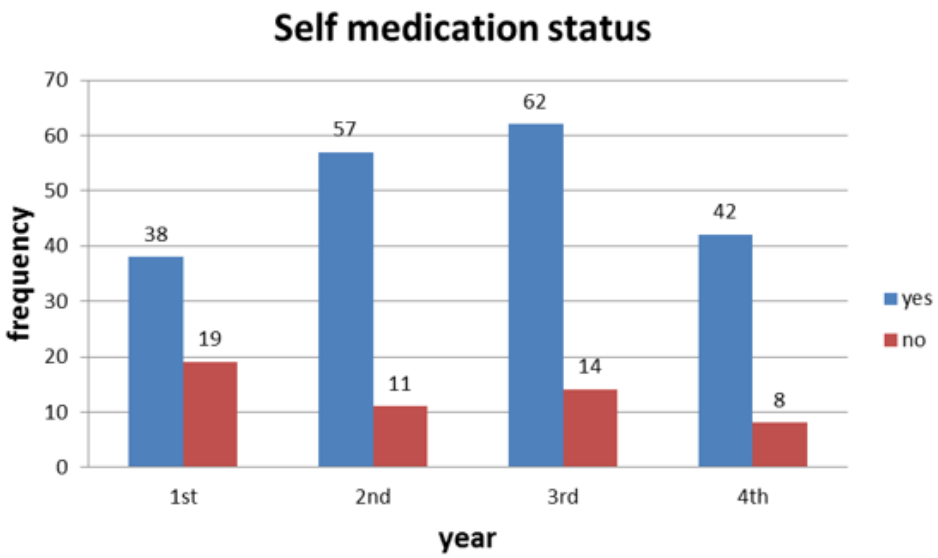

Fig 1. Prevalence of self-medication among medical students (Year wise) (n=251)

Table 1. Association of prevalence of self medication among medical students (n=251)

Year	Self Medication Taken	Self Medication Not taken	Total
1st Year	38(19.1%)	19(36.5)	57
>1st Year	161(80.9%)	33(63.4)	194
Total	199	52	251

df = 1, pvalue = 0.01

The prevalence of self medication between first year medical students and senior medical students was found statistically significant in our study. (Table 1)

Also results showed that 22.7% medical students know about the therapeutic dose of medications. Highly statistically significant results were found in knowledge between first year students and senior students.(p=0.00001)

Major reasons of self medication among students reported in present study were convenience followed by cost saving and very few students use it due to lack of trust in prescribing doctor.

Medical students reported more than one health problems for self medication like 59.2% students take self medication due to complain of fever, 43.2% due to aches & pains, 42% for cough, 38%for running nose, 35% for sore throat, 31% for nasal congestion, 23.6% for vomiting, 21% for diarrhea,13%for skin wounds.

Students obtained medications from multiple sources in present study like maximum (86.4%) students from community pharmacies, 23.6% from

previous prescription and only 4% from online E-pharmacies and 3.5% from others. It was also observed that most of the students always check the instructions come with the package insert for self treatment and fully understood them.

Table 2. Trend of Completion of full course of antibiotics among medical students (n=191)

Year	Yes no.(%)	No no.(%)	Total
First	24(68.57)	11(31.43)	35
Second	33(68)	22(40.00)	55
Third	46(76.67)	14(23.33)	60
Forth	32(78.05)	9(21.95)	41

Table 2 shows that tendency of completion of full course of antibiotics as a self medication increased from second year onwards i.e. it was 68% among second year, 76.67% among third while 78.05% among final year students.

Approximately 15.07% students had experienced any adverse reaction during self medication process and almost all consulted a doctor and few of them also stopped taking medications whereas some students did nothing except consulting a doctor.

Table 3. Type of Medications used by medical students for self medication (n=199)

S. No.	Type of medication	No. of students(%)
1	Analgesics Antipyretics	169(84.92)
2	Antibiotics	57(28.64)
3	Anti allergic	53(26.63)
4	Cough syrup	46(23.1)
5	Antacid	18(9.04)
6	Others	08(4.02)

#Students took more than one type of medications for self medication.

Analgesics were taken mostly due to fever, abdominal pain and body ache. Antibiotics were taken for upper respiratory tract infections, acute gastritis and urinary tract infections. (Table 3)

Maximum (84.9%) students stopped taking self medication after disappearance of symptoms in present study.

Most of the medical students (58.8%) thought self medication as an acceptable practice while 27.1%did not accept it for self healthcare.

On assessing the knowledge, 82% students know about mechanism of medications and 51% know the drug interactions shown by them.

Table 4. Association of knowledge of lethal doses among medical students (n=251)

Lethal dose of Medication	Yes(%)	No(%)	Total
1 year	11(19.29%)	112(57.73%)	123
>1 year	46(80.71%)	82(42.22%)	128
Total	57	194	251

Chi square value is 24.52.The p value is 0.000001

Table 4 Association of knowledge of lethal doses among medical students found highly statistically significant.(p=0.000001)

In present study, mostly students knew the adverse reactions of self medication as nausea and vomiting followed by drug resistance, diarrhea and rashes.

Discussion

In present study, 79.3% students take self medication and out of them, 39.7% males and 60.3%females. This finding is almost similar in various studies like 79.9% by Lukovic f et. al[10] at Serbia, 78.6% by Kumar et al[11] at Mangalore, 65% by Pal J[12] at Kolkata, 83% by Chauhan et. al[13] at Kangra, 88.1% by Patil et al[14], 82.3% by Rushi et al[8] at Gujarat, 78.6% by Kumar et al[11] in south India. Few other studies are reported much higher prevalence like91.5% found byShahetal[15]in2018 at Gujarat where as one another study conducted in Egypt found it very low i.e. 55%.[16]

Year wise prevalence was 66% in 1st year MBBS, 83.82% 2nd year, 81.58% 3rd year and 84% in4thyear in our study. This finding collaborates with other studies like Pandya et al[8],Palet.al[12] and Patil et.al.[14] The increasing trend in use of self medication from 1st year to final year was found due to successively gaining knowledge academically, so they learn more about medications year wise.

The prevalence of self medication was found as 66% among 1st year students in our study which is much lower than in study done by Shah etal[15] in which it was found 90%. Likewise, Kumar et al[11]reported 67% prevalence among 4th year students. This finding contrasts with our study in which it was found much higher (84%) among 4th year students.

The commonest health conditions for self medication were found as fever, aches& pains, cough, running nose, and sore throat in our study. Almost similar findings were observed in various studies done by Chauhan et al[13], Pal J et al[12] at Kolkata (2017) and the principal morbidity for seeking self medication was cold and cough as reported by 78.35% students in study done by Patil et al[14] at Karnataka. These health problems are very much frequently encountered by medical students so that they took medications by their own choice without any delay. Probably, students did not feel the necessity to consult a doctor for so much common problems and believed the seas very trivial conditions.

Major reasons of self medication among students reported in present study were convenience (68%) followed by cost saving (16%) and others (16%). Very few students (13%) use it due to lack of trust in prescribing doctor. Similarly common reason for self-medication was they know the medicine (78.14%) and previous experience (64.48%)by Shah et.al[15]atGujarat.

In present study, 45% students select medications based on their own experience whereas 41% follow the previous prescription of doctor. This finding supports study done by Shah et al.[15]

Analgesics & Antipyretics were the most commonly used drug for self medication (85%) followed by antibiotics (28.6%), anti allergic (26.6%) and cough preparations (23.1%). Few studies like Lukovic et al[10], Chauhan et al[13], Kumar et al[11] and Shah al[15]support our observations while antacids were found commonly by Pal J et al[12] at Kolkata. Antibiotics were most commonly self medicated as reported by 63.91% students in study by Patil S.[14]Basically, all of these kinds of medications are very easily available and accessible in market without any prescription in our country.

In this study, 58.8% students thought self medication as an acceptable practice while 27.1% did not accept it or believed it as non acceptable. Contrary to our results, only 25% students believed it as an acceptable in study done by Jagadeesh et al[17] whereas Kumar et al[11]found it 47% and Patiletal[14]found40%. Chauhanetal[13]found that 22% students felt this self medication practice could be harmful whereas18% regarded it as an unacceptable.

Approximately 15.07% students had experienced any adverse reaction during self medication process and out of them, almost all (100%) consulted a doctor, 60% stopped taking antibiotics whereas 43.33% did nothing in our study. This finding is almost similar to another study done in Egypt by Fawaz et.al[16] in which16.9%sufferedfromadverse effects.

On assessing the knowledge, 82% know about mechanism of medications while 22.7% know the dosage of medications to give therapeutic effect, 51% know the drug interactions shown by them in our study whereas in a study done by Shah et al[15] found 64.48% know about dosage. Another study by Fawaz et.al[16]observed that4.7% knew about drug interactions.

Conclusion

In present study, 79.3% students take self medication and out of them, majority was females (60.3%) and major reason was reported as feel very convenience one.(68%)

Fever is the commonest health problem reported followed by aches & pain, cough and cold for which they took self medications. Majority of students got information about medications from their own experience and previous prescription of doctor and most of them obtained medications from community pharmacist.

In our study, although students take self medication but mostly they completed full dose of antibiotics. Most of students were well known about mechanism of action as well as therapeutic dosage of medications and also their adverse reactions. Maximum students thought self medication as an acceptable practice.

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Original Research Article

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Prevalence of Distress among Diagnosed Type 2 Diabetics Residing in Rural and Urban Areas of District Amritsar: A Cross-Sectional Study

Navpreet Kaur[1], Sanjeev Mahajan[2], Preeti Padda[3], Vineet Bal[4], Shyam Sundar Deepti[5], Kompal[6]

[1]Junior Resident, [2]Professor and Head, [3]Associate Professor, [4]Assistant Professor, [5]Professor, [6]Intern, Department of Community Medicine, Government Medical college, Amritsar, Punjab.

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Abstract

Background: Patients with diabetes face psychological issues which may be part of the spectrum of disease experience, distinct from depression, which hinder glycemic control. Therefore, this study was planned to determine the prevalence of diabetes related distress, and its association with socio-demographic variables, treatment status, and glycemic control in adults with type 2 diabetes.

Materials and Methods: A cross-sectional study was conducted among diagnosed type 2 Diabetic patients residing in urban and rural field practice area of Government Medical College, Amritsar. Data was collected for period of one year. Pre-tested, validated questionnaire Diabetes Distress Screening Scale 17 (DDS17) was used. Quantitative and Qualitative variables were compared using t- test and Chi-square test respectively. P value <0.05 was considered to be statistically significant.

Results: Overall, 18% of study participants were found to be distressed. Distress was slightly higher among urban study participants (21%) in comparison to rural study participants (15%) but this difference was not statistically significant. Significantly higher distress levels were observed among study participants who reported inadequate treatment, uncontrolled glycemic status and complications due to diabetes.

Conclusions: Diabetes related distress is associated with treatment status, glycemic status and complications due to diabetes. There is need to manage diabetes well and achieve glycemic control in all patients to reduce level of distress among them.

Keywords: Diabetes related distress, Glycemic control, Type II diabetes mellitus

Introduction

Globally, there has been a shift in the causes of illness and death from infectious diseases to non-communicable diseases (NCDs). This changing pattern has been attributed to the effects of an (ongoing) epidemiologic transition.[1] In recent years, NCDs, such as cardiovascular diseases (CVD), diabetes, chronic obstructive pulmonary diseases (COPD) and cancers have become an emerging pandemic globally with disproportionately higher rates in developing countries.[2]

Diabetes is a serious, chronic disease that occurs either when the pancreas does not produce enough insulin (a hormone that regulates blood sugar, or

Corresponding Author: Vineet Bal, Assistant Professor, Department of Community Medicine, Government Medical college, Amritsar, Punjab.

E-mail: vineetbal@gmail.com

glucose), or when the body cannot effectively use the insulin, it produces.[1] In 2016, WHO declared diabetes as the seventh leading cause of death and estimated 1.6 million deaths occurred directly due to diabetes.[3]

In 2020, according to the International Diabetes Federation (IDF), 463 million people have diabetes in the world and 88 million of these live in Southeast Asia region.[4] The prevalence of diabetes in India has risen from 7.1% in 2009 to 8.9% in 2019.[5] Punjab is one of the prosperous and rich states of India with high rates of obesity and alcohol intake which are one of the major risk factors associated with diabetes. A state-wise STEP wise approach to NCD risk factor surveillance (STEPS) survey was conducted in 2014-2015 where the prevalence of diabetes was reported to be 8.3% in state.[6]

Once a diabetic is always a diabetic but blood sugar levels can be controlled through day-to-day activities and adherence to medication. Therefore, following fixed day-to-day routines and making dietary modifications (avoidance of sweets, high glycemic index foods) brings in distress among the diabetics. Diabetes distress, a relatively new concept, is getting increasing attention these days. It implies far broader affective experience than major depressive disorder. A chronic disease comes with worries, concerns and fears, specifically emotional distress among individuals living with it.[7]

There could be diabetes related conflict with loved ones and, strange relationship with health care individuals, making life more difficult.[8]These emotional burdens and worries about diabetes, its management, threats of complications, and unmet needs of moral support from family, friends and health care providers have been recognized as diabetes distress.[9] Keeping such factors in mind, this cross-sectional study was conducted to find the prevalence of diabetes related distress among diagnosed type 2 diabetic patients and it's association with socio-demographic variables, treatment status, glycemic control and complications due to diabetes.

Material and Methods

This was a cross-sectional study conducted on already diagnosed patients of type 2 diabetes mellitus aged >40 years residing in field practice area (urban and rural) of Department of Community Medicine, Government Medical College, Amritsar. Patients with diabetes for period of $\geq$ 6 months were included in the study. Patients with type 1 diabetes, those suffering from any mental illness, hearing and speech impairment and those who failed to give written informed consent were not included. Time period for study was 1 year (1st March 2021 to 28th February 2022).

Sample size and sampling technique- sample size was calculated using formula[10] for single proportion: $N > Z^2 \times P \times Q/D^2 \times Deff$ where N=required sample size. Z = 1.96, P (proportion of interest) =0.08314 (prevalence of diabetes in Punjab was 8.3% in state-wise NCD STEP survey conducted in 2014-2015[6]), Q= 1-P = 0.917, D (absolute precision) =0.05, Deff= design effect for cluster sampling =2. Assuming power of the study to be 80% and Confidence Interval of 95% the required sample size came out to be 234. Probability proportionate to size sampling (PPS) technique was used where each ward/village was considered to be cluster in itself. Assuming the non-response rate to be 10% for study population, sample size of 258 was calculated. In order to increase the validity of study, a total of 300 participants, 150 each from rural and urban area were included for this study.

Data collection tool

A pre-tested semi structured questionnaire was used to collect the sociodemographic data, medical history for complications, medications, glycemic control. To measure the distress associated with type 2 DM "Diabetes Distress Screening Scale (DDS17)"[8] was used which consisted of 17 questions. Scoring for each question was done on a Likert scale which ranged from 1-6, where higher the score, higher was the problem/distress. Total score was calculated by summing up all the responses and this total score was divided by no. of items in the scale to get a mean item score. Study participants with mean item score of >3 were labelled as distressed. In this scale, 4 sub scale scores, each addressing a different kind of distress, i.e Emotional burden, Physician- related distress, Regimen-related distress and Interpersonal distress subscale were also calculated. Similar to the mean total score, mean sub-scale score were calculated by adding appropriate item responses and dividing this

by number of items for each sub-scale. Mean item score for each sub-scale score of > 3 was considered as a level of distress worthy of clinical attention.

Methodology

Prior to selection of study participants, a house-to-house visit was made to identify the households with a diabetic patient and a line-list of all the households where a person having type 2 DM for > 6 months and aged > 40 years was made. From this line list, the required study participants of both urban and rural area were selected using Simple Random Sampling. During house-to-house visit, one to one interview was conducted with study participants after obtaining a written informed consent using study tool. If the selected participant failed to give consent or his/her house was found to be locked, a repeated attempt was made but if the study participants was not available on the second visit too, then immediately next participant in line list were included to complete the sample size.

Operational definitions:

Adequate treatment: Patient is taking medication for diabetes from last 7 days and his/her RBS < 180mg/dl.

Inadequate treatment: Patient is not taking medication for diabetes from last 7 days and/or his RBS is ≥ 180mg/dl.

Controlled diabetes: if RBS < 180mg/dl.

Uncontrolled diabetes: if RBS > 180mg/dl.

Statistical Analysis

Data was compiled using Microsoft Excel and analyzed using Epi-info 7 (CDC USA) freely available online. The distribution of categorical/nominal variables was represented through frequencies and proportions whereas, for continuous variables mean ± standard deviations were calculated. To find the association between different variables the relevant tests of significance were applied, i.e., chi-square for categorical/nominal variables and t-test for continuous variables. Chi-square test and t-test where p-value was less than 0.05 was considered to be statistically significant. If any of the expected cell value of <5 was found then Fisher's exact test was used.

Results

Total 300 study participants were included in the present study, with equal representation from both urban and rural areas (150 each). Approximately three-fourth of study participants (74%) were aged between 50-69 years. 63% of study participants were females. Overall, majority (87 %) of rural study participants belonged to SC/BC/OBC whereas in urban area, majority (62%) of study participants belonged to general caste. Overall, majority of study participants followed Sikh religion (69%). Almost half (52%) of study participants lived in nuclear families. Majority were married (88%).71% of urban belonged to upper class (according to BG Prasad's classification) whereas most of rural study participants belonged to middle class (40%). Following were the results:

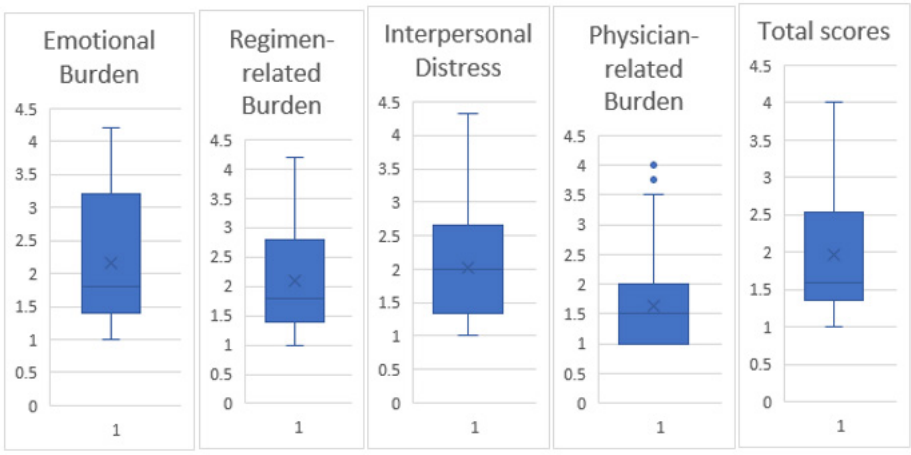

Figure 1: Distribution of scores of Diabetes Distress Scale 17 (DDS-17) and its subscales among study participants (N=300):

The overall mean score of DDS-17 was found to be 1.96±0.85 (figure 1). Highest mean scores were found for Emotional burden subscale, i.e,2.16±1.05, which was followed by Regimen-related burden (2.09±0.99), Interpersonal distress (2.02±0.93) and least was found for Physician- related Distress (1.63±0.67). The scale and all subscales ranged from 1-10.

Table 1: Association of overall scores of Diabetes Distress Scale 17 (DDS-17) and its subscales with place of residence:

Scores	Urban (n=150)	Rural (n=150)	(t) (p-value)
Emotional Burden	2.01 ± 1.04	2.31 ± 1.06	-2.55 (0.005)
Physician-related Distress	1.79 ± 0.77	1.47 ± 0.51	4.30 (0.0001)
Regimen-related Burden	1.99 ± 1.00	2.19 ± 0.99	-1.71 (0.043)
Interpersonal Distress	2 ± 1.04	2.05 ± 0.81	-0.43 (0.333)
Total scores	1.94 ± 0.94	1.99 ± 0.77	-0.48 (0.315)

Table 1 shows mean score of DDS-17(Diabetes Distress Scale -17) which was 1.94 ± 0.94 and 1.99 ± 0.77 for urban and rural areas respectively. The scores of study participants ranged between 1-4 in urban and 1-3.58 in rural areas.

As far as subscale scores were concerned, Physician related distress was found to be significantly higher in urban participants (1.79 ± 0.77) whereas Emotional burden (2.31 ± 1.06) and Regimen-related burden (2.19 ± 0.99) scores were significantly higher among rural study participants.

Table 2: Association of Diabetes related Distress (according to DDS17) in study participants with socio-demographic profile

Variables	Distressed (n=53)	Not distressed (n=247)	χ2 (p-value)
Age (in years)			
40-49	06(16)	32(84)	6.24 (0.100) df=3
50-59	10(11)	80(89)	
60-69	31(24)	100(76)	
≥70	06(15)	35(85)	
Sex			
Male	14(12)	98(88)	2.73 (0.098) df=1
Female	39(21)	149(79)	
Place			
Rural	23(15)	132(85)	1.46 (0.225) df=1
Urban	30(21)	115(79)	
Religion			
Sikh	43(21)	165(79)	4.96 (0.835) df=2
Hindu	06(09)	62(91)	
Others	04(17)	20(83)	

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Socio – economic status (as per BG Prasad's classification)			
Class I	21(17)	100(83)	2.40 (0.662) df=4
Class II	11(22)	39(78)	
Class III	10(13)	66(87)	
Class IV	09(20)	37(80)	
Class V	02(29)	05(71)	

Overall, 18% of study participants were found to be distressed (i.e., having score $\geq$ 3 according to DDS 17). Diabetes related distress was not significantly associated with age, gender, place of residence, religion and socio-economic status (table 2).

Table 3: Association of distress among study participants according to various subscales of Diabetes related distress (DDS17) with place of residence (N=300):

Distressed (According to subscales)	**Urban (n=150)**	**Rural (n=150)**	**Total (N=300)**
Emotional Burden	31(21)	59(39)	90(30)
Physician- related Distress	16(11)	03(02)	19(06)
Regimen-related Burden	31(21)	41(27)	72(24)
Interpersonal Distress	31(21)	26(17)	57(19)
$\chi 2$ =17.87, p-value = 0.004, df=3)			

(Figures in parenthesis are percentages)

Significantly higher proportion of rural study participants (39%) were found to be distressed for emotional burden subscale as compared to urban study participants (21%) (table 3).

Table 4: Association of Distress (according to DDS 17) with diabetes control among study participants (N=300):

Variable	Distressed (n=53)	Not distressed (n=247)	$\chi 2$ (p-value)
Treatment Status			
Adequate	10(09)	100(91)	7.87 (0.005) df=1
Inadequate	43(23)	147(77)	
Glycemic status			
Controlled	11(08)	120(92)	12.62 (0.000) df=1
Uncontrolled	42(25)	127(75)	
Complications present			
Yes	37(24)	118(76)	7.62 (0.005) df=1
No	16(11)	129(89)	

(Figures in parenthesis are percentages)

Significantly higher distress levels were observed among study participants who reported inadequate treatment, uncontrolled glycemic status and had complications due to diabetes (table 4).

Discussion

Once a diabetic is always a diabetic but blood sugar levels can be controlled through day-to-day activities and adherence to medication. Therefore,

following fixed day-to-day routines and making dietary modifications (avoidance of sweets, high glycemic index foods) brings in distress among the diabetics which is well proven by our study, where distress was assessed using Diabetes Distress Screening Scale (DDS17). The overall mean score of DDS-17 was found to be 1.96+0.85. Almost 1/5th (18%) study participants had a distress score of > 3, which was labelled as distressed. It was observed that distress was slightly higher among urban study participants (21%) in comparison to rural study participants (15%) but this difference was not found to be statistically significant. A slightly lesser proportion of distress has been reported by a study conducted in Kerala, where prevalence of distress was 13.3%.[11] Whereas, similar results were reported from North India by Gahlan, et al, in which prevalence was 18% with highest scores in Emotional burden subscale.[12] With DDS17, four subscales measured distress related to emotions, regimen, inter-personal relations and treating physician. In our study, highest scores were found for Emotional burden subscale, i.e.,2.16+1.05 and least was found for Physician- related Distress (1.63+0.67), with 90 (30%) study participants having score of ≥ 3 in Emotional burden subscale and 19 (06%) study participants having score of ≥ 3 in Physician- related Distress subscale.

As the rural study participants were less educated and awareness levels were even lesser, significantly higher proportion were found to be emotionally distressed in comparison to urban (39% v/s 21%). On the contrary, in spite of wider network of physicians in urban areas, physician related distress was higher among urban study participants (11%). Higher levels of inter-personal distress (21%) among urban population could be explained by loose families ties among them. As the availability of treatment modalities in rural area is lesser, this led to increase in regimen-related distress (27%). Inadequate treatment (23%) and poor glycemic control (25%) were found to be associated with higher levels of distress. Subconsciously, diabetics are aware that uncontrolled glucose levels and inadequate treatment would result in complications related to the disease. Due to the same reason, distress levels were higher among those with complications (24%). Complications usually occur due to end-organ/vital organ damage which further increases distress. With increase in complications, treatment costs increases and emotional burden increases which further contributes to distress. A study conducted by Gahlan also proves the association of poor glycemic control with higher Diabetes distress.[12] Significant association was also found between distress and diabetes related complications in other study conducted by Fisher.[13]

Conclusion

Distress among study participants was assessed using DDS-17(Diabetes Distress Scale -17) where overall, 18% of study participants were found to be distressed (i.e., having score > 3 according to DDS 17). Distress was slightly higher among urban study participants (21%) in comparison to rural study participants (15%) but this difference was not found to be statistically significant. Using various subscales of DDS-17, it was found that significantly higher proportion of rural study participants (39%) were found to be distressed for emotional burden subscale as compared to urban study participants (21%). Proportion of distress for subscales for Physician-related Distress and Interpersonal distress were relatively higher among urban study participants (11% and 21%) whereas for Regimen-related burden, distress was found to be higher among rural study participants (27%). Significantly higher distress levels were observed among study participants who reported inadequate treatment (23%) and 25% of those having uncontrolled glycemic status were found to be distressed whereas distress levels were only 8% with controlled glycemic status. Distress levels were found to be significantly higher among those having complications (24%) as compared to those who didn't report any complications (11%).

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Original Article

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An Epidemiological Study on Mucormycosis Patients Admitted in Tertiary Care Hospital of Central India

Neelam Anupama Toppo[1], Aditya Thakur[2], Deepali Soni[3], Priyanka Dubey[3], Sapna Tiwari[3]

[1]Professor, [2]Associate Professor, [3]PG Resident, Department of Community Medicine, Netaji Subhash Chandra Bose Medical College, Jabalpur.

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Abstract

Introduction: The second wave of SAR Cov-2 Infection brought a new menace that was the escalation in the number of mucormycosis, which is a potentially life-threatening, opportunistic, invasive, fungal infection commonly called the "Black fungus".

Objective: To find out the factors responsible for occurrence of mucormycosis and the pattern that have emerged in the Post SARS – CoV-19 infected cases admitted in tertiary care hospital of Central India.

Material and methods: This descriptive Cross-sectional study was conducted in Government Netaji Subhash Chandra Bose Medical college and hospital of Central India from May 2021 to June 2021**.** 96 Confirmed cases of mucormycosis were included in this study. The details about Demographical, Epidemiological, clinical data were retrieved by us through interview with patient or his relative and by going through the case sheets of the cases.

Results: The mean age for the mucormycosis was among male is 52.68 ±11.13 years and among female it is 47.47±10.07years. 78% of study subjects were hospitalized for treatment while 22% received treatment at home. 72.40% had steroid intake, Mean duration of steroid therapy was 10.15±5.71 days. Mean duration between steroid therapy and appearance of mucormycosis as 14.21±9.1 while mean duration between Covid infection and mucor mycosis was found to be 19.71±9.84 days.

Conclusion: Immunosuppression during Covid -19 treatment had catalyst effect on the development of mucormycosis. Early diagnosis and careful monitoring of immuno-compromised individuals is essential. Steroid and other immune- suppressive drugs should be given cautiously.

Keywords: MUCORMYCOSIS, COVID -19, STEROID, MEAN, EPIDEMIOLOGICAL

Introduction

COVID-19 has played havoc with millions of lives globally. In this highly infectious disease, supportive care plays an essential role in reducing the mortality and morbidity. Gluco-corticoids have shown promising results in the management of COVID-19. They are economical, widely available,

Corresponding Author: Aditya Thakur, Associate Professor in Department of Community Medicine, Netaji Subhash Chandra Bose Medical College, Jabalpur.

Mobile: 9926822544

E-mail: adityathakur701@gmail.com

and have shown to decrease mortality in hypoxemic patients with COVID-19. [1] But there also exists a dark side of glucocorticoids, they increase the risk of secondary infections. The risk of opportunistic infections in COVID-19 patients is further enhanced by the immune dysregulation caused by the virus and the use of parallel immunomodulatory drugs such as tocilizumab. [2]

The second wave of SAR Cov-2 Infection brought a new menace that was the escalation in the number of mucormycosis, which is a potentially life-threatening, opportunistic, invasive, fungal infection commonly called the "Black fungus". By June 7, 2021, about 28,252 cases of mucormycosis had been documented by the Indian Health Ministry. [3] Mucormycosis is one such fungal infection which has taken advantage of this situation thus making the COVID-19 pandemic gloomier and more frightening.

Mucormycosis has emerged as a matter of concern during COVID-19, as a complex spectrum of factors was considered to be facilitating the rise in mucormycosis. The high oxygen saturation in COVID-19 is an ideal environment for the germination of sporangiospores. [4] Another potential cause is immunosuppression caused by systemic immune alterations by COVID-19, coupled with uncontrolled diabetes mellitus (DM), poor glycaemic control, steroid therapy, pre-existing paranasal and airway diseases such as asthma, chronic obstructive pulmonary disease (COPD) and other associated comorbidities. The other factor is prolonged hospitalization and oxygen need with or without ventilator support and also possible nosocomial sources. [1,4] With above speculation we have design this study with an aim to find out the factors responsible for occurrence of mucormycosis and the pattern that have emerged in the Post SARS – CoV-19 infected cases admitted in tertiary care hospital of Central India.

Methodology

This descriptive Cross-sectional study was conducted in Government Netaji Subhash Chandra Bose Medical college and hospital of Central India from May 2021 to June 2021. First case was admitted on 13th may then cases were keep coming. As during first wave we didn't see any case with mucormycosis but during the second wave of SARS-CoV-19 many cases of mucormycosis have been reported to our Institution. First 96 Confirmed cases of mucormycosis were included in this study. Confirmation was done by reviewing the clinical and radiological features and demonstration of Mucor on KOH mount or histopathological examination. The details about Demographical, Epidemiological, clinical data were retrieved by us through interview with patient or his relative and by going through the case sheets of the cases. Various factors were reviewed like status of comorbidity, Covid-19 status, treatment history like use of steroids, use of tocilizumab, use of oxygen, duration of hospital stay, change of masks during oxygen therapy etc. The Study was approved by the ethical and scientific Committee of Institution. Data were collected, entered and coded in MS excel sheets, and Descriptive statistics was generated.

Result

During the second wave of covid-19 pandemic mucormycosis has been emerged as a new threat which raised health care professionals' concern. In this study 96 cases were studied in which 46% belonged from the rural area while 54% from the urban area. We have seen the high rate of infection among the males which was 81% while the females are less in number only 19%. The mean age for the mucormycosis was among male is 52.68 ±11.13 years and among female it is 47.47±10.07 years. 78% of study subjects were hospitalized for treatment while 22% received treatment at home. [Table 1]

Table: 1. Distribution of Mucormycosis patient with respect to epidemiological factors.

Variables	Characteristics	Frequency (%) [N = 96]
Mean Age	Male	52.68 ±11.13 Years
	Female	47.47±10.07 Years

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Gender	Male	78 (81%)
	Female	18 (19%)
Area	Urban	52 (54%)
	Rural	44 (46%)
Co-morbidities	Diabetes	59 (61.48%)
	Hypertension	17 (17.73%)
	Diabetes and hypertension	15 (15.63%)
	Asthma	1 (1%)
	No Co-morbidities	4 (4.16%)
Steroid therapy	Steroid given	84 (87.5%)
	Not known	5 (5.2%)
	Not given	7 (7.3%)
oxygen therapy	On oxygen	58 (60%)
	NIV	1 (1%)
	On room air	37 (39%)
Nasal Hygiene	Yes	13 (14%)
	No	83 (86%)
Place of treatment	Hospital stay	75 (78%)
	Home isolation	21 (22%)

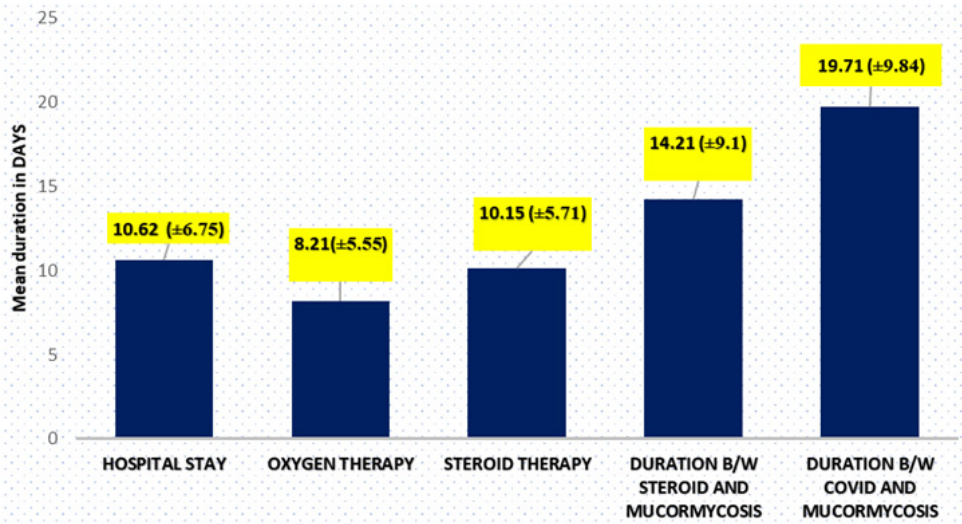

Figure: 1. Mean Duration of different factors in Mucormycosis Patients.

Covid-19 was a threat to the patients with comorbidities like diabetes. We've seen the diabetes has emerged as a major contribute factor for the mucormycosis.in this study 61.48% patients had diabetes mellitus, 17.73% had hypertension, 15.53% had both diabetes and hypertension, 1% had asthma while only 4.16% had no comorbidities.

Diabetes along with steroid therapy makes a drastic combination for the mucormycosis. In this study 72.40% had steroid intake while only 27.60% hadn't. Mean duration of steroid therapy was 10.15±5.71 days. Mean duration between steroid therapy and appearance of mucormycosis was 14.21±9.1 while mean duration between Covid infection and mucormycosis was found to be 19.71±9.84 days.

In present study 60% had oxygen therapy, 1% had NIV support and 39% had no oxygen therapy.

The Mean duration of steroid therapy was 10.15±5.71 days. Mean duration between steroid therapy and appearance of mucormycosis was 14.21±9.1 while mean duration between Covid infection and mucormycosis was found to be 19.71±9.84 days.

Nasal hygiene is must, to avoid mucormycosis. In this study we've found that 86% patients didn't maintain nasal hygiene while remaining had maintained.

Discussion

In current study first 96 patients with mucormycosis were included, where most of the patients were in 46 to 55 years of age group with mean age for male was 52.68 ±11.13 Years and for female it was 47.47±10.07 Years. A study by Arora U et al where they found mean age of study population was 48.2 ± 14 years with 226 males (64.2%) while in our study 81% were males. [5] In our study more cases were from urban area which were 54% while rural cases were 46% but Arora U et al found rural cases more at high risk with p <0.001. [5] Raid M. AI-Ani et al reported more males were affected with mucormycosis i.e., 71.4% with a male-to-female ratio of 2.5:1. They reported cases with median age 61 years (age range: 27-80 years) which was very high as compared to our study. [6]

Martin Hoenigl, et al reported in their review that majority of patients i.e. (62 [78%] of 80) were male with the median age of 55 years (range 10–86) which was quite comparable to our findings. They also reported that male to female ratio 62:18 (78%:23%), therefore it is evident that males are more vulnerable as compare to female. [7]

During the second wave of covid-19 pandemic we've seen surge of mucormycosis. Patients with compromised immunity have become susceptible to mucormycosis, which includes uncontrolled diabetes mellitus, solid organ transplantation, neutropenia, malignancies, iron overload, intake of immunosuppressants etc. In our study there is 61.48% patients have been presented with diabetes in which 18.75 % were diagnosed during the covid-19 infection and 37% have uncontrolled diabetes, similar to the study done by Meher R et al. In their study on 131 patients concluded that CAM [Covid Associated mucormycosis] was commonly seen in patients with diabetes [77.09 %] in which 17.5% were newly diagnosed. [8] Martin Hoenigl, et al found that rhino-orbital cerebral infection was more among 55 patients with uncontrolled diabetes with median of 3·5 days (0–50 days) after COVID-19 as compared to a median of 20 days (0–60 days) among patients with controlled.[7] Another study by Kiran Bala, et al found significant association of Diabetes mellitus with rhino-orbito-cerebral presentation (OR = 7.55, P = 0.001) [9]

This reinforces the fact that diabetes along with compromised immunity status is one important factor for the occurrence of covid-19 associated Mucor mycosis. In the current situation of Covid-19, immunosuppressant has been a major tool to combat the severity of hyper inflammation or viral load in Covid-19 patient, in consequence to it significantly increases the risk to get infected with mucormycosis infection. In our study 87.5% individuals were given steroids therapy as a treatment for covid-19. Methylprednisolone was the most commonly used followed by dexamethasone. The average duration was 10 days. Similar to Bhanuprasad K et. al. Study on 164 patients 74% covid-19 positive patients were given steroid therapy. [10]Steroid therapy along with diabetes weakens the immunity of the patients and make them vulnerable to the mucormycosis. Hyperglycaemia stimulates fungal proliferation and also causes decrease in chemotaxis and phagocytic efficiency which permits the opportunistic organisms to thrive in acid-rich environment. Predisposing factors like AIDS, uncontrolled diabetes mellitus, cancers such as lymphomas, kidney failure, organ transplant, long term corticosteroid and immunosuppressive therapy, neutropenia, iron overload or hemochromatosis. Similar kinds of findings were reported by many other researchers.[11-19]

People who are immunocompromised or take medicines that lower the body's ability to fight against infections are particularly susceptible. Glucocorticoids have shown promising results in the management of COVID-19. They are inexpensive, widely available, and have shown to reduce mortality in hypoxemic patients with COVID-19. But there also exists a dark side of glucocorticoids, they increase the risk of secondary infections. The risk of opportunistic

infections in COVID-19 patients is further enhanced by the immune dysregulation caused by the virus and the use of concurrent immunomodulatory drugs such as tocilizumab.[20] studies have found that candidates who received corticosteroid for the treatment of COVID-19 was found in 76.3% of cases, followed by remdesivir (20.6%) and tocilizumab (4.1%).[21,22]

In our study 60% mucormycosis patients were on oxygen therapy for at least 8 days. Another study by Mehta & Pandey et al found in a case report that after 10 days of starting of oxygen supplementation, systemic steroids, tocilizumab, meropenem, and oseltamivir the case developed invasive rhino cerebral mucormycosis, and he was kept on ventilator and amphotericin B. but unfortunately case died on day 16.[23]

It has been known facts that for Covid 19 management oxygen demand were increased and in place of Medical oxygen, industrial oxygen was used. This was found as one of the causes for mucormycosis. With Industrial oxygen there is a high chance of compromised quality and hygiene of the oxygen. There was high chance of development of fungal spores in unhygienic water used for the humidification of the oxygen. These all factors and evidences reinforces the role of oxygen therapy in the causation of mucormycosis after covid-19. Kandasamy S, Muthuraju S, Vasugi A, et al also found re-usage of disposable masks, poor quality of oxygen cylinders and poor sterilization of ventilators during the time of COVID-19 crisis.[24]

Conclusion

Detailed analysis of clinic-epidemiological features suggests the possibilities of immunosuppression (due to diabetes and use of corticosteroids in treatment of COVID-19) and COVID-19 (endothelial damage, cytokine storm) being the pathogenesis associated with the sudden surge of mucormycosis. Complete Clinico-pathological correlation will help for efficient treatment. Early diagnosis and careful monitoring of immuno-compromised individuals is essential. Steroid and other immune- suppressive drugs should be given cautiously.

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Snack Bars as a Functional Snack Option for Individuals with Diabetes: A Review

Nidhi Chauhan[1], Payal Mahajan[2]

[1]Ph.DScholar, [2]HOD, Department of Nutrition & Health, School of Medical And Allied Sciences, GD Goenka.

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Abstract

Snack bars can be a great example of functional foods, which are foods that provide health benefits beyond basic nutrition. By adding other functional ingredients such as nuts, seeds, fruits, and spices, snack bars can offer even more health benefits. For example, nuts and seeds are rich in healthy fats and can help lower cholesterol levels, while fruits and berries are high in antioxidants and can help boost the immune system. Spices like cinnamon and ginger have anti-inflammatory properties and can help improve digestion.

Moreover, snack bars can be a convenient and portable way to get the nutrition and energy needed throughout the day. They can be a great option for busy individuals who need a quick and easy snack on the go or for athletes who need sustained energy during exercise.

The demand of functional food increasing day by day as the threat of non-communicable diseases increasing such as diabetes, CVD and obesity. From the ancient time the use of medicinal food such as seeds of chia, millets and multigrain has been seen to get different health benefits. Currently seeds are widely used for numerous health benefits. Seeds are well known for there high content of PUFA mainly omega-3 and omega-6 fatty acids and fiber. These seeds are also rich source of polyphenols which further helps in protecting the body from free radicals. Furthermore, seeds are rich source of the fiber which helps in reducing cholesterol level, regulate bowel movement and reduce inflammation in the body. Demand for practical and convenient food increasing day by day due to busy lifestyle. Food items that are convenient and can improve health are needed in today's time. The seeds incorporated snack bar can be a convenient and practical food product with complete nutritional components. There are Some ingredients which can be used as the raw material to prepare an anti-diabetic snack bar. On the basis of existing research, seed and modified cassava flour (MOCAF) can reduce blood sugar levels and that can reduce the risk of diabetes too.

Key Words: Chia seed, antidiabetic, snack bar, MOCAF, Health, Nutritious food.

Introduction

At present, People are more conscious about their health and awareness regarding nutrition and health increasing among people. Eating nutritious and healthy food is necessary for the good health.[1] People are now being conscious about their health in

Corresponding Author: Nidhi Chauhan, Ph.DScholar, Department of Nutrition & Health, School of Medical And Allied Sciences, GD Goenka.

Mobile: 9717354573

E-mail: Chauhan.dnidhi@gmail.com

order that eating behaviour are not only for enjoying delicious food but can also affect their whole some level of health and fitness.[2] Due to busy lifestyle people getting lesser time for preparing food so mostly they are switching on the fast food because those are practical, quick, eaten t anytime and easy to get. Snack bar can be a food product which is practical easy to get, need no preparation and provide health benefits too.[3] Increasing fitness consciousness, activity levels and consciousness about the benefits of frequent and smaller meals leading into the high use of snacks.[4]

The protein rich bars initially produced to address the nutritional deficiencies to military and physical exercise practitioners. The main purpose of the research and development team of food industry is to develop new products and market them to consumers but due to high demand of nutritious healthy products protein bars are good option to provide the fiber, protein healthy fat vitamin and minerals.[5]

Functional food use is the trend of today's time as consciousness increased for the healthy eating and non-communicable diseases like diabetes mellitus, and hyperlipidemia. In the diabetes mellitus people not able to control blood sugar levels in normal limits and leads to hyperglycemia in a longer run.[6] Blood sugar levels can be controlled if we eat food items with low glycemic index and long starch digestibility. Glycemic index and blood glucose level are related with each other so if we eat food which have high glycemic index it will raise the blood sugar level faster, at variance with if we eat food with low glycemic index, the blood sugar level will rise slowly.[7] If the fiber content of the food is good it will have a low glycemic index but not always. Nutritious snacks should not only rich in energy, but they should also provide dietary fiber, antioxidants, protein, vitamins, and minerals that are crucialfor maintaining good health[8]. Chia seeds due to its potential health benefits consider as the functional food or super food. seeds and their food products are promising food items which can help in maintaing a good health.[9,10,11] The hypoglycaemic effect of Nuts and seeds is well known which can reduce the blood glucose levels and reduce the risk of diabetes. On the other hand, apart from chia seeds many other products that also have potential to reduce blood sugar levels is mocaf. Mocaf is known as the cassava flour made by fermentation of cassava cell modification. It is generally used as a replacement of wheat flour. Mocaf is similar to wheat flour but it's coarse in texture than wheat flour.[12]

Chia Seed (Salvia hispanica L)

Chia seeds are oval in shape, have a glossy surface, and has many colors such as dark brown, grey, white, and black. Chia seeds has a width of 1.2 - 1.5 mm, lengthabout 2 - 2.5 mm, and thickness of 0.8 - 1 mm.[11] Chia seeds has protein about (15-25%), fat (30-33%), carbohydrates (26-41%), fiber (18-30%), and minerals (4-5%). Chia seeds also rich in omega 3 fatty acids especially (linolenic acid) by 17.83%.[13] To Make chia seed flour first of all weight 250g of chia seeds and roast them for about 6 minutes and keep stirring. Grind the roasted chia seeds until you get a smooth texture and then sieved with a 60-mesh flour sieve .[14]

Cassava (Manihot esculenta)

Modified Cassava Flour (MOCAF) is aproduct from cassava (Manihot esculenta) in which cassava cells modified with the lactic acid bacteria via fermentation process. Mocaf flour is generally and vigorously used in various food products.[15] Modified cassava flour has many advantages over basic cassava flour as it has higher viscosity, better rehydration power, and a covered cassava flavour. 100 grams of mocaf flour contains 1.2% protein, 0.4% fat, and 3.4% fiber [16] Mocaf is gluten free in nature and has the ability to be processed to produce resistant starch 3 (rs3).Resistant starch capability needed for diabetics people it means this can be used as food processing for diabetics.[12] To make the mocaf from cassava starts from selecting cassava it should be 10 months old, after it peel the cassava and wash with clean water. Then cut the cassava in thin strips with help of slicer. Then cassava chips go through the fermentation process by the addition of water and a starter in 1000:1. There are Two different grinding methods. In thedry milling, fermented cassava chips dried by the sun (sun drying) to produce chips Mocaf, and then blended using a blender for one minute and eventually sieved with a 100-mesh sieve. In the wet milling process, the fermented cassava chips are blended with by adding 6: 1 water using blender for one minute until a nice slurry formed. The slurry is

dried with sun drying method and milled again with the help of a blender for one minute. Sieved with a 100-mesh sieve to get a cassava flour.[15]

Snack Bar Production

The snack bar production starts from the weighing the ingredients according to the formulation. Both the flours mocaf and chia flour mixed with the other ingredients and then mixed for 20 minutes. After every ingredient being incorporated a dough is formed and transfer the in to the baking sheet sized 26.5x10x3.5 cm. After it the snack bar dough baked at 120 degrees Celsius for 40 minutes, and then it again baked at 140-degreeCelsius for 5 minutes. prepared snack bar left for to stand for half an hour.[16] The high concentration of mocaf flour was used for lighter colour of the snack bar. The texture od resulting snack bar was is not too hard and the protein content of 5.6%. it was low due to roasting via high temperatures.[17] When high temperature for a longer period of time has been used the high protein damage take place in these food products. In spite the fact that the resultant snack bar has low water content which mean its shelf life is high. Based on other research by Singh et al. (2020), snacks produced with the addition of chia flour have fiber content in the resultant product. 100 g of chia seeds contains 50 g of dietary fiber. High fiber content provides better water holding capacity and high emulsifying activity. Hence when more concentration of chia seeds uses the moisture content will reduce which ultimately increase the shelf life of the product.[18]

Other Antidiabatic Snack Bars Flour

The available snacks for diabetic people mellitus need further mindfulness. Many researchers have been conducted studies on the formulation of snack bars by using different nutrient rich ingredients. A study conducted by Jahanzeb *et al* (2016) in which he formulated bars using cereal and utilizing guava pulp at 10% and 15% concentration. The results showed a high protein, and lower fat content in the cereal bars.[19] In a different study conducted by Mridula *et al* (2013) developed an energy bar by using different concentration of flaxseed (0–20%) in addition to cereals and pulses with different levels of sweeteners (45, 50, and 55%).[20] As the level of flaxseed increase, the total calories obtained from the energy bar significantly increase. The snacks should have high fiber content and low glycemic index to be appropriate for diabetic people. Insulin sensitivity can be improved by eating high fiber and low glycemic index food. By doing so the complication due to diabetes mellitus can be reduced. Generally, whole grains, nuts, seeds and tubers have low glycemic index and high infiber. Snack bar also made with sorghum flour as main ingredient. But in final product the resistant starch content reduced. Sorghum flour has ability to reduce systolic blood pressure. Hypertension and diabetes can co-exist.[21] A nutrimat bar also made from soybean and red bean flour, which can say to be a best formulation of soybean flour 25%: 75% red bean flour due to delicious taste, savoury aroma, brown color, and soft texture with high nutritional value.[22] Snack bars made with functional foods such as nuts, seeds, and whole grains can help regulate blood sugar levels due to their high fiber content and antioxidant properties. This can be particularly beneficial for many metabolic syndrome diabetes, CVD and many more.[23,24]

Methodology

A literature research has been conducted to recognize the recent articles on the snack bar production by using functional ingredients such as chia seeds, flax seeds, nuts and multigrain flours. Different sets of terms have been used for the literature research such as snack bars, antidiabetic bars, blood sugar control snack, chia seeds and snack bars, multigrain bars, cassava flour and bars. To confirm the applicability for review all the abstracts has been reviewed carefully. Additional articles were also extracted from the reference of the articles.

Conclusion

The use of snack bars made from functional ingredients such as nuts, seeds and cassava flour can be a healthy and convenient option for individuals with diabetes. These bars are typically high in fiber and protein, which can help regulate blood sugar levels and keep individuals feeling full and satisfied for longer periods of time. Additionally, nuts and seeds are rich in healthy fats, vitamins, and minerals, which can support overall health and well-being.

Overall, incorporating snack bars made from seeds and nuts into a balanced and varied diet can

be a helpful strategy for individuals with diabetes who are looking for a convenient and healthy snack option. Top of FormFrom the current literature it has been shown that seeds, nuts and cassava have the ability to help in managing the lifestyle disorders such as diabetes, obesity and CVD. It can reduce the risk of diabetes mellitus. As people have lesser time and want something easy to eat different snacks has been made from seeds with the incorporation of different flours as the main ingredient. Overall, snack bars can be an excellent choice for functional foods, offering a combination of nutrients and health benefits in a convenient and tasty form. To develop nutritious food product which provide potential health benefits thorough analysis of different parameters should be in future studies.

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Original Article

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Knowledge, Attitude and Practices towards COVID-19 among Adults in a Rural area of Sonepat: A Cross-Sectional Study

Pankaj Yadav[1], Sanjay Kamar Jha[2], Babita Rani[3], Anita Punia[4], Tanvi Goel[5]

[1,5]Postgraduate, [2]Professor and Head, [3,4]Professor, Department of Community medicine, BPS Government Medical College for Women, Khanpur Kalan, Sonepat.

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Abstract

Background: The COVID-19 pandemic posed a major global health challenge. India has taken unprecedented and stringent preventive and precautionary measures against COVID-19 to control its spread. Public adherence to preventive measures is influenced by their knowledge and attitude towards COVID-19. This study was aimed to access the knowledge, attitude, and practices (KAP) towards COVID-19 among Indian adults

Methods: This cross-sectional study was performed on 576 participants from August 2021 to July 2022 in three villages under CHC Juan, Sonepat, Haryana using multistage random sampling. A pretested semi structured proforma comprising questions regarding knowledge attitudes and practices with respect to COVID-19 was used. Data were analysed using R statistical software.

Results: Participants were male (61.8%) & married (89.6%) & the mean (SD) age was 43.11 (15.66) years. Participants had overall good knowledge of COVID-19 as 82.6% knew that the disease was contagious. The most common symptoms of this disease reported by participants were cough, fever, body ache, difficulty in breathing in sequence. Almost 90% had positive attitude about receiving vaccine against COVID-19. Most participants washed their hands (92.4%) and used a facemask (92%), avoided crowded places (88.9%) to safeguard self from COVID-19 infection.

Conclusion: The knowledge on COVID-19 preventive measures was good and majority held positive attitude and practices.

Keywords: Knowledge, Attitude, Practices, COVID-19, Pandemic

Introduction

The new Coronavirus disease 2019 (COVID-19) pandemic has emerged as the most important public health challenge of the 21st century and has caused enormous health and economic losses globally.[1] First human case of Severe Acute Respiratory Syndrome Coronavirus-2 was reported in Wuhan, China in December 2019. Covid-19 is a highly contagious disease transmitted mainly through respiratory droplets and its major clinical manifestations include fever, dry cough, runny or stuffy nose, sneezing, sore throat, shortness of

Corresponding Author: Pankaj Yadav, Postgraduate, Department of Community Medicine, BPS Government Medical College for Women, Khanpur Kalan, Sonepat.

Mobile: 8930895893

E-mail: dr.pankaj26@gmail.com

breath, headache, body aches, fatigue, chills, and loss of taste and smell.[2] High surge in the number of cases worldwide led the WHO to declare it as "a public health emergency of international concern" on January 30th; 2020.[3]

As of October 06th, 2022, there were 611.4 million confirmed cases in the world and 44 million confirmed cases in India, and the death tolls has reached 6.5 million and 5,28,449 respectively.[4,5]

Although different actions taken in fighting the outbreak, the success or failure of these efforts is largely dependent on public behaviour. Specifically, public adherence to preventive measures is of key importance to avert the spread of the disease. According to the knowledge, attitude, and practices (KAP) theory, the state of society, behaviours, understanding, and habits significantly impact willingness to consider behavioural improvement and adherence to preventive strategies. Individuals' knowledge, attitude, and practices (KAP) towards preventive and precautionary measures for COVID-19 is essential to control the spread of the disease.[6,7] Several KAP studies about COVID-19 have been conducted worldwide and in India but most of the studies were done among healthcare workers. There is a dearth of data regarding KAP towards COVID-19 in rural Sonepat. So, this study was conducted to assess the KAP regarding COVID-19 among adults in a rural area of district Sonepat, Haryana.

Material and Methods

This community based cross-sectional study was conducted from August 2021 to July 2022 among adults of three villages under CHC Juan, Sonepat, Haryana which is field practice area of the Department of Community Medicine, Bhagat Phool Singh Government Medical College, Khanpur Kalan, Sonepat. Assuming the prevalence of knowledge, attitude and practices as 50%, the sample size was calculated for proportions considering 95% confidence interval, margin of error 0.05 with design effect 1.5. The calculated sample size was 576. Multistage random sampling method was opted for recruitment of participants. Participants aged 18 years and above who were residents (6 months or more) of the study area and willing to participate were included in the study.

The study objectives were explained to the participants. Data were collected after taking written informed consent from the participants. The ethical clearance was obtained from the Institutional Ethics Committee. For data collection, a pretested semi structured proforma was used to interview the participants. It included questions related to awareness, attitude and practices towards COVID-19. R statistical software was used to perform all statistical analyses. The results were described in terms of frequency and proportion.

Results

Table 1: Socio-demographic characteristics of the study participants (n=576)

Age (Years)	Frequency (n)	Proportion (%)
18-29	143	24.8
30-39	112	19.4
40-49	125	21.7
50-59	76	13.2
60 and above	120	20.8
Gender		
Female	220	38.2
Male	356	61.8
Marital status		
Married	516	89.6
Unmarried	60	10.4
Occupation		
None	341	59.2
Labourer	111	19.3
Business	9	1.6
Profession	7	1.2
Cultivation	72	12.5
Service	36	6.3
Educational Status		
Illiterate	137	23.8
Can Read and Write	40	6.9
Primary	77	13.4
Middle	80	13.9
High School	109	18.9
Secondary School	85	14.8
Graduate and above	48	8.3
Socioeconomic Status		
Social Class I	32	5.6
Social Class II	144	25.0
Social Class III	200	34.7
Social Class IV	172	29.9
Social Class V	28	4.9

- Table 1 shows the sociodemographic characteristics of the study participants. Out of total 576 participants majority were males (61.8%) and married (89.6%). The mean (SD) age of participants was 43.11 (15.66 years). Around one-fourth (24.8%) were in age group 18-29 years followed by 21.7% in age group 40-49 years. More than half (59.2%) of the participants were un-employed, and almost one fifth (19.3%) were laborer. Almost one fourth (23.8%) of study participants were Illiterate whereas approximately one fifth (18.9%) had completed their high school. Majority (34.7%) belonged to Social Class III followed by Social Class IV 172 (29.9%) as per Modified B G Prasad Scale 2020.

Table 2: Distribution of study participants according to their knowledge about COVID-19 (n=576)

Characteristics	Yes	No	Don't know
	n (%)	n (%)	n (%)
COVID-19 viral disease	237 (41.1)	7 (1.2)	332 (57.6)
COVID-19 Contagious	476 (82.6)	25(4.3)	75(13.0)
COVID-19 Spread through Sneezing	480 (83.3)	23 (4.0)	73 (12.7)
COVID-19 Spread through Coughing	482 (83.7)	22 (3.8)	72 (12.5)
COVID-19 Spread through Touching	372 (64.6)	109 (18.9)	95 (16.5)
COVID-19 Spread through Food	361 (62.7)	97 (16.8)	118 (20.5)
Get COVID-19 from covid-19 vaccine	22 (3.8)	400 (69.4)	154 (26.7)
Have COVID-19 without knowing it	146 (25.3)	178 (30.9)	252 (43.8)
Symptoms of COVID-19			
Fever	520 (90.3)	12 (2.1)	44 (7.6)
Cough	529 (91.8)	14 (2.4)	33 (5.7)
Difficulty Breathing	469 (81.4)	36 (6.3)	71 (12.3)
Sore Throat	431 (74.8)	40 (6.3)	105 (12.3)
Runny nose	245 (42.5)	81 (14.)1	249 (43.2)
Tiredness	464 (80.6)	31 (5.4)	81 (14.1)
Body ache	473 (82.1)	26 (4.5)	77 (13.4)
COVID-19 can lead serious complications	534 (92.7)	13 (2.3)	29 (5.0)
COVID-19 can be prevented with the vaccine	477 (82.8)	9 (1.6)	90 (15.6)
Antibiotic can cure COVID-19	66 (11.5)	184 (31.9)	326 (56.6)

Table 2 shows knowledge of study participants regarding COVID-19 disease. Among study participants, more than half (57.6%) were unaware about viral aetiology of disease but majority (82.6%) knew that disease was contagious. Maximum participants knew about its spread through sneezing (83.3%), coughing (83.7%), touching (64.6%) and through food (62.6%). Approximately seventy percent (69.4%) knew about the fact that COVID-19 vaccine did not cause Corona virus disease and 43.8% were unaware of having COVID-19 without knowing it. Most commonly reported symptom was Cough (91.8%), followed by fever (90.3%), Body ache (82.1%) and Difficulty Breathing (81.4%). More than ninety percent (92.7%) agreed that COVID-19 could lead serious complications. Majority (82.8%) of study participants believed COVID-19 as vaccine preventable disease. In response to the question antibiotic can cure COVID-19, more than half (56.6%) showed unawareness.

Table 3: Distribution of study participants according to their attitude about COVID-19 (n=576)

Characteristics	Agree	Don't Agree	Don't know
	n (%)	n (%)	n (%)
Pandemic led Millions of Deaths	570 (99)	0 (0)	6 (1.0)
Vaccine best way to prevent COVID-19	470 (81.6)	7 (1.2)	99 (17.2)
Vaccine must be received by everyone	518 (89.9)	16 (2.8)	42 (7.3)
Vaccine will stop COVID-19 Pandemic	438 (76.0)	8 (1.4)	130 (22.6)
Get Vaccine if Doctor recommends it	571 (99.1)	5 (0.9)	0 (0)
Get Vaccine if Government recommends it	567 (98.4)	6 (1.0)	3 (0.5)
More Complications elderly/Young	523 (90.8)	38 (6.6)	15 (2.6)

Table 3 shows attitude of study participants about COVID-19 disease. Utmost all (99%) study participants agreed the fact that COVID-19 pandemic had led millions of deaths. Majority of participants considered vaccine as best way to prevent COVID-19 (81.6%), vaccine must be received by everyone (89.9%) and it would stop the Pandemic (76%). Almost all participants had positive attitude towards vaccine acceptance if recommended by doctor (99.1%), and government (98.4%). More than ninety percent believed that COVID-19 cause more complications in elderly/young.

Table 4: Distribution of study participants according to Practices (Behavioural Responses) to COVID-19 Pandemic (n= 576)

Characteristics	Yes	No
	n (%)	n (%)
Hand washing with soap and water	532 (92.4)	44 (7.6)
Alcoholic hand gel use	373 (64.8)	203 (35.2)
Cover Face with Cloth/ Mask	530 (92.0)	46 (8.0)
Covering mouth while coughing/sneezing	543 (94.3)	33 (5.7)
Increased frequency to clean/disinfect things might touch	263 (45.7)	313 (54.3)
Kept away from crowded places	512 (88.9)	64 (11.1)
Reduced Public Transport use	511 (88.7)	65 (11.3)
Cancelled/postponed social events	505 (87.7)	71 (12.3)
Reduced going shops	510 (88.5)	66 (11.5)
Avoid public spitting	547 (95.0)	29 (5.0)

Table 4 shows Practices of study participants to COVID-19 Pandemic. Participants had good hand washing practices with soap and water (92.4%), however lesser use of alcoholic hand gel (64.8%) was observed. Participants had good cough etiquette practices like Cover Face with cloth/Mask (92%), covering mouth while coughing/sneezing (94.3%), avoid public spitting (95%). Good social distancing practices like kept away from crowded places (88.9%), Reduced public transport use (88.7%), cancelled/ postponed social events (87.7%), reduced going shops (88.5%) were practiced by study participants.

Discussion

India is the second most populated country in the world; thus, a large number of citizens are at greater risk of transmission and mortality by COVID-19 in India, particularly among the children and elderly. Worldwide efforts to stop the spread of the virus have been made. These efforts are based on the general public's understanding of the disease, which is mainly regulated by their knowledge and attitude.

In the current study, there were a greater number of males (61.8%) than females (38.2%) majority (24.8%) of participants were within the age group of 18-29 years, reflecting the young generation's - who actively express their views and concerns about socially relevant issues - presence on social media platforms. Such young people's decision strongly reflects the community's perception, judgment, and attitude. In the current study, literacy rate was reported to be 76.2% which is in line with the average literacy rate of rural areas of Sonipat (76.93%).[8]

The etiological agent, signs and symptoms, disease transmission mode, prevention mechanisms,

and risk groups were all assessed in this study. Only 41.1% of participants in the current study were aware of the causative agent, however 82.6% of participants knew that COVID-19 was contagious suggesting that study participants understood disease transmission better, which may have kept them away from becoming infected. The findings of our study were higher than the studies by Serwaa D et al. (67.4%) and Mohamed NA et al. (55.9%).[9,10]

Participants in the current study were well-versed with the modes of COVID-19 transmission. The majority (83.7%) of participants reported respiratory droplets as the mode of spread. This is consistent with studies conducted in Pakistan (87%) and India (80%).[11,12]

Other modes of transmission reported by our study participants were touching 64.6% and food 62.7%. In a study conducted by Molla KA et al, 81.4% of participants reported disease transmission by touching contaminated material.[13]

A significant number of participants were aware of signs and symptoms of the disease. The majority of participants (90.3%) reported fever, followed by cough (91.8%), difficulty breathing (81.4%), tiredness (80.6%), and sore throat (74.8%), while only 42.5% were aware that runny nose was a symptom of COVID-19. This could be because of information obtained via newspapers, radio, television, flyers, and posters distributed by the local municipality government department.[14] This is in approximation with the findings of the studies conducted in India, Ethiopia, Ghana, and Iraq.[10,13,15,16]

Almost all participants agreed that COVID-19 can cause death (99%), and poses greater risks (90.8%) to elderly and children. The current findings of disease seriousness are consistent with the results of an online survey on the attitude and willingness of Chinese adults to receive Covid-19 vaccination (98.7%) and a study on COVID-19-related KAPs conducted among Indians (>90%).[12,17]

The vast majority of respondents (76%) were optimistic about the vaccine's ability to aid in the fight against the Covid-19 pandemic, which is consistent with the findings of Khune S et al (73.83%).[16] Positive attitudes and high confidence in COVID-19 control could be interpreted by the Indian government's unprecedented response in taking stringent control and precautionary measures such as the lockdown and suspension of all domestic and international flights, as well as the closure of all offices and educational institutions to protect citizens from COVID-19.

Being equipped with good knowledge and attitude toward pandemic or epidemic diseases does not guarantee that people will not contract the disease; practices play a critical role. Wearing masks (92%), maintaining social distancing (88.9%), washing hands (92.4%), and following respiratory etiquette when sneezing and coughing (94.3%) were all common precautions in this study. This indicated a high level of willingness among participants to make behavioural changes to protect against COVID-19. The findings of our study are remarkably similar to the findings of the study by Serwaa D et al, Ahmed N et al, Al-Qerem W et al, Khune S et al study.[10,11,15,16]

Conclusion

This study had found overall good knowledge, positive attitude and good preventive practices about COVID-19 among rural adults of Sonepat. Efforts targeting poor and illiterate sections of the society in rural areas should be intensified to improve KAP about COVID-19 and other upcoming pandemic diseases in future.

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Declarations

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Original Article

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Knowledge, Attitude, and Practice of Contraception Methods among Nursing and Paramedical Staff of Tertiary Care Hospital of Sabarkantha District, Gujarat

Parmar Meghavini[1], Patel Jaiminkumar Pravinbhai[2], Sheth Moin S[3]

[1]Assistant Professor, Obstetrics and Gynaecology Department, GMERS Medical College, Himmatnagar, [2]Assistant Professor, Community Medicine Department, GMERS Medical College, Himmatnagar, [3]Junior Resident, TB chest department, GMERS Medical College, Himmatnagar.

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Abstract

Background: Population control contribute towards social and economic growth to the country. Contraception is regarded as an important measure to improve maternal and child health. Hospital staff is major contributor towards proving correct information related to contraceptive use among community. This study aimed to assess the knowledge, attitude, and practice of contraception among nursing and paramedical staff of our hospital.

Material and Methods: In this cross-sectional study, 350 nursing and para medical staff were interviewed related to their knowledge, attitude and practices pertaining to family planning. A written pre-designed, structured questionnaire was used for data collection which included questions on socio-demographic details and Study tool contained three sections comprising of a total of 20 Questions (Knowledge: 8, Attitude: 7, Practice: 5). Microsoft Excell was used for data entry and analysis.

Results: Most of the participants (96.29%) were having the knowledge related to contraceptive methods. 78% of participants had favourable attitude towards contraception and 74.29% participants were using any method of contraception for family planning. Common methods of contraception were condoms and OC pills.

Conclusion: Knowledge regarding family planning is universal among hospital staff but still there is gap in favourable attitude and contraceptive use.

Keywords: Attitude, Contraceptive methods, Family Planning, Knowledge, Nursing staff, Practice

Introduction

Although world's two thirds of population are living in areas where fertility rate is below the so-called "replacement level" of 2.1 births per woman, world population crossed 8 billion people in November 2022.[1] This growth is because of advances in technology, medicine, education and agriculture. More newborns make it through the precarious first months of life Children are more likely to grow to adulthood and people live longer, healthier lives.

Corresponding Author: Jaiminkumar P. Patel, Assistant Professor, Community Medicine Department, GMERS Medical College, Himmatnagar.

Mobile: 7405481287

E-mail: jaiminpatel169@gmail.com

As per UNFPA's recent report Indian's population (142.87 crore) out number that of the China (142.57 crore).[2] India's census figure indicates that, India's annual population growth rate remained at a steady 2.2% and started to decline in the 1990s. As per Census 2011, India's annual growth rate is 1.6%. NFHS-5 reports shows that Total Fertility Rate (TFR) has declined to 2.0 children per woman, resulting in the achievement of the replacement level of fertility. [3] India being young population country its absolute numbers continued to remain high because of a "population momentum". A population momentum occurs when there is a very large young population in a country. These young people will want to have children and therefore, there is an increase in the population even when the fertility rate itself may be on the decline. According to some projects, India's population will peak in 2048, after which it will start declining.[4] To maintain this low fertility it is mandatory to maintain high contraceptive prevalence rate (CPR) among currently married women age 15-49 years.

If we achieve adequate family size with optimal number of children it will enhance maternal and child health. [5-8] Even though India was the first country in the world to implement a national population control program in 1952, the country is still struggling to contain the baby boom. Fertility control since beginning has been used in different forms with coitus interruptus (withdrawal) being the oldest known method to man.[9,10] Currently many methods of family plannings are available in private and government setups. Availability of injectable depot methods and non-steroidal oral contraceptive tablets in government setup gives larger basket of choice for couples. As per NFHS-5 Gujarat had CPR of 65% in married women of age group 15-49 years. It resulted into total fertility rate in urban areas, at 1.6 children per woman, and in rural areas, at 2.0 children per woman, are both below the replacement level.[3]We are able to achieve increased prevalence of contraceptive use still there is high unmet need for contraception. As per NFHS-5 in Gujarat 10 percent of currently married women have an unmet need for family planning. Health care providers and specially nursing staff can play vital role in spreading awareness and increasing utilization related to family planning services. Nursing staff's knowledge and attitude towards family planning directly affect adoption of family planning methods by couples. So, we conducted a study related to knowledge and attitude of nursing staff regarding contraceptive methods.

Methodology

This cross-sectional descriptive study was conducted among para medical staff of GMERS Medical College, Himmatnagar and attached hospital. There are studies suggesting incidence of contraceptive use among nursing and paramedical staff in range of 60 to 71%.[11,12] Assuming prevalence of contraceptive practice as average to this range of 65% and considering an error of 5% calculated sample size was350 participants.

Inclusion criteria

- Nursing and paramedical staff married (both males and females) at the time of study

Exclusion criteria

- Unmarried nursing and paramedical staff.
- Married nursing and paramedical staff who refused to take part in the study.

After obtaining the ethical committee approval, randomly selected married male and female nursing and paramedical staff who gave consent were included to participate in the study. A written pre-designed, structured questionnaire was given to the participants which included questions on socio-demographic details and study tool contained three sections comprising of a total of 20 Questions (Knowledge: 8, Attitude: 7, Practice: 5). Every correct answer was awarded 1 mark, while incorrect answers were given 0 mark. Respondents receiving ≥ 12 marks were considered having good knowledge, while a score below 8 was classified as having poor knowledge. Data entry and analysis done in Microsoft Excell.

Results

This cross-sectional study receive responses from 350 participants from tertiary care hospital of Sabarkantha district. Around two third participants were female (66.57%) and age distribution indicate that half of the participants were in the age group of

20-29 years (54.29%). Majority of study participants belongs to urban area (66.57%), having joint family (61.71%) and more than five years of marriage life (68%). (Table 1)

Knowledge related to contraception is universal, 96.29% of population aware abouts contraceptive methods. Out of 337 participants who were having knowledge of contraception 89.11% had good knowledge. Knowledge of methods of contraception was assessed by scoring the responses of participants on the various methods of contraceptives. Knowledge related to different contraceptive methods varies between eighty-one percentage to nighty seven percentage. Highest number of participants were aware about condoms (97.63%). Knowledge related to non-steroidal contraceptive pill (Saheli) is lowest (81.90%) among all contraceptive methods. It shows good knowledge related to indication, side effects and contraindication for contraceptive method. In this hospital-based study main source of information related for different contraceptive methods was their formal education during their graduation (67.36%) which ensure truthfulness of the knowledge. (Table 2)

Majority of participants (72.6%) discussed family planning issues with their partners and both were willing to use it. About 96.6% of the participants answered that they believe family planning is required and it is mandatory. 78% of the participants had a favourable attitude toward family planning. Thirteen percent participants who were having unfavourable attitude towards family planning was due to side effects or other fertility related reasons like infrequent sex, husband away, difficult to get pregnant, menopausal, and marital dissolution/ separation.

More than three fourth (78.43%) of the participants reported prior use of any contraceptive method. Around three fourth of the participants (74.29%) currently using any contraceptive method for family planning. Most common reason for contraceptive use is limit their family size followed by spacing between two children. Seventy five participants who reports discontinuation of any contraceptive methods in past swich to other method or uses natural methods of contraception. Common reasons for discontinuation of contraceptive use was couple wants child (37.33%) followed by side effects (17.33%) and requirement for more effective method (16%). Majority of participants (92.3%) procure family planning services from public institutes.

Table 1: Demographic characteristic of participants

Characteristics	Number	Percentage
Sex		
Male	117	33.43
Female	233	66.57
Age		
< 20 years	48	13.71
20-29 years	190	54.29
30-39 years	87	24.86
≥ 40 years	25	7.14
Residential area		
Rural	117	33.43
Urban	233	66.57
Type of family		
Nuclear	134	38.29
Joint	216	61.71
Duration of marriage		
< 5 years	112	32
≥ 5 years	238	68
Number of living children		
Zero	66	18.86
One	93	26.57
Two	167	47.71
More than two	24	6.86

Table 2: Awareness related to contraception

Characteristics	Number	Percentage
Awareness about contraceptive methods (n=350)		
Aware	337	96.29
Not aware	13	3.71
Knowledge of methods of contraception (n=337)		
Good	303	89.91
Poor	34	10.09
Knowledge pertaining to method of contraception (n=337)		
Condom	329	97.63
OC pills	323	95.85
Intra Uterine Device	318	94.36
Implants/Injectable contraceptive	287	85.16

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Saheli	276	81.90
Natural methods	326	96.74
Tubal ligation	328	97.33
Vasectomy	326	96.74
Knowledge of contraceptive use indication (n=337)		
Prevention of unwanted pregnancy	332	98.52
Prevention of Sexually Transmitted Diseases	312	92.58
For spacing between to sibling	317	94.07
Source of contraceptive knowledge (n=337)		
During their graduation	227	67.36
Family members or friends	56	16.62
Media or internet	30	8.90
Other	24	7.12

Table 3: Practices related to contraception

Characteristics	Number	Percentage
Current use of contraception (n=350)		
Any method	260	74.29
Any modern method	225	64.29
Any traditional methods	35	10
Indication of contraceptive Use (n=260)		
To delay the first child birth	52	20.00
Spacing between two children	75	28.85
To limit family size	133	51.15
Reason for discontinuation of any contraceptive methods in past (n=75)		
Desire to become pregnant	28	37.33
Side effects/ health concerns	13	17.33
Other fertility related reason	4	5.33
Wanted more effective method	12	16.00
Method failure	7	9.33
Other reason	11	14.67

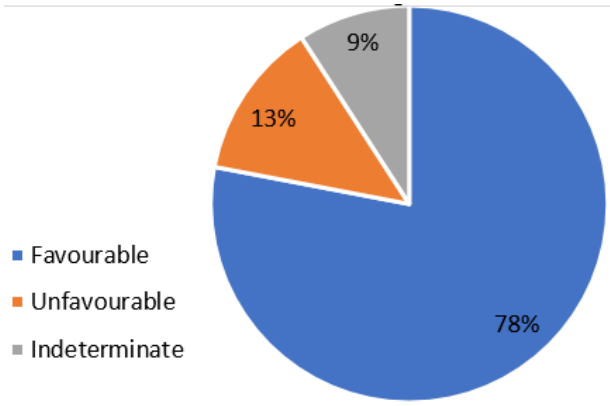

Figure 1: Attitude towards contraception

Discussion and Conclusion

This study was aimed to assess the knowledge, attitude, and practice of contraception methods among the hospital staff. This group of population is primary source of information for patients in hospital and within their friends and family circles. This group influence family planning practices of many couples so it becomes important to know about their family planning practices. It is strongly recommended that all eligible women should have adequate awareness as well as favourable attitude and a correct and consistent use of family planning instrument.[13]

Our study shows most of the participants were in the age group of 20-29 years. This finding was similar to study by GothwalM *et. Al* which shows majority of study participants in this group.[11] Present study result indicated that 96.29% of hospital staff were aware about the different contraceptive methods similar findings was seen in study conducted in India and Pakistan. [11,14,15] Other studies by Gerg P *et. al* showed (89%) lower percentage of awareness among nursing and para medical staff in hospital.[12] Our study showed that majority (78%) of the respondents had a favourable attitude toward family planning. This finding was similar to that observed by the other studies conducted in India.[11,16]

In present study, 74.29% of study participants were using some method of contraception. Study conducted by GothwalM *et. al (70.5%) and* Gerg P et. al (77%) shows in line results for contraception use among hospital staff. [11.12] NFHS 5 survey results in Gujarat showed that 65.3% of population is using any contraceptive methods.[3] This

contraceptive use percentage is less than our study but as NFHS represent data from general population and we collected data from hospital staff which had higher education status and easy availability for contraceptive services justify our data. Most common method used for contraception was condom followed by OCPs. Similar result was shown in other study as well.[11,17-22] Study conducted by Jabeen M *et al*, mentioned commonly used methods were traditional, injectable and female sterilization.[23] In our study common reasons for discontinuation of contraceptive use was couple wants child (37.33%) followed by side effects (17.33%). These reasons were similar to NFHS study. Knowledge regarding family planning is universal among hospital staff but still there is gap in favourable attitude and contraceptive use. If we equipe them with knowledge regarding newer contraceptive methods and common side effects results in to higher utilization in themselves and community.

India is pioneer in implementing the family planning programme. Widespread programme coverage and access to different contraceptive methods are not enough to achieve the programme objectives. If eligible couples don't have adequate awareness, favourable attitude and correctly and consistently practicing contraceptive as per their need we cannot control population explosion in country. So, increasing awareness/knowledge is primary step towards the goal of small family norms.

Ethical clearance: Taken from Institutional Ethical Committee of GMERS Medical College, Himmatnagar

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Criteria for inclusion in the authors'/ contributors' list: All authors had contributed at each level of study from conceptualization to paper writing.

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Original Research Article

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Quality of Life of Female Employees (A Study in Aligarh)

Pawan Kumar Patric[1], Uzma Eram[2], Anjali Bhardwaj[3]

[1]Assistant Professor, Department of Community Medicine, Krishna Mohan Medical College, Mathura, Uttar Pradesh, [2]Associate Professor, Department of Community Medicine, JN Medical College, AMU, Aligarh, [3]Statistician cum Tutor, Department of Community Medicine, Krishna Mohan Medical College,Mathura, Uttar Pradesh.

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Abstract

Background: Nowadays, more and more women are getting into the different professions. They are expected to maintain the balance or make adjustments at their work place and home as well. In a way, such situation may negatively affect their quality of life. Many of the recent studies have shown the higher vulnerability of poor mental health and poor quality of life in the working women. This study aimed at analyzing the quality of life of working women. In this regard, the objective of this study was set to assess the quality of life in the working women.

Methods: A cross-sectional study was conducted from July 2019 to June 2020. Stratified random sampling was done in female employees in Jawaharlal Nehru Medical College, Aligarh Muslim University, Aligarh. A pre-tested semi-structured proforma was used. The study was being done on 378 participants. All the data were entered and analysed in SPSS-20.0.

Conclusion: About more than half (n=210; 55.6%) of the study participants reported to perceive their quality of life as "neither poor nor good." Majority of the participants (43.4%; n=164) reported to be satisfied with their health. On WHOQOL BREF Scale, Psychological domain had the lowest mean score (59.28 ± 11.598).

Keywords: Quality of life, female employees.

Introduction

It's a thing of past now when the place of woman was being considered only at home and the purpose of her life was taken as to take care of her family and rear the children. Women did not have the permission to broaden their knowledge or grasp the required education and thus, they were restricted from doing jobs.

However, at present, women are found to gain the privilege of going out from homes for seeking education and enjoying equivalent job opportunities. Despite these improvements, women today continue to face challenges both in their domestic and professional lives. The innumerable and varying challenges that women face in their daily life result from the virtue of their sex. Besides being women, health workers also have below the average quality of life in interpersonal relations, organizational activity and occupational activity.[1]

Corresponding Author: Uzma Eram, Associate Professor, Department of Community Medicine, JN Medical College, AMU, Aligarh.

E-mail: pavanpatrik29@gmail.com

As a matter of concern, women still continue to remain a subject of exploitation, sexual harassment and physical and mental violence both at their homes and workplaces.All these factors cause women to suffer from extreme stress and depression, leading to frustration.[2] [3] This frustration tends to create a negative impact on the physical, mental and social health of women thus degrading their quality of life.[4]

While for non-working women and housewives, the major reason of frustration is their roles played in domestic lives. For the employed women, the factors are rooted in both their domestic and professional lives. Despite many of the difficulties and challenges, many of the working women would report their quality of life to be good [5]. Quality of life has direct effect on the quality of work and efficiency also. There are studies which show that the improved quality of life may improve the level of competence [6].

In this context, the present study was an effort to understand the quality of life among the married working women of Jawaharlal Nehru Medical College and Hospital, Aligarh.

Materials and Methods

A cross-sectional study was conducted from July 2019 to June 2020. Stratified random sampling was done in female employees in Jawaharlal Nehru Medical College, Aligarh Muslim University, Aligarh. A pre-tested semi-structured proforma was used.

Inclusion criteria:

1. Married female employees of JNMCH working for more than 1 year.
2. Female employees consenting for participation in the study.

Exclusion criteria:

1. Unmarried female employees.
2. Women with working duration of less than 1 year.
3. Not consenting for the participation

Sample size:

Using a precision of 5% and 95% confidence interval the sample size was determined by the formula,

$n = Z^2 PQ/L^2$

Where, n = Sample Size

P = Prevalence of health problems taken

Q = (1-P)

L = Absolute error (5%)

Z = Value of the standard normal variable at 0.05 level of significance (1.96)

Due to non-availibility of larger scale research study on psychosocial problems among working women in this region, the prevalence of 32.9% from the study of *Panigrahi A et al, 2014*[7] was considered for the purpose of calculation of sample size.

$n = (1.96)^2 \times 0.329 \times (1- 0.329) / (0.05)^2 = 339 \approx 340$

Considering a non-response rate of 10%, the final sample size came out to be:

N = 340 + (10% of 340) = 374 which was rounded off to 400.

Because of the Covid-19 pandemic, only 378 could be interviewed and considered further for study. So finally, the study was being done on 378 participants.

As per the different categories of the working female employees, the probability proportional to the size (PPS) was applied to get the appropriate sample size in proportion to the different categories of workers

Tools of Data Collection

Data were collected using a pre-tested, semi-structured questionnaire. Study tools used were:

1) WHO Quality of Life (WHO-QOL BREF Scale)

The WHOQOL-BREF Scale contains a total of 26 questions that looks at different domain level profiles viz. physical health, psychological, social relationship and environment.

2) **For Socio economic class**. BG Prasad Scale (2019) [8] taken for socio economic classification.

All the data were entered and analysed in SPSS-20.0 To find out the association between certain variables Chi-square/Fisher Test was used.

Ethical approval was taken before the start of study from the Institutional Ethics Committee (IEC), Jawaharlal Nehru Medical College, AMU, Aligarh, UP, India.

Results

Table 1: Frequency tables of Socio-Demographic Data

Variable	Frequency (N=378)	Percentage
Age Group (In Years)		
≤ 30	65	17.2
31-40	127	33.6
41-50	107	28.3
51-60	79	20.9
Education of the Female Employee		
Primary school	2	0.5
Middle school	26	6.9
High school	52	13.8
Intermediate	17	4.5
Graduate	11	2.9
Post-graduate	9	2.4
Diploma	218	57.7
Professional	43	11.4
Occupation of the Woman		
Doctor	30	7.94
LA / TECH./ MSW	25	6.61
Nursing Officer	211	55.82
Ward Lady / WA / Peon	62	16.40
MTS / Safaiwala	35	9.26
Official / Clerical	15	3.97
Status of Job		
Permanent	261	69
Non-permanent	117	31
Education of the Husband		
Primary school	6	1.6
Middle school	12	3.2
High school	43	11.4
Intermediate	91	24.1
Graduate	126	33.3
Post-graduate	34	9.0
Diploma	31	8.2
Professional	35	9.3
Type of Family		
Nuclear family	273	72.2
Joint family	105	27.8

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Religion		
Hindu	89	23.5
Muslim	242	64.0
Christian	45	11.9
Others	2	0.5
Caste		
General	240	63.5
OBC	106	28.0
SC	32	8.5
ST	0	0
Don"t know	0	0
Modified BG Prasad Classification (2019)		
Class I	363	96.0
Class II	15	4.0
Class III	0	0
Class IV	0	0
Class V	0	0

Quality of Life among Female Employees

Table 2: Perception about quality of life

Perception about quality of life		
	Frequency	**Percentage**
Very poor	0	0
Poor	19	5
Neither poor nor good	210	55.6
Good	144	38.1
Very good	5	1.3

Table 3: Perception about satisfaction with health

Perception about satisfaction with health		
	Frequency	**Percentage**
Very dissatisfied	0	0
dissatisfied	68	18
Neither satisfied nor dissatisfied	135	35.7
Satisfied	164	43.4
Very satisfied	11	2.9

Table 4: Mean score and SD of the QUALITY OF LIFE domains

	Physical Health	**Psychological**	**Social Relationship**	**Environment**
Mean	67.37	59.28	73.83	66.78
Std. Deviation	13.703	11.598	4.678	8.524
Minimum	38	31	44	44
Maximum	94	81	100	88

Discussion

As in Table 1

Age of the study participants ranged between 25 years to 59 years. The mean age of the study participants was 41.32 ± 9.411 years. Most of the study participants belonged to the age group of 31 to 40 years of age (n=127; 33.6%), followed by 41 to 50 years (n=107; 28.3%), 51 to 60 years (n=79; 20.9%) and 30 years or less (n=65; 17.2%) in decreasing frequency.

The large number of participants had the professional diploma (n=218; 57.7%), followed by high school (n=52; 13.8%) and professional degree (n=43; 11.4%). The main reason of high number of diploma holder may be because of the large number

of nursing officers selected as study participants after probability proportional to size sampling method. There are studies which suggests that highly educated working and nonworking married women could perform better in their married life in comparison to the working and non-working married women who are not highly qualified.[9]

In this study, there were Doctor/Teaching faculty (n=30; 7.94%); LA/Technician/MSW (n=25; 6.61%); Nursing officer (n=211; 55.82%); Ward Assistant/ Peon (n=62; 16.40%); MTS/Safaiwala (n=35; 9.26%); Official/Clerical (n=15; 3.97%).

Among the total of 378 study participants, 261 (69%) were having permanent job while 117 (31%) participants were either on contractual or daily wages or fixed pay. Some of the studies suggest that health care staff with regular job is more satisfied than the contractual job staff [10]

The mean duration of marriage among the study participants was found 16.46 ± 9.490 years.

Among all the 378 participants, 273(72.2%) belonged to the nuclear family, while 105(27.8%) reported to be living in a joint family. Some of the studies indicate that professionals living in nuclear families strongly believe that commitment to the family responsibility hindered their career advancement.[11]

Most of the husband of the participant were graduate (n=126; 33.3%) followed by high school (n=43; 11.4%) and professional qualification (n=35; 9.3%). Majority of the participants belonged to the Class I category (n=363; 96%) of the Modified BG Prasad Classification, while a very small portion belonged to the Class II category (n=15; 4%).

As in table 2

On being asked from the participant about their perception about quality of life, about more than half of the study participants reported the quality of life as "neither poor nor good" (n=210; 55.6%). These findings are also supported by previous studies[1] which reveals that overall quality of life among the health workers is average.

Not a single participant reported their quality of life to be "very poor". However, 144 (38.1%) reported the quality of life to be "good" and only 5 partcipants (1.3%) reported their quality of life to be "very good". These finding are also supported by some of the similar studies.[5]

As in table 3

On being asked from the participants about satisfaction against their health, 164 (43.4%) reported to be "satisfied" with their health. However, 135 participants (35.7%) reported for being "neither satisfied nor dissatisfied" with their health. While 68 participants (18%) reported for being "satisfied", while 11 (2.9%) reported for being "very satisfied" with their health. Not a single participant reported for being very dissatisfied with their health. Some of the previously done studies reveal the same outcome.[5]

As in table 4

On WHOQOL BREF Scale, Domain 3 (Social relationship) got the highest mean score (73.83 ± 4.678) followed by Physical health domain (67.37 ± 13.703), Environment domain (66.78 ± 8.524). Psychological domain had the lowest mean score (59.28 ± 11.598).

These findings correlate with some of the previously done studies.[5] [12] [13]

These findings are quite suggestive that among all other factors or domains it's mental health (psychological domain) of the working women which suffered the most.

Conclusion

About more than half of the study participants reported the quality of life as neither poor nor good which clearly indicates the need of efforts for the upliftment required in and around the vicinty of the working women. Most of the people reported to be satisfied with their health followed by the people who were neither satisfied nor dissatisfied with their health. On WHOQOL BREF Scale, the lowest score of the psychological domain indicates that it is mental health which is suffering most than other factors. Quality of life is a multidimensional thing which needs sincere efforts for the upgradation. A much synchronous improvement is needed to improve the quality of life as a whole.

Conflict of Interest: NIL

Source of funding: Self

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Original Research Article

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Effect of COVID-19 Pandemic on Over the Counter Drugs use and its Associated Factors among Adults of an Urban Slum in Hyderabad: A Cross Sectional Study

Pidakala Mary Moses[1], Nadipena Jhansi[2], Maruthi Reddy Mandadi[3], Thej Kiran Reddy Dalli[4], Hari Krishna B N[5], Sumalatha Bangi[6]

[1]Associate Professor, Community Medicine, Mamata Academy of Medical Sciences, Hyderabad, India, [2]Assistant Professor, Community Medicine, Government Medical College, Vizianagaram, India, [3]Assistant Professor, Community Medicine, Osmania Medical College, Hyderabad, India, [4]Assistant Professor, Community Medicine, GSL Medical College & General Hospital, Rajahmundry, India, [5]Associate Professor, Community Medicine, Community Medicine, Mamata Academy of Medical Sciences, Hyderabad, India, [6]Assistant Professor, Community Medicine, Government Medical College, Srikakulam, India.

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Abstract

Background: Over the counter (OTC) drugs are the drugs that are legally allowed to be sold 'Over the counter', i.e., without the prescription of a registered medical practitioner. Self-medication represents a global healthcare epidemic.

Objectives: To assess the usage of OTC medication among study subjects. To determine the factors associated with use of OTC medication.

Materials and Methods: A cross-sectional study was conducted among adults of urban field practice area attached to department of community medicine, Mamata Academy of Medical Sciences, Hyderabad during the months of July and August 2022. Adults aged 18 years and above, who were willing to participate were interviewed. Simple random technique was used for sampling. Data was entered in Microsoft excel and analysed in SPSS version 20.

Results: It was found that there was significant increase in the use of OTC drugs from the COVID-19 pandemic as compared to before. Major source of OTC drugs was found to be Medical shops. Most common symptoms for which self medication was taken were fever and body pains. The most common reason for opting OTC was mentioned as convenience. Statistically significant association was found between Social class and OTC drug usage (p value 0.001, X^2=11.456, OR=7.4) and also between education status of the OTC drug users and checking expiry date and reading label (p value 0.000).

Conclusion: OTC drugs usage among the study subjects was increased from the COVID-19 pandemic as compared to before and risky behaviour was found in around half of the subjects.

Key words: Over the counter drugs, self medication, COVID-19 pandemic

Corresponding Author: Sumalatha Bangi, Assistant Professor, Community Medicine, Government Medical College, Srikakulam, India.

E-mail: sumalathabangi@gmail.com

Introduction

Over the counter (OTC) Drugs or Non-prescription drugs are the drugs that are legally allowed to be sold 'Over the counter', i.e., without the prescription of a registered medical practitioner. [1] Self-medication is gaining the popularity globally. In developing countries it depicts a global healthcare epidemic, often driven by economic and social motivations. [2-4] Self medication is prevalent in all the age groups and its extent varies from person to person and region to region. Its prevalence ranged from 11.2 to 93.7%, representing that a large proportion of the world's population uses drugs without consulting a doctor or healthcare professional. [5,6]

The National Health Service (NHS) resources were facing burden due to use of higher cost health care for minor ailments, so people with minor ailments prefer Selfcare. [7,8] Though it was previously considered unnecessary, responsible self-medication is regarded as an important aspect of self-care. [9] The use of OTC drugs is associated with many benefits, such as decreased hospital visits, easy of getting medicines, less absentees from work with self-management of minor ailments and utilization of available resources. Self medication is associated with negative health consequences as well, like misuse of OTC drugs can result in adverse reactions, drug interactions, overdosing, and other medication-related issues.[10-12] Vulnerable people like children, elderly, pregnant and lactating mothers, and patients with co-morbidities can have serious implications (including deaths) with improper use of OTC drugs for self medication. [13-15]

Lack of adequate knowledge about OTC medications may directly lead to adverse outcomes, such as overuse or non-compliance to treatment programs.[16] Inappropriate use of OTC medication is associated with several potential risks such as the risk of adverse drug reactions, wrong use of drugs, missing the diagnosis, drug dependence, drug-drug, drug-food, drug-disease interactions, and overuse or toxicity.[17,18]

Due to paucity of literature on OTC in India, this study was under taken to assess the burden of OTC medication use which might cause antimicrobial resistance in the present scenario.

Objectives:

1. To assess the effect of COVID-19 pandemic on the usage of OTC medication among study subjects
2. To determine the factors associated OTC medication use among study subjects
3. To evaluate the reasons for using OTC medication
4. To study the risky behaviour among study students and its association with the socio-demographic variables

Methodology

Study design: A community based cross sectional study.

Study setting: Urban field practice area attached to department of community medicine, Mamata Academy of Medical Sciences, Hyderabad

Study Period: 10th July 2022 to 31st August 2022.

Study subjects: Adults aged 18years and above who were willing to participate in the study

Sample size: The sample size was calculated using the formula Z^2pq/L^2, taking prevalence of self medication as 80% from the previous study from Telangana state, with precision of 5%, the calculated sample size was 400.[19]

Sampling technique: Simple random technique

Ethical permissions and informed consent: Ethical permission was obtained from the institutional ethics committee and informed consent was taken from all the respondents.

Data collection Method: After explaining the purpose of the study and taking verbal consent, pre-designed semi structured questionnaire was used to collect data by face to face interview.

Data tools: Age, gender, education, socio-economic status, use of over the counter drugs, source of over the counter drugs, reason for opting over the counter drugs, symptoms for which medication was taken, type of medication and practice of checking expiry date and reading the label.

Data Analysis: Data was analysed using MS excel and IBM SPSS version 20. Descriptive analysis was

used to depict baseline characteristics of the study participants. Chi-square test was deployed to assess the statistical association between socio-demographic factors and OTC drugs usage. P value less than 0.05 was considered significant.

Findings:

Table 1: Use of over the counter medication before and from the COVID-19 pandemic (n=400)

Before the COVID-19 pandemic	From the COVID-19 pandemic		Total	
	Yes	No		
Yes	260	8	67	X^2=158.869 P value= 0.000
No	56	76	33	
Total	316	84	400	

It was observed that OTC drugs use has been increased from the COVID-19 pandemic as compared to before and the increase was statistically significant. **(X^2 =39.717, P value = 0.000)**

Table 2: Use of OTC medication and socio-demographic variables (n=400)

Variable	OTC medication usage (316)	OTC medication non usage (84)	Chi Square P value
Gender			
Male	204 (77.2)	60 (22.8)	1.396
Female	112 (82.4)	24 (17.6)	0.247
Education			
Illiterate	44 (78.6)	12(21.4)	31.825 0.000
Primary	40 (100)	0 (0)	
High school	64 (94)	4(6)	
Intermediate	68 (77.2)	20 (22.8)	
Graduation & above	100 (67.6)	48 (32.4)	
SES			45.825 <0.0001 (OR=7.4)
APL	296(84)	56(16)	
BPL	20 (41.6)	28 (58.4)	

On statistical analysis it was found that there was a significant association of literacy status, socio economic status with the over the counter drug usage. On regression analysis it was found that OTC drug use was 7.4 times higher in BPL families as compared to APL families.

Table 3: Factors associated with OTC drugs use among the study subjects (n=400)

Variable	Frequency (%)
Source of OTC drugs	
Medical shops	192 (61)
Old prescriptions	140 (44)
RMP	128 (40)
Friends and family	116 (37)
Known medication	64 (20)
Social media	28 (9)

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Symptoms	
Fever	284 (90)
Pain	224 (71)
Cough & cold	228 (72)
Ear/Eye problems	124 (39)
GI symptoms	100 (32)
Medication used	
Analgesics	276 (87)
Antipyretics	232 (73)
Antihistamines	216 (68)
Antacids	192 (61)
Ear/eye drops	128 (40)
Antibiotics	56 (18)
Multivitamins	16 (5)
Reasons for opting OTC drugs	
Easy to get	224 (71)
Known medicines	152 (48)
Lack of knowledge	80 (25)
Lack of affordability	16 (5)

*All Multiple responses

Source of OTC was found as medical shops followed by old prescriptions and Quacks. Fever, pain, cold & cough were the common symptoms for which OTC drugs were taken. Analgesics, antipyretics and antihistamines were the highly consumed drugs. Most common reasons for opting OTC drugs were convenience, known medicines, followed by lack of knowledge.

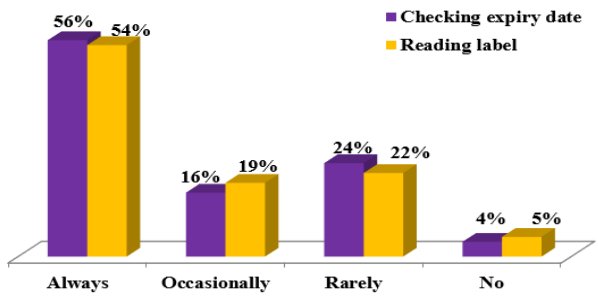

Fig 1: Practice of checking expiry date and reading label (n=316)

Table 4: Socio demographic variables and risky behaviour (n=400)

	Variable	Checking expiry date					Reading label				
		Always	Occasional	Rarely	Never	Chi Square & p value	Always	Occasional	Rarely	Never	Chi Square & p value
Gender	Male	116	36	44	8	2.135 0.545	108	44	36	16	15.049 0.002
	Female	60	16	32	4		64	16	32	0	
Education	Illiterate	8	4	24	8	248.256 0.000	12	4	24	4	240.827 0.000
	Primary	0	4	36	0		4	0	36	0	
	High school	28	24	12	0		36	20	4	4	
	Intermediate	48	16	0	4		32	28	0	8	
	Graduation & above	92	4	4	0		88	8	4	0	
SES	APL	164	48	72	12	1.190 0.755	156	60	68	12	20.621 0.000
	BPL	12	4	4	0		16	0	0	4	

56% of the respondents check expiry dates while purchasing OTC drugs and 54% read the label always. It was found that for checking expiry date statistically significant association was found only with gender where as for reading label the association was significant with gender, literacy status and also with socio-economic status.

Discussion

In the present study 79% of the study subjects were practicing self medication with OTC drugs from the COVID-19 pandemic as compared to 67% before the pandemic. The reason for increase of OTC drug usage can be attributed to fear of acquiring infection and death especially during the COVID-19 pandemic and the false information on the prophylaxis for prevention of drugs has lead to unnecessary consumption of many drugs like Paracetamol, Azithromycin, Doxycyclin, HCQ and other drugs.

In this study among the OTC drug users males were 66% and females 34% where as Tesfamariam et al. found that 93.7% of their respondents practiced self-medication with OTC drugs which includes 65.1% males and 34.9% females. [6] On statistical analysis it was found that there was a significant association of literacy status, socio economic status with the over the counter drug usage. In the study conducted by the Shroti et al analgesics were the most common over the counter mediations dispensed by pharmacists the findings of which were similar to the present study. [20] Source of OTC drugs helps in intervening to promote safe self medication practices and the communication gap between pharmacists and the OTC drug users should be bridged. Most common symptom for OTC medication was pain similarly in the study by Nagaraj et al most common complaint for the use of OTC drugs was pain (26.80%).[21]

The reason for opting OTC medication was observed as convenience and known medication similar findings were found in a study by Ganapa P et al. [19] 56% of the respondents check expiry dates while purchasing OTC drugs and 54% read the label always which is very less in this study and it depicts that the individual were at risk of negative health consequences. It was found that for checking expiry date statistically significant association was found only with gender where as for reading label the association was significant with gender, literacy status and also with socio-economic status.

It was also observed that inappropriate use of steroids and other medicines was more during the pandemic as quacks have exploited this health crisis to make money which had ultimately lead to over and misuse of over the counter medication. Escalation of Black market during medical catastrophes is also one of the reasons for misuse of OTC medication.

Strengths:

Study on the global public health emergencies like COVID-19 pandemic itself is the strength of the study.

Limitations:

Sample size is small to generalize the results of the study. There could be under estimation of the burden as we have not used any validated questionnaire to measure the OTC medication usage.

Conclusion

OTC drugs usage among the study subjects was increased from the COVID-19 pandemic as compared to before. On statistical analysis it was found that there was a significant association of literacy status, socio economic status with the over the counter drug usage. Major source of OTC drugs was found to be Medical shops. Most common symptoms for which self medication was taken were fever and body pains. The most common reason for opting OTC was mentioned as convenience. Risky behaviour was found in around half of the subjects.

Recommendations:

Awareness should be created among the public regarding the harmful effects of over the counter drugs and to promote responsible self care.

Regulation of OTC drug availability should be done to prevent misuse of the drugs.

Conflict of Interest: NIL

Source of Funding: NIL

Ethical Clearance: Obtained

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Original Research Article

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Comparative Study of Treatment of Distal end Radius Fracture by Non-Operative Method Versus Operative Method with Joshi's External Stabilisation System

Pothukuchi Sree Lakshmi Prapurna[1], Sachinshah[2]

[1]Junior Resident, Department of Orthopaedics, Khaja Bandanawaz University Faculty of Medical Sciences, Gulbarga, (Karnataka), [2]Professor and Head, Department of Orthopaedics, Khaja Bandanawaz University Faculty of Medical Sciences, Gulbarga, (Karnataka).

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Abstract

Background: Distal end radius fractures are the most common fracture. There are various treatment modalities, which include closed reduction and casting, closed reduction and percutaneous pinning, open reduction, and internal fixation with a variety of implants. A minimally invasive technique like JESS could be ideal technique.

Method: 30 patients with distal end radial fractures were selected. Out of 30 patients, 15 were treated with closed reduction and casting, and the remaining 15 were treated with the JESS technique approach. Patients of both techniques were studied haematologically and radiologically before undergoing these comparative technological studies, and the pros and cons of both techniques were noted. to justify the ideal method for a lower distal end fracture of the radius.

Results: The fewest post-surgical complications were observed with JESS techniques as compared to the conservative group. Excellent outcomes were observed in the JESS technique treatment, with significant statistical values in terms of good anatomical reduction and stabilisation; early mobilisation with regaining full ROM was justified.

Conclusion: From the present study, it is concluded that closed reduction with JESS fixation under the C arm is a simple, minimally invasive, and cost-effective technique that provides better stability in the treatment of distal end radius fractures with not only a good clinical and radiological outcome but also minimal complications as compared to conservative treatment.

Keywords: JESS technique, conservative method, Gartland & Werley Score, Distal end of radius fracture, north Karnataka

Introduction

The fracture of the distal end of the radius is one of the most common fractures and accounts for approximately 1/6th of all fractures treated in emergency departments [(1)]. It occurs commonly in elderly women after falls and in young men after high velocities. If untreated, or failure in proper management, may cause permanent deformity and disability.

Corresponding Author: Pothukuchi Sree Lakshmi Prapurna, Junior Resident, Department of Orthopaedics, Khaja Bandanawaz University Faculty of Medical Sciences, Gulbarga, (Karnataka).

E-mail: pslprapurma95@gmail.com

There are a lot of treatment modalities, which include closed reduction and casting, closed reduction and percutaneous pinning, external fixation, open reduction, and internal fixation with a variety of implants. Any treatment modality should be primarily aimed at restoring radial articular contiguity, alignment, length, motion, and stability. This mostly implies that operative innervations become essential for the management of unstable DRFs to achieve successful outcomes[2]. Good restoration and maintenance of anatomy with accurate and stable reduction and early wrist mobilisation are necessary to get good results. JESS has been used for fracture stabilisation in the Indian subcontinent for the last 30 years[3]. It is minimally invasive surgery that uses fewer instruments and takes less time, and it is effective[4]. It also leaves joints free for early mobilisation. Hence, an attempt is made to compare the functional outcome of the non-operative cast method and the operative JESS under image intensifier guidance.

Material and Method

30 (thirty) adult patients with distal end radius fractures who regularly visited the Orthopaedics Department of Khaja Banda Nawaz University Faculty of Medical Sciences, Gulbarga-585102, Karnataka, were studied.

Inclusive Criteria: Unilateral or bilateral fracture, aged between 20-70 years, closed fractures. Fractures were up to 2.5 cm from the distal articular surface of the radius. Fractures with a history of trauma lasting less than 2 weeks (<2 weeks) the patients who gave their consent in writing were selected for study.

Exclusion Criteria: Patients below 20 years and above 70 years Open fractures, fractures beyond 2.5 cm from the distal surface of the radius, Fractures with trauma lasting more than 2 weeks.

Methods: A detailed history of every patient was recorded. 15 patients treated by cast, and the other 15 patients treated by closed reduction with JESS. Apart from x-ray, haematological evaluation was done (CBC, RBS, blood grouping, Rh typing, BT, CT. PT INR, RFT, LFT, serum electrolytes, HIV, HBSAG, urine routine), and, additionally, an ECG, chest x-ray (AP view), and 2D echo were recorded to rule out the cardio-vascular status of the patients.

Pre-operation evaluation:

1. Immediate management inspected the mode of injury, the severity of trauma, swelling, ecchymosis, tenderness, and bony irregularity, and the relative position of the radial and ulnar styloid processes was elicited. Radial artery pulsation, capillary filling, pallor, and parenthesis The movements of the arm and forearm were checked. The involved forearm was immobilised below the elbow with a cast and a CC sling. Pain and inflammation were managed using analgesics.
2. Closed reduction with cast application for a colles fracture under short-term general anaesthesia was performed supine on the table; the shoulder was abducted, and then anaesthesia was applied to the thumb with concentration above the elbow by an assistant. The fracture was dissected by a direct and firm pull, traction alone reduced lateral displacement and rotation; and it was manipulated to correct residual deformity. While manipulating the right colles fracture, the right hand was placed on the patient's right thenar eminence over the dorsal and lateral aspects of the radial styloid and the left thenar eminence of the ulnar and palmar aspects of the limb, just proximal to the fracture line. Pressure was applied to the lower end of the radial bone with the right hand, not to the carpal bones with hands in the position. By pushing the lower radial fragment into pronation, it is also possible to correct the supination deformity.

Immobilisation: After reduction, the traction on the thumb was maintained, and a plaster cast 10 cm wide was applied over a thin layer of orthopaedic wool. Special care was taken to pad the styloid processes of the ulna and radius. The cast extends from the metacarpal head to just below the elbow. The cast maintained the ulnar deviation of the hand by having a tongue of plaster shape the top radial side of the index metacarpal. While the plaster was setting, the wrist was moulded in the same way as when reducing the fracture by holding the wrist in a few degrees of flexion at the wrist and a few degrees of ulnar deviation.

Smith fracture (reverse colles fracture) is a fracture dislocation of the wrist in which the distal fragment is displaced anteriorly. Displacement was reduced by applying traction and counter-traction by assistants and manipulating the surgeon with his palms, and then the cast was applied from the metacarpal head to below the elbow, covering the whole circumference with the wrist in a few degrees of dorsiflexion.

Valar Barton's fracture was reduced by applying traction and counter traction by the assistant and manipulating it by the surgeon, and then a cast was applied from the metacarpal head to below the elbow with the wrist in a few degrees of dorsiflexion.

Dorsal Barton's fracture was reduced by traction applied to the thumb with counter traction above the elbow by assistants and manipulated by the surgeon, and then a cast was applied from the metacarpal head to just below the elbow with the wrist in a few degrees of flexion and a few degrees of ulnar deviation. Reduction was checked by x-ray.

Postoperative rehabilitation for the cast group: The patient was advised to begin active finger movements the next day as frequently as possible, not to wet the cast, and to watch for alarming symptoms of compartment syndrome. The plaster cast was removed at 6 weeks, followed by active and strengthening exercises of the fingers, wrist, forearm, and elbow, and physiotherapy advice.

Surgical Technique: Closed Reduction with JESS: was performed as per the guidelines of Mumbai JESS Research and Development 2016[3] K-wire connecting rods Drill clamps Allen keys were the instruments used in JESS.

The duration of the study was March 2021 to August 2022.

Statistical analysis: Comparison of the distribution of cases following surgery and comparison of radial length post-operatively, Gartland – Werley Scores, wise distribution cases, and quality of outcome were compared with a t test and classified with a percentage. The statistical analysis was carried out in SPSS software. The ratio of males and females was 1:2.

Figure-1: JESS Instruments

Observation and Results

Table-1: Side wise distribution of cases

- Left – 7 (46.7%) in cast (group-A) group, 7 (46.7%) in JESS group.
- Right – 8 (53.3%) in cast (group-A) and 8 (53.3%) in group JESS.
- Total 15 (100%) in each group, 30 cases were studied.

Table-2: Comparison of length of Radius in both groups

- Post-operatively – 10.53 (± 1.18) in group-A, 11.8 (±1.01) in group-JESS, t test was 3.14 and p<0.001
- At 6th Week – 9.20 (± 0.86) in group-A, 11.46 (±0.99) in group-JESS, t test was 6.68 and p<0.001
- At 24th Week – 9.13 (± 0.91) in group-A, 11.20 (±0.94) in group-JESS, t test was 6.09 and p<0.001

Table-3: Gartland and Werley Scores wise distribution

- score <5 – 2 (13.3%) in group-A (cast group), 9 (6.0%) in JESS group
- score 5-10 – 6 (40%) in cast group, 4 (26.6%) in JESS group, 1 (6.71) in JESS group
- score 5-10 – 6 (40%) in cast group, 4 (26.6%) in JESS group
- score 11-20 – 5 (33.4%) in cast group, 1 (6.7%) in JESS group
- score >20 – 2 (13.3%) in cast group, 1 (6.7%) in JESS group, x2 test value 7.03, and p<0.01 (p highly significant)

Table-4: Post-surgical complication

- 2 (13.3%) observed in cast group, 1 (6.7%) pin tract infection in JESS group
- 2 (13.3%) residual pain in cast group, 3 (20%) mal-union in cast group

Table-5: Comparison outcome in both groups

- Excellent – 2 (13.3%) in cast group, 9 (60%) in JESS group
- Good result – 6 (40%) in cast group, 4 (26.6%) in JESS group
- Fair – 5 (33.9%) in cast group, 1 (6.7%) in JESS group
- Poor – 2 (13.3%) in cast group, 1 (6.7%) in JESS group, x2 value 7.08 and p<0.001

Table 1: Side wise distribution of cases

Side	Group-A (Cast)		Group-B (JESS)	
	No	%	No	%
Left	7	46.7	7	46.7
Right	8	53.3	8	53.3
Total	15	100.0	15	100.0

Table 2: Comparison of Radial Length between the groups

Radial Length	Group-A (Cast)	Group-B (JESS)	Un paired t-test & p-value
	Mean ±SD	Mean ±SD	
Post op	10.53 (± 1.18)	11.8 (±1.01)	t=3.142, p=0.004 HS
6th Week	9.20 (± 0.86)	11.46 (±0.99)	t=6.686, p=0.000 HS
24th Week	9.33 (± 0.91)	11.20 (±0.94)	t=6.096, p=0.000 HS

Table 3: Gartland and Werley Scores wise distribution of cases

Gartland and Werley Scores	Group-A (Cast)		Group-B (JESS)		Total	
	No	%	No	%	No	%
< 5	2	13.3	9	60.0	11	36.7
5-10	6	40.0	4	26.6	10	33.3
11-20	5	33.4	1	6.7	6	20.0
> 20	2	13.3	1	6.7	3	10.0
Total	15	100.0	15	100.0	30	100.0
X^2-test value and p-value	X2 = 7.033 p=0.017					

Table 4: Post-Surgical complication

Complications	JESS Group	Conservation Group
Stiffness of wrist	-	2
Stiffness of Fingers	-	1
Pin tract Infection	1	-
Residual Pain	-	2
Reduced grip strength	-	0
Mal-union	-	3
Sudek's Osteodystrophy	-	-
Subluxation of inferior radio ulnar joint	-	-
Carpal tunnel syndrome	-	-
Rupture of EPL	-	-
Radio-carpal arthosis	-	-

Table 5: Comparison of study outcome wise distribution of cases

Outcome	Group-A (Cast)		Group-B (JESS)		Total	
	No	%	No	%	No	%
Excellent	2	13.3	9	60.0	11	36.7
Good	6	40.0	4	26.6	10	13.3
Fair	5	33.4	1	6.7	6	20.0
Poor	2	13.3	1	6.7	3	10.0
Total	15	100.0	15	10.00	30	100.00
X^2-test value and p-value	X2 = 7.033 p=0.017					

Discussion

Present a comparative study of the treatment of the distal end of the radius fracture by the non-operative method versus the operative method with Joshi's external stabilisation system in the north Karnataka population. The left side fractures were 7 (46.7%) in the cast group, and the same number of 7 (46.7%) was for the JESS group. The right side had 8 (53.3%) for the cast group and the same number for the JESS group (Table-1). The length of the radius was compared in both groups: post-operatively, 10.53 (± 1.8) in the cast group and 11.8 (±1.01) in the JESS group, t test was 3.14 and p<0.001. At 6th week, with a 9.20 (± 0.86) mean value in the cast group, 11.46 (± 0.99) in the JESS group, the t test was 6.68 and pM0.001. The t test was 6.09 and p0.001 at the 24th week, 9.13 (0.91 in the cast group) and 11.20 (0.94 in the cast group) (Table 2). As per the Gratland and Werley Scores, <5 was 2 (13.3%) in the cast group, 9 (60%) in the JESS group, Score 5-10 – 6 (40%) in the cast group, and 4 (26.6%) in the JESS group. In the score study – 10-20 – 5 (33.4%) in the cast group, 1 (6.7%) in the JESS group. >20 score – 2 (13.3%) in the cast group, 1 (6.7%) in the JESS group (Table-3). Post-surgical complications were 2

(13.3%) stiffness in the conservative or cast group, 1 (6.66%) stiffness of fingers in the conservative (cast) group, 1 (6.66%) pin tract infection in the JESS group, 2 (13.3%) residual pain in the conservative (or cast) group, and 3 (20%) malunion observed, in the cast or conservation group (Table-4). In the comparison of study outcomes, 2 (13.3%) in the cast group, 9 (60%) were excellent, 6 (40%) in the cast group, and 4 (26.6%) in the JESS group, were good 5 (33.4%) in the cast group and 1 (6.7%) in the JESS group were fair. Poor were 2 (13.3%) in the cast group and 1 (6.7%) in the JESS group, with an x2 value of 7.03 and p 0.001 (Table 5) (Figure-1).These findings are more or less in agreement with previous studies [(5)(6)(7)].

In the present study, we found a better functional outcome in distal end radius fracture patients treated by closed reduction and fixation with the JESS fixator, which maintains the reduction and allows early functional range of motion of the fingers and wrist as compared to conservative treatment[(8)].

On the radiological follow up it was confirmed that closed reduction and fixation with the JESS fixator maintain anatomical parameters more effectively than plaster of Paris (POP) casts and retain them till the union better than POP casts. So it is proven that the JSS fixator is more effective in holding the reduced position as compared to patients treated with closed reduction with cast application while at the same time leaving the wrist joint for mobilisation [(9)(10)].

As compared to other fixators, the JESS fixator is low-cost, light-weighted, requires fewer instruments, and can be operated by any new orthopaedic surgeon. It is readily available, less traumatic to soft tissues, and has the advantage of early post-operative wrist mobilisation. The early mobilisation of the wrist leads to normalisation of functional recovery, earlier resolution of wrist swelling, and decreased joint stiffness [(11)].

Closed reduction and fixation with JESS allows good anatomical reduction with good fixation of fracture and at the same time it leaves wrist joint free from mobilization with ideal fracture union with functional mobility than closed pop group patients.

Summary and Conclusion

From the present comparative study, it is concluded that JSS fixation under C-arm is a simple, minimally invasive, and cost-effective technique that provides better stability in the treatment of distal end radius fractures with minimal post-operative complications. The present study demands that such clinical trials be carried out with a large number of patients where the latest techniques are available to confirm the significance of the comparative study.

Limitations of the study: Owing to the tertiary location of the research centre, the small number of patients, and the lack of the latest technologies, we have limited findings and results.

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Orginal Article

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Physical Activity Pattern among Undergraduate Medical Students in a Rural Medical College in Southkerala: A Cross-Sectional Study

Pranav Pramod[1], Siji VS[2], Leela Itty Amma K R[3], Alice Matilda Mendz[4], Prajwal[5], Vaishnavi[6], Ruksana[7]

[2]Assistant Professor, [3]HOD and Professor [4]Associate Professor, Department of Community Medicine, SUTAMS, [1, 5,6,7]Medical Intern, SUT Academy of Medical Sciences.

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Abstract

Background: Physical inactivity is the prime contributor to one –third of the world's adult population's non-communicable diseases. Doctors, in spite of their knowledge regarding the benefits, often find it hard to stick to a proper exercise regime and follow their own advice. This could be due to habits they picked up during their college years. The present study aims to estimate the proportion of physical activity among MBBS students of a rural medical college in Kerala using WHO's GPAQ questionnaire (Global Physical Activity Questionnaire) and also to determine the factors associated with their physical activity pattern.

Methodology: A descriptive cross sectional study was conducted among undergraduate medical students of a private medical college in Thiruvananthapuram, Kerala, from December 2021 to April 2022. Physical activity patterns were assessed using the WHO's Global Physical Activity Questionnaire. An online questionnaire using Kobo Toolbox was developed and shared to record their physical activity patterns .

Results: A total of 341 students participated in the study. The study showed that only 25% of students achieved above 600 METs (Metabolic equivalents) and had adequate physical activities. The mean duration of hours spent on sedentary activities on average per day by the study participants was 6.75 hours (SD 3.6). Among the 341 students, 78 (22.8%) reported that they were unable to do physical activities. The reasons for unable to do physical activities were study burden 48 (61%), engaging in other activities 35(44.8%), lack of motivation 22 (28.2%), lack of facilities 19 (24.5%), health issues 18 (23%) and environmental barriers 5 (6.5%),. Among the students with above average screen time, 71% of them were found to be physically inactive. and was found to be statistically significant.

Conclusion: Medical institutions should have an adequate environment for physical activity. It is ideal to appoint a physical education trainer and allot mandatory time for physical activities for a few hours every week. Students must be encouraged to reduce time spent glued to their mobile screens. Hostels must have properly maintained and easily accessible exercise areas with adequate equipment. Health awareness programs and marathons must be promoted.

Key words: Physical activity, GPAQ, medical students

Corresponding Author: Siji VS, Assistant Professor, Community Medicine, SUT Academy of Medical Sciences.

Mobile: 9495824776

E-mail: siji292@gmailcom

Introduction

India is going through a transition from communicable to non-communicable diseases. Non-communicable diseases (NCDs) now account for 61.8% of all fatalities in India, from 37.9% in 1990. The four main NCDs are diabetes, cancer, chronic respiratory diseases (CRDs), and cardiovascular diseases (CVDs), which all have four behavioral risk factors in common: a poor diet, physical inactivity, and use of cigarettes and alcohol[1]. Physical activity has its own importance in the prevention of non-communicable diseases. The World Health Organization defines physical activity as any bodily movement produced by skeletal muscles that requires energy expenditure. It refers to all movement, including during leisure time, for transport to get to and from places, or as part of a person's work. Both moderate and vigorous physical activity improve health. Approximately 3.2 million deaths and 32.1 million DALYs (Disability Adjusted Life Years), which represent about 2.1% of global DALYs, each years are attributable to insufficient physical activity[1]. Insufficient physical activity and an unhealthy diet have emerged as important modifiable risk factors for all chronic noncommunicable diseases[2]. In India, 392 million individuals are physically inactive, according to the study ICMR –INDIAB[3].

Physical activity habits throughout college have a substantial impact on habitual physical activity over the entirety of adult life and, as a result, have important implications for both short- and long-term health outcomes[4]. Despite the well-known advantages, studies demonstrate a marked reduction in young adults' participation in physical exercise and an increase in sedentary behavior over the college years. There is a lot of research showing that activity levels fall off during youth, and this pattern persists as people become older and enter adulthood [5]

This highlights the importance of spreading awareness regarding physical activity. Most of the time, awareness regarding physical activity will be given by health professionals, including doctors. Professional college students don't have enough time for physical activity. By the time a medical student graduates and becomes a doctor, their schedule won't be flexible. As a result, it's critical to develop a good physical activity routine as a habit because it will help prevent a number of cardiovascular problems in later life. Several studies have been conducted among doctors and health professionals regarding their physical activity patterns. The present study aims to find out the proportion of physical activity among the budding doctors, MBBS students of a teaching tertiary care center in Kerala using the WHOs Global Physical activity Questionnaire. This study also aims to observe the relationship between objectively measured physical activity, sedentary behavior, and screen time.

Material and Methods

A descriptive cross sectional study was conducted among undergraduate medical students of a private medical college in Thiruvananthapuram, Kerala, from December 2021 to April 2022. The sample size was calculated to be 339, using the formula, for a cross sectional study with an anticipated population proportion of low physical activity 15.2%[5], confidence level of 95% at 5% significance level an allowable absolute error of 4 and a nonresponse rate of 10%. Non probability sampling technique based on convenience was used to select the participants. Physical activity patterns were assessed by WHOs Global Physical Activity Questionnaire (GPAQ). The factors associated with physical activity, such as age, sex, height, weight, day scholar or hosteller, family type, exercise pattern, diet pattern, socio-demographic details, and reasons for not doing physical activity, were assessed by a semi structured questionnaire. This questionnaire, which included the consent form, was shared via an online platform using Kobotool Box for humanitarian response to the undergraduate medical students after obtaining Institutional Ethical Committee clearance. Apart from those who had any physical disabilities, 341 students in total gave their permission and took part in the study. The collected data was downloaded in MS Excel sheet and analyzed using SPSS soft- ware.

The Global Physical Activity Questionnaire (GPAQ) was developed by WHO for physical activity surveillance in countries[6]. It collects information on physical activity participation in three settings (or domains) as well as sedentary behavior, comprising 16 questions. The domains are activity at work, travel to and from places, and recreational activities. METs (metabolic equivalents) are used to express the intensity of physical activities. MET is the ratio of a person's working metabolic rate relative to their resting metabolic rate. One MET is defined as the energy cost of sitting quietly, and is equivalent to a caloric consumption of 1 kcal/kg/hour. GPAQ was analyzed using the existing guidelines.

The quantitative variables such as age, hours spent on screen time, and sedentary activities were expressed as mean and standard deviation. The qualitative variables such as gender, type of diet, type of physical activity, distribution of people who met WHO criteria for MET minutes per week, and barriers to doing physical activity were expressed as proportions. The factors influencing physical activity were assessed by the chi-square test.

Results

A total of 341 students participated in the study. The mean age of the study participants was 21.78(SD 1.62) years and males were 123(36.1%) and 218 (63.9%) were females (Fig No.1). A total of 226 (66%) students were hostellers and 115(34%) were day scholars.

The students who have not attained the WHO recommended minimum requirement of 600 MET minutes per week were classified as inadequately physically inactive. In this study, the proportion of adequately physically active students were only 85 (25%) and the students involved in physical activities but not attained the WHO requirement of 600 MET minutes per week were 117(34%) and involved in no physical activities were 141(41%)(Fig No.2). The mean duration of hours spent in sedentary activities on average per day by the study participants was 6.75 hours (SD 3.6). The students engaged in vigorous physical activity in the past one week were 89 (26%), moderate activity were 66 (19.5%) and walking or using a bicycle was 186(54.5%). Among the 341 students 78 (22.8%) reported that they were unable to do physical activities. The reasons for unable to do physical activities were study burden 48(61%), engaging in other activities 35(44.8%), lack of motivation 22 (28.2%). lack of facilities 19 (24.5%), health issues 18 (23%), environmental barriers 5(6.5%).

The various factors associated with physical activity status was shown. The proportion of students (71%) on above average screen time was found to be physically inactive and was found to be statistically significant.

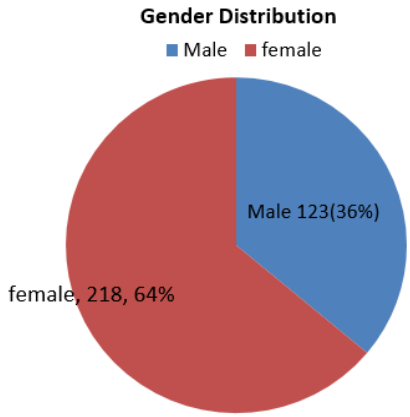

Fig No 1: Gender Distribution

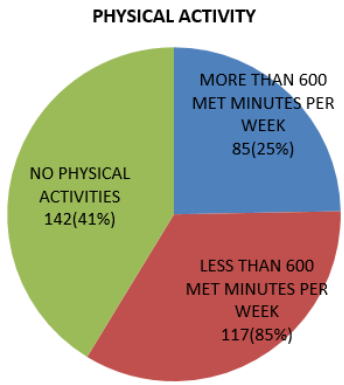

Fig No. 2: Distribution of students based on their level of physical activity based on WHO MET minutes/week.

Table No 1: The factors influencing physical activity

		PHYSICALLY ACTIVE (N= 85)	PHYSICALLY INACTIVE (N=256)	χ2	P VALUE
GENDER	MALE	29(23.6%)	94(76.4%)	0.187	0.665
	FEMALE	56(25.7%)	218(74.3%)		
RESIDENCE	HOSTELLERS	56 (24.8%)	170 (75.2%)	0.08	0.929
	NON-HOSTELLERS	29 (25.2%)	86 (74.8%)		
DIET	VEGETARIAN	5 (23.8%)	16 (76.2%)	0.015	0.903
	NON-VEGETARIAN	80 (25.0%)	240(75.0%)		
BMI	BMI <23 Kg/m^2	47 (24.2%)	147 (75.8%)	0.094	0.759
	BMI >23Kg/m2	38(25.7%)	110 (74.3%)		
SCREEN TIME (MEAN =4.4 HRS)	BELOW MEAN SCREEN TIME	64 (28.7%)	159 (71.3%)	5.07	**0.024***
	ABOVE MEAN SCREEN TIME	21 (17.6%)	98 (82.4%)		

*p value less than 0.05, statistically significant.

In table No:1, various factors influencing physical activity was studied only those medical students had screen above mean average time was found to be statistically significant.

Discussion

Many studies have been conducted on physical exercise, which is crucial in the prevention of many non-communicable diseases. Globally, physical inactivity is one of the leading causes of mortality.

In the present study, the prevalence of physical activity among the study population of 341 was 85 (25%).The prevalence of physical activity in the present study was found to be very low compared to other studies, ranging from 30%-43.2% [5]. The medical students, being the future doctors, are well aware of the importance and benefits of physical activity, but the present study shows a gap in knowledge and practice. A study done by *Anjana et al.* among doctors in Kerala shows a higher prevalence of obesity and overweight. The physical activity of males is 29 (23.6%), and that of females is 56 (25.7%). A similar finding was observed in a study conducted in Telagana[7]. The difference in the proportion of physical activity among males and females in the present study was not statistically significant. The gender difference in physical activity was found to be significant in many other studies conducted in India and Kerala[8].

The physical activity (25.7%) and physical inactivity levels (74.3%) among overweight individuals were not statistically significant. This was comparable to the study conducted in Telangana[7].

The participants in the current study had an average screen time of 4.4 hours. The amount of screen time may have increased due to online classes. It was found that the difference in physical activity levels among individuals who had above average screen time was statistically significant. Prolonged screen time and low levels of physical activity are suggested as unhealthy behaviors that may persist into adulthood. Previous studies have reported significant associations between more screen time and lower levels of physical activity, indicating that sedentary screen time is likely spent at the expense of other healthy activities[9-11]

Lack of time and motivation were the main reasons for inactivity as reported by the students, which have also been identified by other studies[12-13].

Another study found comparable results to ours and depicted that being a medical student posed a risk of physical inactivity.[14]

Research demonstrates that medical students' and doctors' physical activity habits have an impact on their attitudes towards conselling behavior[15]. Studies shows that doctors are less likely to engage in physical activity, which is contributing to the rise in obesity[16]. In order to encourage future doctors to exercise more, it is imperative to create the right conditions. The standard of healthcare will gradually rise as a result.

Conclusion

Our study showed us that only 1 in 4 participants involved in the study are physically active according to the WHO's GPAQ's minimum requirement of 600 MET minutes per week, which is a very alarming fact. Students must take more initiative to take part in physical activities. This cross sectional study tried to find out the knowledge gap in the physical activity pattern among medical students. The increase in screen time has a significant association with physical inactivity. So it is high time to make provisions in the medical colleges for improving the physical activity.

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Conflict of Interest: None

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Original Research Paper

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Clinical and Endoscopic Profile of Upper Gastrointestinal Bleed Patients

Prashant Kumar Swarnkar[1], Kamya Verma[2], Shrey Srivastava[3], Neelabh Pratap[4]

[1]Assistant Professor, Department of Medicine, Rama Medical College, Hapur, [2]Assistant Professor, Department of Microbiology, Saraswathi Institute of Medical Sciences, Hapur, [3,4]Assistant Professor, Department of Medicine, School of Medical Sciences and Research, Sharda University, Greater Noida.

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Abstract

Background: Acute upper gastrointestinal (UGI) bleeding is a common medical condition, potentially life-threatening emergency presents with hematemesis and/or melena. The hospitalization rate for UGIB is estimated to be six-fold higher than for lower GI bleeding. The incidence of UGIB is significantly higher in men than in women and increases with age. In the present study, we aim to address the clinical profile and endoscopic profile, in patients with upper gastrointestinal bleeding.

Methods and Results: This was a cross-sectional study conducted for 22 months at a tertiary care center in a rural part of Northern India. Patients admitted with a history of hematemesis and melena, satisfying the inclusion criteria were taken consecutively. Clinical and endoscopic profiles were noted. Statistical analysis was performed using a chi-square test for qualitative variables and an independent t-test for quantitative variables.

A total of 190 patients were studied during this period. The male-to-female ratio in the study was 3.4:1. The mean age was 43.7±15.42 years, ranging between 17 to 82 years.

The most common clinical presentation was Malena in 77 patients (40.5%) followed by haematemesis and melena in 71 patients (37.4%) and 42 patients (22.1%) presented with only hematemesis. The most common cause of endoscopy was portal hypertension-related oesophageal and gastric varices (52.63%) followed by antral gastritis (15.26%). The cause of UGI bleeding could not be identified in 5.26% in which the endoscopy was normal.

Conclusion: The most common causes of UGI bleed are portal hypertension-related gastric and oesophageal varices. The in-hospital mortality in the study was 7.82%.

Keywords: UGIB, comorbidities, hematemesis, melena, Forrest's classification

Introduction

Acute upper gastrointestinal (UGI) bleeding is defined as bleeding proximal to the ligament of Treitz. Upper gastrointestinal bleeding (UGIB) is a common medical condition that results in substantial morbidity, mortality, and medical care cost. It commonly presents with hematemesis and/or melena. In a small proportion of patients with severe UGIB, it may present as haematochezia. The

Corresponding Author: Prashant Kumar Swarnkar, Assistant Professor, Department of Medicine, Rama Medical College, Hapur.

Mobile: 9495824776

E-mail: dr.prashant@live.com

diagnosis is easier when the patient has hematemesis. In the absence of hematemesis, 40% to 50% of patients in the emergency room with GI bleeding have an upper source.[1]

The annual incidence of hospitalization for acute upper gastrointestinal bleeding (UGIB) is approximately 48-160 per 100,000 individuals and is more common than lower GI bleeding. The hospitalization rate for UGIB is estimated to be six-fold higher than for lower GI bleeding.[2]

The incidence of UGIB is higher in men than in women (128 versus 65 per 100,000) and increases with age. The reported frequencies of specific causes of UGIB vary and have changed over time. Depending on its severity, it carries an estimated mortality risk of 11%.[3.]

The most common causes of UGIB include the following (in approximate descending order of frequency) Gastric and/or duodenal ulcers, Esophagogastric varices, Severe or erosive esophagitis, Severe or erosive gastritis/duodenitis, Portal hypertensive gastropathy, Angiodysplasia (also known as vascular ectasia), Mass lesions (polyps/cancers), Mallory-Weiss syndrome, No lesion identified (10 to 15 percent of patients).[4]

Other less common causes of UGIB include Dieulafoy's lesion, Gastric antral vascular ectasia, Hemobilia, Hemosuccus pancreaticus, Aortoenteric fistula, Cameron lesions, Ectopic varices, Iatrogenic bleeding after endoscopic interventions.

Methods

The study was conducted for 22 months from September 2018 to June 2020 in the Department of Gastroenterology at Sharda Hospital Greater Noida, a tertiary care Centre. One hundred and ninety patients who presented with features of acute upper gastrointestinal bleeding i.e. hematemesis, malena, or syncope were hospitalized randomly irrespective of age, sex, or comorbidities after obtaining written consent from the patient and/or their relatives.

In the emergency department, hemodynamic assessment was done with careful measurement of pulse and blood pressure including orthostatic changes and urine output. Patients were first hemodynamically stabilized; blood transfusion was given when required. Complete hemograms, biochemical tests including blood urea level, liver function tests, chest x-ray, and ultrasonography of the abdomen were done in all the patients.

Once the patient was hemodynamically stable, upper GI endoscopy was performed. All study participants included in the study underwent a relevant clinical history and examination. The interview of all study participants was undertaken by the same research associate.

Demographic data, including age, sex, place of residence, and education; history of associated symptoms such as pain abdomen, nausea, vomiting, retching, jaundice, and syncope were obtained during the baseline interview.

Statistical analysis

The recorded data was compiled and entered in a spreadsheet (Microsoft Excel) and then exported to the data editor of SPSS Version 20.0 (SPSS Inc., Chicago, Illinois, USA). Continuous variables were summarized in the form of means and standard deviations and categorical variables were summarized as percentages. Graphically the data was presented by bar diagrams. Student's independent t-test was employed for comparing continuous variables. The chi-square test or Fisher's exact test, whichever is appropriate, was applied for comparing categorical variables. A P-value of less than 0.05 was considered statistically significant. All P-values were two-tailed.

Results

This is a hospital-based cross-sectional and descriptive study. The present study comprised 190 patients with acute UGI bleeding. The age ranged from 17 to 82 years, the mean age being 43.7±15.42. 65 patients were between 40-54 years, 53 were 25-39 years, 37 were between 55-69 years, 22 patients were < 25, and 13 were ≥ 70 years.

Table 1: Age distribution of study patients

Age (years)	Frequency	Percentage
< 25	22	11.6
25-39	53	27.9
40-54	65	34.2
55-69	37	19.5
≥ 70	13	6.8
Total	190	100
Mean±SD (Range)=43.7±15.42 (17-82)		

Table 2: Gender distribution of study patients

Gender	Frequency	Percentage
Male	147	77.4
Female	43	22.6
Total	190	100
Male: Female= 3.4:1		

147 patients (77.4%) were male and 43 patients (22.6%) were female with M: F = 3.4:1

Seventy-one patients (37.4%) presented with both hematemesis and malena, while 77 patients (40.5%) presented with only malena, and 42 patients (22.1%) presented with only hematemesis.

Table 3: Showing various symptoms at presentation in study patients

Symptoms	Frequency	Percentage
Malena	77	40.5
Hematemesis	42	22.1
Both hametemesis and malena	71	37.4
Total	190	100

Upper GI Endoscopy was done in all the patients to identify the cause of bleeding. They were classified according to Forrest's classification. Ten patients (5.3%), 4 patients (2.1%), 32 patients (16.8%), 16 patients (8.4%), 8 patients (4.2%), and 120 patients (63.2%) were classified as Forrest IA, IB, IIA, IIB, IIC, and III respectively.

Table 4: showing the patient distribution of Forrest classification with Malena

Forrest classification	Number of pt with Malena (in %)
IA	10(5.3%)
IB	4(2.1)
IIA	32(16.8%)
IIB	16(8.4%)
IIC	8(4.2%)
III	120(63.2%)

The most common cause of endoscopy was portal hypertension-related oesophageal and gastric varices (52.63%) followed by antral gastritis (15.26%). The cause of UGI bleeding could not be identified in 7 (5.26%) in which the endoscopy was normal.

Table 5: Showing aetiological factors for upper GI bleed.

Endoscopy findings	Total number	Percentage
Portal hypertension-related gastric and oesophageal varices	100	52.63%
Antral gastritis	29	15.26%
Gastric erosion	13	6.84%
Duodenal ulcer	10	5.26%
Gastric ulcer	7	3.68%
Oesophagitis	5	2.63%
Mallory Weiss tear	5	2.63%
Duodenal growth	4	2.11%
Post banding ulcer	3	1.58%
Oesophageal growth	1	0.53%
Gastric growth	1	0.53%
Gastric antral vascular ectasia	1	0.53%
Dieulafoy lesion	1	0.53%
Normal study	10	5.26%
Total	190	

Discussion

In the present study, we aimed at understanding the clinical and endoscopic profiles of patients who present with acute UGIB.

The mean age is variably reported in different studies. In the present study, the mean age was

43.7±15.42. Our results are comparable to numerous studies conducted in the past, which is similar to studies reported by Nepal Gurung et al[5] and Hussein et al[6] that showed mean ages 45.32+18.47 years and 44.6 years respectively. From India, Anand et al[7] reported mean age being 41 years and Rao et al[8] reported a mean age of 43 years, from West Indies, Kaliamurthy et al[9] reported higher mean age of 55 years. A recently published UK audit showed an even higher mean age of 64.4[10].

In our study, male patients were 77.4% and females 22.6%. Male predominance was reported by Bhattarai et al[11] 71% and Gurung et al[5] 64.4%. Similarly in other studies also male to female ratios 3:1 and 3.2:1, 70.1% male in the Jamaican study[9], 79% male in the Sudan study, 78.4% male reported by Kashyap et al[12], and 59% in the UK audit[10].

Greater number of patients in our study presented with malena i.e. 148 patients (77.9%) of whom 71 patients (37.4%) presented with both hematemesis and malena both. Rocall et al also reported male predominance in the British population.

In the present study, the most common cause of UGI bleeding was portal hypertension-related gastric and oesophageal varices (51.4%). This was followed by antral gastritis (15.2%), gastric erosions, ulcer disease, and malignancy.

Our patients were further classified according to Forrest's classification for the prediction of rebleed. A maximum number of patients (63.2%) with Forrest III classification.

The mortality rate of patients was 7.82 %, in this study. The mortality rate depends on multiple factors like age, associated co-morbidities, severity of bleed, and availability of endoscopic/surgical/ interventional radiological expertise in some cases.

In a study by Zaltman C et al., the mortality was as high as 15.34%. This signifies the importance of UGI bleeding as an emergency. Early management and endoscopic treatment shall reduce this high mortality. Understanding the demographic picture and the importance of differentiating variceal vs non-variceal bleeding and triage of patients accordingly will have a great impact on overall management.

Conclusion

Acute upper gastrointestinal (UGI) bleeding is a common medical condition common potentially life-threatening emergency presents with hematemesis and/or melena. The hospitalization rate for UGIB is estimated to be six-fold higher than for lower GI bleeding. incidence of UGIB is significantly higher in men than in women and increases with age. Portal hypertension-related bleeding is the common cause of UGI bleeding with significant mortality.

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Original Article

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Evaluating Spectrum of Epithelial Cell Abnormalities in Cervical Cytology Smears with a Focus on Atypical Squamous Cells of Undetermined Significance (ASCUS): A Study in Eastern India

Pratyusha Bhattacharjee[1], Partha Pratim Sinha Roy[2], Riya Das[3], Saumik Chakraborty[4]

[1]Assistant Professor, Department of Pathology, KPC Medical College & Hospital, Jadavpur , Kolkata, West Bengal, India, [2]Post Doctoral Trainee, Department of Urology, IPGME&R and SSKM Hospital, Kolkata, West Bengal, India, [3]Post Graduate Trainee, Department of Pathology, KPC Medical College & Hospital, Jadavpur, Kolkata, West Bengal, India, [4]Medical officer, Tripura Health Service, Tripura, India.

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Abstract

Background: Cervical cancer being one of the major causes of death in women living in developing countries like India, this study evaluates the spectrum of epithelial cell abnormality while primarily focusing on the prevalence of ASCUS and their correlation with predisposing factors.

Materials and Methods: Descriptive type of study was conducted over 456 patients. Patients underwent per speculum examination followed by cervical smear examination. Cervical lesions were categorized according to Revised Bethesda system, 2014.HPV detection & sequencing was done as required.

Results and conclusion: ASCUS was most prevalent in the sexually active age group (7.01%). The incidence of intraepithelial lesions among multiparous women was high (50.8%). Early coital age, smoking, poor economic conditions, multiple sexual partners, contraceptive usage and HPV infection were associated with higher chances of squamous cell abnormality.

Cervicitis, cervical erosion, and hypertrophic cervix need careful investigation for the presence of ASCUS due to its high prevalence in sexually active females in Eastern India. Henceforth, addressing these factors and spreading awareness about early diagnosis, necessary treatment, HPV vaccination along with the maintenance of proper sexual and menstrual hygiene becomes a cornerstone in the reduction of the overall burden of atypical cervical cytology and finally, cervical cancer.

Keywords: ASCUS, Cervical Intraepithelial Neoplasia, Uterine Cervical Dysplasia

Introduction

According to epidemiological data, cervical cancer has become one of the major causes of death in women living in developing countries.[1] It has become one of the leading causes of morbidity and mortality in India and other developing countries with estimated new cases emerging every year

Corresponding Author: Partha Pratim Sinha Roy, Post Doctoral Trainee, Department of Urology, IPGME & R and SSKM Hospital, Kolkata, West Bengal, India.

Mobile: 9432289316

E-mail: ppsr88@gmail.com

being around 1,26,000.[2,3] In 2007, according to the national cancer registry of India, the number of new cases of cancer cervix was 90,708 approximately, with a five-year survival rate of around 48%.[3]The cervix is easily accessible and the cervical cells have the propensity to exfoliate, aiding in early diagnosis of the spectrum of epithelial lesions using cervical smear examination.[4,5]

The 1988 Bethesda system for reporting cervical/ vaginal cytologic diagnoses introduced the term "atypical squamous cells" (ASC) for those cellular abnormalities that are markedly greater than those to be designated as reactive/inflammatory cellular changes yet deficient quantitatively or qualitatively to ascertain a definitive diagnosis of a squamous intraepithelial lesion (SIL).[1] Hence these lesions were termed as atypical squamous cells-undetermined significance (ASCUS) including cells with cytologic atypia that are indicative of a squamous intraepithelial lesion, yet insufficient for a definitive diagnosis and atypical squamous cells- cannot exclude high grade squamous intraepithelial lesion (ASC-H), which include cells with cytologic atypia indicative of HSIL, yet insufficient as per criteria for definitive diagnosis.

This study aims to evaluate cervical cytology smears as per the Bethesda system of reporting cervical cytology, to determine the prevalence of various epithelial cell abnormalities in cervical cytology in the Eastern Indian population. The study also aims to assess the association between the various epithelial cell abnormalities specially ASCUS and various clinicopathological features like age group, sexual activity, HPV infection, socioeconomic status and findings of per speculum examination.

Materials and Methods

A descriptive type of study was carried out for a period of 3 years (February 2019 to March 2022). All procedures performed in the current study were approved by Institutional Ethics Committee. A total of 456 patients were taken into account. All these patients underwent cervical smear examination as directed by their respective treating clinicians in the department of Gynaecology. Unstained cervical smears were then sent to the department of Pathology along with a requisition form encompassing patient particulars and relevant information. It was recorded only after taking informed signed consent from the patient or guardian of the patient. The following information was obtained from the requisition forms or the patient's medical records:

Patient's name and age, socio-economic status, history of early coitus, multiple sexual partners, and per speculum observations.

Pathological evaluation:

After performing per speculum examination, the cervical smears were collected in the Gynaecology department. These smears were fixed in ethanol for processing and staining by the conventional method using Papanicolaou's technique. The 2014 Revised Bethesda system of reporting was used for the gradation of cytopathological findings observed in the cervical smears and were finally categorized into Negative for Intraepithelial lesion or Malignancy (NILM), Atypical squamous cell of undetermined significance (ASCUS), Atypical squamous cells cannot exclude HSIL (ASC-H), Low-grade squamous intraepithelial Lesion (LSIL), High-grade squamous intraepithelial lesion (HSIL) and Squamous cell carcinoma (SCC). Stained smears were evaluated according to the morphological criteria of amphophilia, perinuclear halo, dyskeratosis, nuclear criteria (binucleation, multinucleation), increase in the nucleus/cytoplasm ratio, anisokaryosis, hyperchromasia, nuclear atypia, and karyorrhexis.[6].

HPV detection & sequencing was done after DNA extraction using the Amplitude Liquid Media Extraction Kit from cases having atypical cervical cytology. HPV types found were recorded. These results were correlated with history along with per-speculum findings.

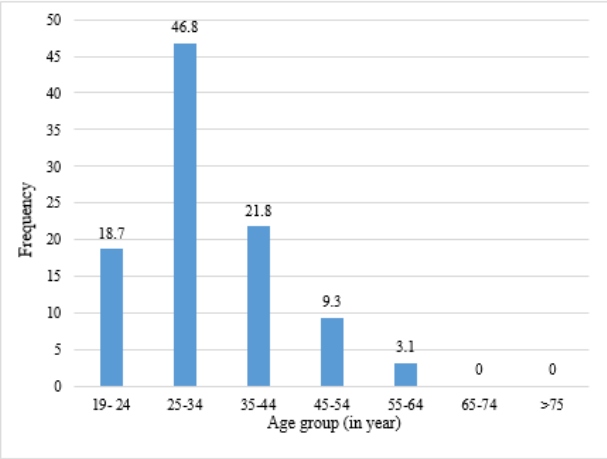
Statistical analysis:

Appropriate statistical analysis was done as and when required. Data were analyzed using SPSS version 22.0 (Statistical Product for Services Solutions).

Results

A thorough cytological assessment of 456 patients revealed that NILM was the most common finding while ASC-US was the most prevalent epithelial abnormality in the sexually active age group.

The prevalence of ASCUS in our study is 7.01%. LSIL was also associated with sexually active women (0.21%). ASC-H on the other hand was more prevalent in postmenopausal women. SCC is prevalent in the age group 41-50 years. [Table 1] [Figure- 1]



ASCUS incidence is raised in younger and sexually active women between 19- 44 years, after which it reduces significantly.

Most of the cervical smears with epithelial abnormalities had per speculum finding of cervical erosion (86.8%). Suspicious looking cervix with aceto-white patches and erosion was found only in 3 cases (7.89%). [Table 2]

Early coital age was associated with higher chances of the squamous intraepithelial lesion (p-value< 0.05). [Table 3]

Atypical intraepithelial squamous lesion was found predominantly in women with low socioeconomic status (p-value <0.05) [Table 4] and those having more than one sexual partner (p-value <0.05). [Table 5]

On the other hand, multiple sexual partners are a vital risk factor in the pathogenesis of atypical squamous lesion (p-value <0.05) [Table 5]

HPV infection is often associated with cervical epithelial abnormalities [Table 6]. HPV 16 /18 were among the most common types found.

ASCUS has atypical features comprising orangophilia, and nucleomegaly of squamous cells in an inflammatory background. ASC-H comprises orangophilia, nucleomegaly of squamous cells in addition to the presence of parabasal cells in an inflammatory background.

Table 1: Age wise frequency distribution table.

Age Group (years)	Squamous epithelial findings					
	NILM*	ASCUS#	ASC-H•	LSILΔ	HSIL+	SCC**
19-24	106	6	0	0	0	0
25-34	152	15	0	0	0	0
35-44	79	7	0	1	0	0
45-54	50	3	1	0	0	1
55-64	26	1	1	0	0	0
65-74	3	0	0	0	1	0
>75	2	0	0	0	1	0
Prevalance	91.6	7.01	0.43	0.21	0.43	0.21

* NILM, Negative for intraepithelial lesion or malignancy;

\# ASCUS, Atypical squamous cell of undetermined significance;

• ASC-H, Atypical squamous cells cannot exclude HSIL;

Δ LSIL, Low- grade squamous intraepithelial Lesion;

\+ HSIL High- grade squamous intraepithelial lesion and

** SCC, Squamous cell carcinoma.

Table 2: Frequency distribution according to per speculum finding.

Per speculum findings	Lesion in pap smear	No of cases
Normal	ASCUS	2
Cervical erosion with ectropian	ASCUS	30
	ASC-H	1
	LSIL	1
	HSIL	1
Aceto-white patches with erosion	ASC-H	1
	SCC	1
	HSIL	1

Table 3: Association table between early coital age and atypical squamous lesion.

Atypical cytological findings	Early age at coitus (< 18 years)	Appropriate age (>18 years)	Chi –square value	p value
Present	15	23	18.56	.000
Absent	55	363		

Table 4: Association table between socioeconomic status and atypical squamous lesion.

Atypical cytological findings	Low-socio economic status N= 250	High and middle socioeconomic status N= 206	Chi –square value	p value
PRESENT	35	3	23.2	.000
ABSENT	215	203		

Table 5: Association between number of sexual partners and atypical squamous lesion.

Atypical cytological finding	0 – 1	≥2	Chi –square value	P value
Present	9	29	154.3	.000
Absent	390	28		

Table 6: Distribution of Human Papilloma Virus (HPV) types in atypical cervical cytology smears

Atypical cytological smears (n = 38)	Total number of cases	Type of HPV infection (Number of cases infected)
ASC- US	32	HPV 16 (9 cases) HPV 18 (5 cases) HPV 33 (1 case) Rest 17 cases were not associated with HPV infection
ASC-H	2	HPV 16 (2 cases)
LSIL	1	HPV 18 (1 case)
HSIL	2	HPV 16 (1 case) HPV 18 (1 case)
SCC	1	HPV 16 (1 case)

Discussion

In developing countries, the commonest form of cancer in women is cervical cancer. WHO ascribes an 80% death rate to cervical cancer in these countries due to poor hygienic conditions and lack of awareness.[7] India contributes to one-quarter of the worldwide cervical cancer burden. [8] The Bethesda classification, 1988 describes ASCUS as a median lesion between the inflammatory conditions and LSIL of the cervix.[9] Jahic et al. defined it as "Atypical squamous cells of undetermined significance (ASCUS) is a term that refers to inflammatory, reactive and reparative processes which are atypical and of higher level and insufficient to be classified as cervical intraepithelial lesions (CIN)." [9] ASCUS may be caused due to an infection (HPV) or may be due to low hormonal levels (post-menopausal) or following a benign growth.

In our study, the incidence of ASCUS was found to be 7.01 %, which is in concordance with the data cited in the literature by Srivastava AN et al.[10] They found 8.8 % incidence of ASCUS. Yet another research reported an ASCUS incidence of 4.9% in the cervical cytology of women attending Pravara Rural Hospital, Loni.[11] Analysis shows sexually active women below 44 years were more prone to develop epithelial abnormality. Srivastava M et al. showed a roughly similar age group with a predominance of epithelial abnormality.[11]We found most of the abnormal cytology cases between the age group of 19 to 54 years but a study by Sachan et al. found the same to be between 40 to 60 years.[12] Women between 25 to 34 years were reported to have maximum cases of ASCUS whereas in the study by Wendel et al. the mean age of presentation for ASCUS was 35.7 years. [13] Gupta et al. showed ASC-H, LSIL, HSIL, and SCC were seen mostly above 40 years which was almost in approximation with our study. He also reported 3.23% cases with epithelial abnormality, while in our study 8.3 % of all cases were diagnosed to have the same.[14]

Srivastava A et al in their research noted that epithelial abnormalities mainly including HSIL and carcinoma cervix increase with early age of consummation which matches our monograph. [15] Our study revealed that high-grade squamous intraepithelial lesions and squamous cell carcinoma were found more or less in parallel age groups. Cervical erosion was the most common finding in our study. This observation was also found by Bamanikar et al.[16]Also a study by Duttagupta et al. associated the presence the cervical erosion, hypertrophy, and ulcerative growth with most cases of cervical carcinoma.[17] Epithelial abnormalities were predominantly seen in patients belonging to low socioeconomic status probably due to poor hygiene status and lack of follow-up. HPV 16 was the prevalent genotype (46.80 %) associated with ASCUS followed by HPV 18 and other prevalent types which were similar to other studies.[18,19]

So, to conclude, cervical dysplasia and invasive cervical cancer are preventable. Low income, followed by early marriage and early age of coitus had a higher correlation with abnormal cervical smears. Patients having cervicitis, cervical erosion, and hypertrophic cervix should be carefully investigated for the presence of ASCUS, due to its high prevalence in sexually active females in Eastern India. HPV testing should also be done accordingly. Henceforth, addressing these factors and spreading awareness about early diagnosis, necessary treatment, HPV vaccination along with the maintenance of proper sexual and menstrual hygiene becomes a cornerstone in the reduction of the overall burden of atypical cervical cytology and finally, cervical cancer.

Ethics Statement

This study was approved by the Institutional Review Board. Informed consent was sought from each participating patient.

Conflicts of Interest: No potential conflicts of interest.

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Original Research Article

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Health Related Quality of Life and its Effective Factors in Tuberculosis Patients Receiving Directly Observed Treatment Short-Course (DOTS)

Priya Gangadharan[1], Shivaramakrishna HR[2]

[1] Assistant Professor, Department of Community Medicine, GR Medical College Hospital & Research Centre, Neermarga, Mangaluru, Karnataka, [2]Professor, Department of Community Medicine, GR Medical College Hospital & Research Centre, Neermarga, Mangaluru, Karnataka.

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Abstract

Objectives: This study aimed to assess the health-related quality of life (HRQoL) and related factors among TB patients receiving Directly Observed Treatment Short course (DOTS) in District Tuberculosis Centre, Vellore, Tamil Nadu.

Methods: A cross-sectional study was conducted in the District Tuberculosis Centre, Vellore between January and June, 2018. Health related quality of life was measured using the Short Form-36 (SF-36) questionnaire which measured HRQoL in 8 domains. Statistical analysis was performed using the Statistics Package for Social Scientists (SPSS; Windows version 21.0). The nonparametric tests including Mann–Whitney and Kruskal–Wallis were performed to find out differences between different variables.

Results: A total of 268 participants were recruited for the study. Highest HRQoL scores were observed in the domain of physical functioning (67.19 + 7.31) followed by domain on limited physical activity due to physical problems (64.97 $\pm$ 13.23).

The lowest scores were in the domain of general health (58.89+ 17.07) followed by domain of bodily pain (59.45 $\pm$ 13.24).

Conclusion: The results of the study concluded that TB had negative impact on patients HRQoL with general health being the most affected. The present study underscores the need for targeted, culturally relevant psychosocial support interventions for persons treated for TB disease, especially during the early months of treatment.

Keywords: Tuberculosis, SF-36 Questionnaire, Quality of life

Introduction

Tuberculosis (TB) is the leading infectious disease in India and caused 28 lakh cases and 4.8 lakh deaths due to TB in 2018.[1,2] TB patients face a multitude of problems that are social, economic, physical and mental in nature which if not addressed can lead to poor disease or poor treatment outcomes. Hence there is a need for a more comprehensive assessment of patients' health status.[3]

Corresponding Author: Priya Gangadharan, Assistant Professor, Department of Community Medicine, GR Medical College Hospital & Research Centre, Neermarga, Mangaluru, Karnataka.

Mobile: 9742828401

E-mail: priya.rahul7@gmail.com

Health-related quality of life (HRQoL) involves assessing a person's perception of his or her physical and mental health. TB patients often have physical and mental distress leading to poor disease outcome or poor treatment outcome because of decreased ability to take treatment.[4,5]

The 36-Item Short Form Health Survey questionnaire (SF-36) is tool used for evaluating the Health-Related Quality of Life (HRQoL). This has 36 questions and measures QOL in 8 domains.[6,7,8] This study was undertaken with the aim of assessing the HRQoL of TB patients using the SF- 36 questionnaire.

Materials and Methods

A prospective cross-sectional, facility-based study was conducted in the Designated Microscopy Centre (DMC) attached to the District Tuberculosis Centre in Vellore district, Tamil Nadu. Ethical clearance was obtained from the Institutional ethics committee.

The appropriate sample size needed was calculated based on previous studies which showed the mean and standard deviation (SD) QOL score as 36.1 (6.6).[9] The sample size was calculated as 268 to achieve 95% confidence interval with 5% margin of error.

This study was conducted from January to June, 2018. All adult drug sensitive TB patients who registered for treatment during the study period were eligible for the study. Using convenience sampling method, consecutive patients fulfilling the inclusion criteria and willing to participate in the study were administered with an informed consent.

The Quality of Life - Short-Form Health Survey (SF-36) designed by Ware et al was used to study the quality of life.[7] This questionnaire has 36 questions and measures HRQoL in 8 domains: physical functioning, role limitation due to physical problems, bodily pain, general health, vitality, social functioning, role limitation due to emotional problems and emotional well-being.[7] The questionnaire was administered by trained health care providers. Scoring was done based on the item response data.[8, 9, 10] Scoring began after ensuring that the survey form was complete and the study subject's answers were unambiguous. Item response values were then recorded. Based on previous published literature, several steps were used for this process, including changing out of range values to missing, recoding values for 10 items, substituting person-specific estimates for the missing items. After this, a total raw score was computed for each domain scale. The total raw score was sum of the final response values of all items on a given scale. Health domain scale total raw scores were transformed to 0–100 scores using the formula: ((Actual raw score − Lowest possible raw score)/ Possible raw score range) × 100. Health domain scale 0–100 scores were transformed to scores by using health domain scores. A linear -score transformation is used so that each health domain scale has a mean of 0 and a standard deviation of 1 with mean from the 0–100 score for that scale, then dividing the difference by the given scale's standard deviation. The scores were transformed to a score by multiplying each score by 10, and then 50 was added to this resulting product. Health domain scores were used to score Physical and Mental Component Summary measures.[3]

Data was entered into Microsoft Excel. Statistical analysis was performed using the Statistics Package for Social Scientists (SPSS; Windows version 21.0.). Descriptive statistics comprising frequency and percentages was calculated. The nonparametric tests including Mann–Whitney and Kruskal–Wallis were performed to find out differences between different variables.

Findings

There were a total of 396 patients who were eligible for the study, of which 268 (67.7%) patients consented for the study. Of the 268 patients, 159 (59.3%) were males and 109 (40.7%) were females, 154 (57.5%) were from rural area and 114 (42.5%) were from urban area. The mean age and standard deviation (SD) of the study population was 47.21 (± 12.24) years. Most of the study population (68.3%) were married. Occupation wise, unemployment was seen in a large proportion 129(48.1%) of the subjects, while 76 (28.4%) were unskilled workers. Majority of the patients 164 (61.2%) had pulmonary TB while 104 (38.8%) patients had extra pulmonary TB. There were 172 (64.2%) who were new cases while 96 (35.8%) were retreatment patients who were either relapse, treatment failure and those who had returned after default (but were still drug sensitive). The mean

duration of treatment was 6.12 (± 2.41) months. There were 144 (53.7%) smokers and 124 (46.3%) were non-smokers.

A detailed description of demographic characteristics is given in (Table 1)

Table 1: Characteristics of the study population

Demographic details		Frequency (n =268)	Percentage (%)
Age	18-20 years	6	2.2
	21-30 years	68	25.4
	31-40 years	121	45.2
	41-50 years	54	20.2
	51-60 years	12	4.4
	> 60 years	7	2.6
Sex	Male	159	59.3
	Female	109	40.7
Marital status	Single	30	11.2
	Married	183	68.3
	Divorced/ Widowed	55	20.5
Place of Residence	Rural	154	57.5
	Urban	114	42.5
Occupation	Unemployed	129	48.1
	Unskilled	76	28.4
	Semi-skilled	40	14.9
	Skilled	23	8.6
Education	Illiterate	46	17.2
	Primary	73	27.2
	Secondary	112	41.8
	High School	30	11.2
	College degree	7	2.6
Currently Smoking	No	124	46.3
	Yes	144	53.7
Currently consuming Alcohol	No	132	49.3
	Yes	136	50.7
Site of TB	Pulmonary	164	61.2
	Extra pulmonary	104	38.8
Treatment category	New	172	64.2
	Retreatment	96	35.8
Duration of current treatment	≤ 2 months	119	44.4
	>2months	149	55.6

Health related quality of life was measured using the Short Form-36 (SF-36) questionnaire.

The results showed that lowest scores for health-related quality of life were observed in the domain of general health (58.89± 17.07) followed by domain of bodily pain (59.45 ± 13.24). Highest scores were observed in the domain of physical functioning (67.19 ± 7.31) followed by domain on limited physical activity following physical problems (64.97 ± 13.23).

A detailed description is given in Table 2.

Table 2: Mean scores for different domains of health-related quality of life (HRQoL) among study population

QOL dimension	Mean (SD)	Median
Physical function	67.19 (7.31)	66
Limited physical activity following emotional problems	60.53 (11.76)	59
Limited physical activity following physical problems	64.97 (13.23)	61
Vitality and fatigue	60.76 (11.42)	60
Mental health	63.64 (8.98)	62
Social functioning	61.37 (12.31)	61
Body pain	59.45 (13.24)	57
General health	58.89 (17.07)	55
Total score for QOL	62.91(12.93)	60

A comparison of the HRQoL domains among men and women showed that men had a significantly higher HRQoL score compared to women ($p<0.03$). Also, subjects residing in urban areas had a significantly higher HRQoL score compared to those residing in rural areas ($p<0.001$). Those who had taken TB treatment for a longer duration (≥ 2 months) had a significantly better health related quality of life ($p<0.02$). Those who were taking TB treatment for the first time had a significantly better HRQoL compared to those who had taken treatment previously ($p<0.05$).

A detailed description is given in Table 3.

Table 3: Comparison of mean SF-36 domain scores socio-demographic characters of the study population.

Factor	Mean ± Standard deviation of QOL		Independent t test result
Age	≤40 years 69.13 ± 8.46	>40 years 67.96 ± 9.12	p value < 0.45
Gender	Male 66. 59 ± 10.89	Female 55.12 ± 9.11	p value <0.03
Marital status	Married 63.21 ± 6.89	Unmarried/ Widowed/Divorced 69.18 ± 8.56	P value<0.21
Occupation	Skilled 65.97 ± 8.56	Unskilled 63.78 ± 7.43	P value <0.24
Place of residence	Urban 67.35 ± 10.23	Rural 54. 66 ± 9.27	p value <0.001
Duration of treatment	≤ 2 months 60.34 ± 8.78	>2months 66. 34 ± 6.32	p value< 0.02
Site of TB	Pulmonary 57.13 ± 8.25	Extra pulmonary 59.59 ± 7.17	p value<0.71
Treatment category	New 60.27 ± 10.39	Retreatment 56.97 ± 10.04	p value < 0.05
Smoker	Yes 62.43 ± 8.93	No 61.56 ±9.71	p value <0.36
Alcohol consumption	Yes 63.25 ± 7.34	No 61.87 ± 6.56	p value <0.31

Discussion

The results of this study highlighted a significant impact on several domains of HRQoL of TB patients. The highest HRQoL scores were observed for the domain of physical functioning whereas lowest HRQoL scores were observed for the domain of general health, followed by bodily pain and role limitations due to emotional issues.

The present study highlighted women had a significantly poorer HRQoL across all domains compared to men. This could be explained by fact that women have lower levels of physical strength and are more sensitive to changes in their health compared to men. Similar results were reported in a study conducted in America, where women had more health issues and were more likely to report fair or poor health than men.[11]

This study found that patients residing in urban area had a significantly better quality of life compared to those in rural areas. This could possibly be due to a lower economic status and inadequate level of nutrition in rural patients. These findings are similar to a study done by Marra et al.[12]

The study found that subjects who had taken TB treatment for more than 2 months had a significantly better quality of life. This could be due to a reduction in TB symptoms, adjustment to the medication and positive effect of therapeutic interventions on quality of life of TB patients. These findings are in accordance with studies conducted in India, Canada and Pakistan.[8,11,13,14,15]

This study found that those who were taking TB treatment for the first time had a significantly better HRQoL compared to those who had taken treatment

previously. These findings are in accordance to a study done in Orissa, which showed that there was a significant difference found among new TB cases and retreatment TB cases.[16]

Conclusion

The results of the present study concluded that patients with TB patients had poor HRQoL. The disease had a negative impact on HRQoL of TB patients across all domains. Patients who were females and those living in rural areas were found to have a poorer HRQoL. Besides this, those who had taken treatment for 2 months or less and those who had taken TB treatment in the past also had a poorer HRQoL.

The present study underscores the need for targeted, culturally relevant psychosocial support interventions for persons treated for TB disease, especially during the early months of treatment.

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Ethical Clearance: Ethical clearance was obtained from Institutional Ethics Committee Vellore

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Case Series

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Unusual Clinicopathological Presentations of Mature Cystic Teratoma: A case series

Rajashree Pradhan[1], Madhumita Paul[2], Arindam Bandopadhyay[3], Sajeeb Mondal[4]

[1]Associate Professor, Department of Pathology, College of Medicine & Sagore Dutta Hospital, [2]Senior Resident (Demonstrator), Department of Pathology, College of Medicine & Sagore Dutta Hospital, [3]Associate Professor, Department of Pediatrics, College of Medicine & Sagore Dutta Hospital, [4]Associate Professor, Department of Pathology, Rampurhat Government Medical College & Hospital

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Abstract

Mature cystic teratomas also known as dermoid cyst are one of the most common benign tumors of the ovary. It is usually seen in young women in the reproductive age group. It comprises of mature elements derived from all the three germ layers. In this case series we reported a series of 4 cases of mature cystic teratoma of the ovary with uncommon clinicopathological presentations. First case was a rare entity of melanocytic nevus arising from a mature cystic teratoma. Second case was adipocyte rich teratoma, an uncommon lipomatous lesion of the ovary. Third case was rupture of dermoid cyst presenting as acute abdomen. Fourth case was mature cystic teratoma in a post-menopausal woman. To conclude, though dermoid cysts after surgical removal have an uneventful clinical course, extensive sampling of the specimen for histopathological study should be done to identify rare pathologies which bears a clinical significance.

Keywords: Mature cystic teratoma, Melanocytic nevus, ovary, post-menopausal woman.

Introduction

Teratomas are tumors comprising of derivatives of all three germ layers. Mature teratomas are benign tumors and contains mature (well-differentiated tissues) such as sebaceous glands, hair, teeth, bone, cartilage etc. Mature cystic teratomas also known as as Dermoid Cyst is the most common type of ovarian germ cell tumor.[4] 20-30% of all ovarian tumors are mature cystic teratomas.[3]These are most commonly seen in younger women (<40yrs) [10]and children.[8]These are bilateral in 10-15% of cases with low incidence of malignancy development (1-2%).[12] Here we are reporting a series of 5 cases of mature cystic teratomas of ovary with uncommon clinicopathological presentations.

Materials and Methods

The case series was reported from the department of Pathology of College of Medicine and Sagore Dutta Hospital over a period of 2 years. Clinical presentation, radiological findings and histopathological findings of the ovarian tumors were studied in all the 4 cases.

Corresponding Author: Sajeeb Mondal, Associate Professor, Department of Pathology, Rampurhat Government Medical College & Hospital.

Mobile: 8777561521

E-mail: sjbmondal@gmail.com

Case Discussion (Findings)

Case 1:

A 31-year-old female $P_2 L_2$ presented with lower abdominal pain and heaviness for past 6 months. On ultrasonography, it was found large multilocular cystic mass involving right adnexa. She underwent surgical removal of the adnexal mass and tissue sent for histopathological evaluation. On gross examination, it showed a large 7x 6.5x5 cm^3 solid cystic mass of right ovary with adherent enlarged right fallopian tube.**(Fig 1)** Histopathological examination of the right ovarian mass revealed presence of mature elements derived from all the three germ layers**(Fig 2&3)** along with presence of dense aggregates of spindled to polygonal neval cells containing heavy deposits of melanin pigments at various places particularly in the skin**.(Fig 4)** The final diagnosis was given as melanocytic nevus arising from a mature cystic teratoma.

Case 2:

A 26-year-old nulliparous women presented with chronic pelvic pain. Ultrasonography revealed left ovarian mass with fat and calcification. She underwent oophorectomy (left side) and specimen sent for histopathological analysis. Gross finding was ovarian mass measuring 4cm in maximum diameter. Cut- section showed presence of thin-walled cyst, hair structure and fatty tissue. Histopathology showed presence of epidermis, hair shaft, endodermal glands ,bone &cartilage **(Fig 2&3)**and extensive wide areas of adipocytes in clusters**.(Fig 5)** The final diagnosis was given as adipocyte rich mature cystic teratoma.

Case 3:

A 11-year-old school going girl presented with sudden onset of severe pain in the abdomen and admitted to the emergency OPD. Radiological investigation showed presence of a multiloculated ruptured cystic structure involving the left ovary. She underwent cyst removal and specimen sent for histopathological analysis. Microsection showed presence of well differentiated elements derived from all the three germ layers **(Fig 2&3)** and presence of multiple foreign body granuloma against the keratin and hair shaft of the ruptured dermoid cyst contents. **(Fig 6)** The final diagnosis was given as ruptured mature cystic teratoma of ovary.

Case 4:

A 68-year-old postmenopausal female presented with slow onset lower abdominal pain noticed for past few months.no other clinical signs and symptoms were there. No past medical history and no relevant family history was there. On general examination, vitals were stable. On abdominal examination no palpable mass felt. Hematological investigations were normal. Ultrasonography showed large multilocular echogenic mass involving left adnexa. Uterus was of size 5.2x4 cm^2, with attached b/l adnexa. Left ovary consists of one large thin walled cyst containing hair & pultaceous material. **(Fig 7)** Her CA-125 was 28 U/mL (within normal limit). Considering the age the patient underwent hysterectomy with B/L salphingo-oophorectomy. Sections from endomyo, cervix, B/L tubes and right ovary showed no abnormality except for atrophic endometrium consistent with her age. Sections from left ovary showed histopathological features of mature cystic teratoma**. (Fig 2&3)**

Fig 1- Showing gross pathology of mature cystic teratoma of ovary

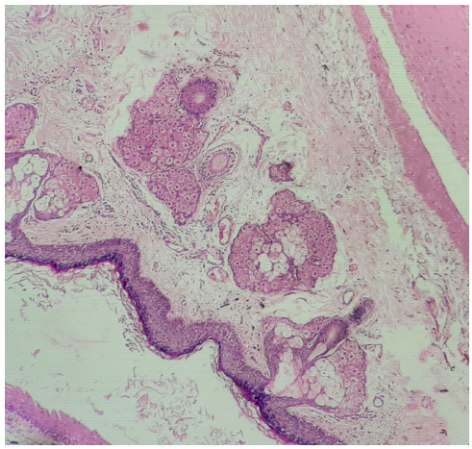

Fig 2 – showing ectodermal derivatives (skin epidermis & appendages) in teratoma(H&E,100X)

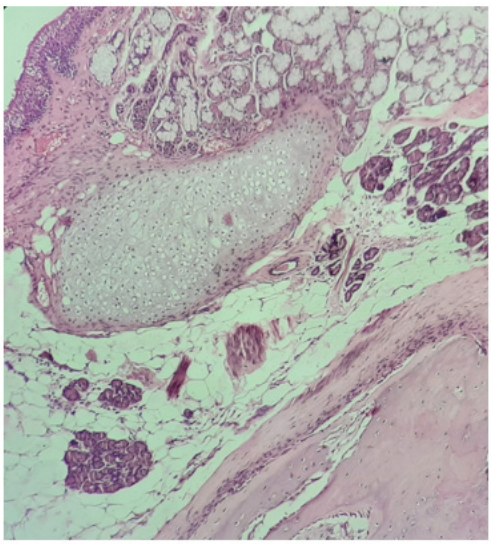

Fig 3- Showing mesodermal (bone, cartilage)& endodermal derivatives(glands) in teratoma (H&E,100X)

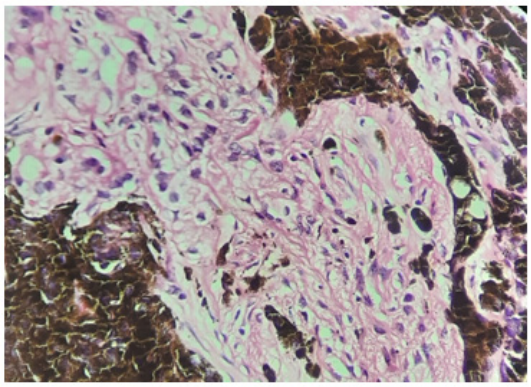

Fig 4- showing features of melanocytic nevus in teratoma(H&E,400X)

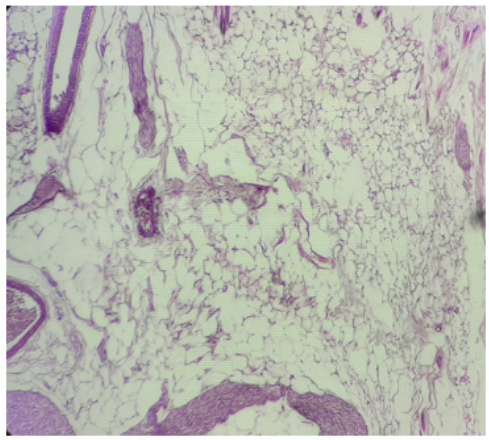

Fig 5- showing features of adipocyte rich teratoma (H&E,100X)

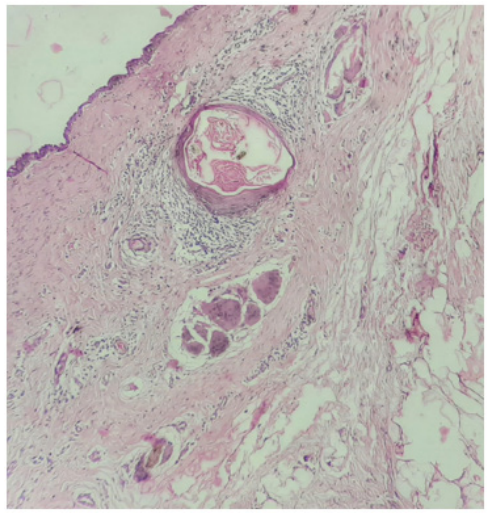

Fig 6- Showing presence of foreign body granulomatous reaction against keratin &hair shaft in case of rupture ovarian teratoma(H&E,100X)

Fig 7- Showing gross features of presence of a large cyst of left ovary containing pultaceous material & hair attached to atrophic uterus

Discussion

Mature cystic teratomas (dermoid cyst) are the most common benign ovarian neoplasm constituting upto 10-25%.[6,5] Histopathologically, they contain mature elements derived from all the three germ layers i.e. ectoderm, mesoderm and endoderm.[11]

Our first case was melanocytic nevus arising from a dermoid cyst. Nevus arising in a dermoid cyst is a rare event. Very few cases had been reported in the literature. Chukwujama AE et al.[1] reported a case compound melanocytic nevus in dermoid cyst in a 36-year-old female. Kuroda et al[9] postulated that melanocytes differentiate from the neural crest tissue originating in the teratoma and then migrate to the epidermis to form the nevus. Though the clinical outcome of these patients is uneventful after removal of the cyst, it is important to differentiate atypical melanocytic lesions such as dysplastic nevi and blue nevi from that of melanoma arising within teratoma for better management of the patients. In our case, there was uneventful clinical course.

Our second case was adipocyte rich dermoid cyst. One case adipocyte rich teratoma was reported by Suchita Pant et al[13] in a 41-year-old female with B/L teratoma. The clinical course of the patient in our case was uneventful with no recurrence. Adipose tissue is not native to ovary and lipomatous ovarian lesions are rare. Lipomatous lesions originating from fat cells of teratoma contributes to one of the mechanisms for histogenesis of lipomatous lesion in ovary.[2]

Our third case was spontaneous rupture of teratoma with clinical presentation of acute abdomen. Spontaneous rupture of teratoma is rare.[15] Ines Mazhoud et al.[10] reported a case of ruptured mature cystic ovarian teratoma in a 21-year-old female.

Our fourth case was mature cystic teratoma in a post-menopausal woman. Dermoid cysts are more common in younger age groups and rarely seen in post-menopausal woman.[14] Thought the rate of malignant transformation in mature teratomas is low (1-2%)[7] this rate increase in post-menopausal woman (15%).[16] Though rare mature cystic teratomas can be seen in post-menopausal woman.

Conclusion

In this case series, we reported a series of cases of mature cystic teratomas with uncommon clinicopathological features. All these findings were diagnosed incidentally in histopathological evaluation. Therefore, extensive sampling in mature cystic teratomas is advised to diagnose the uncommon pathological entities and to avoid misdiagnosis.

Conflict of Interest- Nil

Source of Funding: No financial support received

Ethical Clearance: Our study was approved by institutional ethics committee

Patient Consent: Written informed consent was taken from all the patients participating in this study.

Author Contribution: All are having equal contribution

Acknowledgement: We like to acknowledge the Department of Gynecology for contribution of the specimens of this study.

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Original Research

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Publication of Healthcare Research – Current Scenario and Potential Solutions

Rajesh Dasaraju[1], Thejaswini Muppala[2], Sachin Gupta[3], Ashutosh Mangalgiri[4]

[1]Associate Professor, Department of Pharmacology, Chirayu Medical College & Hospital, Bhopal, Madhya Pradesh, India, [2]Associate Professor, Department of Biochemistry, Central Laboratory Director, Chirayu Medical College & Hospital, Bhopal, Madhya Pradesh, India, [3]Associate Professor, Department of Community Medicine, Chirayu Medical College & Hospital, Bhopal, Madhya Pradesh, India, [4]Professor, Department of Anatomy, Medical Director, Chirayu Medical College & Hospital, Bhopal, Madhya Pradesh, India.

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Abstract

Background and Aim: Making quick decisions on the eligibility of a research work to accept and publish appears to be a daunting task for most of the society journals in India. The aims of this study was to compare the extent of scientific article handling services provided by the Indian and international journals, and to reiterate the importance of publishing the results of high impact research work in the shortest possible time.

Material and Methods: An observational analysis of 19 Indian and 19 international medical journals affiliated to subject specific societies was done. The journals were analyzed for the "median time taken from submission of manuscript to first decision", availability of "online first" facility and "number of issues" published in a year. Microsoft Office 2007 was used to formulate the data and presented in a descriptive manner using numbers.

Results: All the international journals analyzed in this study were offering median timelines to first decision ranging from 7 days to 42 days on their websites compared to only 57.9% (n=11/19) of the Indian journals. The longest duration to respond among Indian journals is being taken by the Indian Journal of Psychiatry (90 days), with the shortest timeline being offered by the Indian Journal of Microbiology (5 days). In contrast to international journals, 52.6% (n=10/19) of Indian journals were only providing the service of "online first" actively on their websites. Among the international journals, 78.9% (n=15/19) were publishing monthly issues compared to only 26.3% (n=5/19) of Indian journals.

Conclusions: Indian journals published by societies must thrive hard to accelerate the editorial process in a time bound manner and disseminate the results of impactful research work at the earliest by recruiting large number of reviewers and skilled technical personnel. Delay in decisions and publications by the journals can hamper the confidence and trust among research community to send good scientific work.

Keywords: Indian journals, International journals, Median timelines, Online first

Introduction

Research is defined as "a systematic investigation, designed to develop or contribute to generalizable knowledge"[1]. In medical field, research can provide important information about risk factors, disease trends, treatment outcomes, health care costs and more. Research starts with framing a hypothesis,

Corresponding Author: Dasaraju Rajesh, Associate Professor, Department of Pharmacology, Chirayu Medical College & Hospital, Bhopal, Madhya Pradesh, India.

E-mail: drdasaraju@gmail.com

followed by literature search about the topic, and then plan methodology to test the research question. It is expected from the researchers to use sound methodology, without which the results may not be accurate and the conclusions unsubstantiated. At the end of the study, collected data is analyzed for statistical significance and conclusions are drawn from them. The research is then submitted to a peer-reviewed journal for its possible acceptance and further publication.

Criteria adopted to select a journal by the researchers vary from country to country. In India, teaching faculty working in the medical colleges often search for journals indexed according to the guidelines of National Medical Commission (NMC)[2]. Articles published in such journals fulfill the requirement for promotions among medical faculties. Alternatively, students pursuing post graduation publish the research work to become eligible for appearing in the university examinations[3].

Even before accepting the manuscripts for further publication, new manuscripts submitted to high impact journals go through a series of checks to ensure adherence to mandatory requirements such as author information, abstract, figures and tables, references, copyright transfer agreement and most importantly about the novelty of research work[4]. Not fulfilling the said requirements entitles the manuscript for rejection. Researchers expect this stage to complete at the earliest and be informed about the decision. This decision is termed as "first decision" by the journals and the median time taken from submission of manuscript to first decision vary among different journals. Many researchers encounter prolonged delays in getting response from the time of article submission to first decision.

Manuscripts that are found potentially suitable for publication in the journals are sent for peer-review process. The comments and suggestions received from reviewers are conveyed to the corresponding author with a request to submit revised version of the manuscript. Majority of the articles stuck at this stage with reviewers requesting more and more clarifications from the authors in order to improve the overall quality of the manuscript. This can also add months to the publication process. Several studies conducted to analyze publication delays acknowledged the problem of delayed publication process and suggested certain ways to accelerate the timely dissemination of research data[5-9]. The approach of providing "online first" facility by most of the journals nowadays is laudable, where the accepted manuscripts for publication in print versions are made available online immediately on acceptance to achieve faster and greater dissemination of knowledge and information.

Given the context, this study was taken up to analyze the "median time taken from submission of manuscript to first decision" and the availability of "online first" facility among Indian and international medical journals affiliated to subject specific societies.

Material and Methods

This is an observational study. We chose medical journals associated with the societies, and included one authorized journal from each respective subject society. In total, 19 Indian journals and 19 international journals were selected for our study on the basis of following criteria

- Existence and functioning of societies in promoting subject specific biomedical research for more than 25 years.
- Publishing of clinical guidelines that can influence the decision making process of large number of subject experts.

The data regarding "median time taken by the journal from submission to first decision" and the availability of "online first / ahead of print / early view / articles in press" facility appeared on the journals' website during the month of February 2023 was collected. The option of "online first" was further evaluated for the purpose of this study as below:

- *Active* – It means that the said journal is publishing articles on their websites immediately on acceptance.
- *Inactive* – It means that the said journal is providing the facility on their websites, but are not publishing the articles on acceptance.

The number of issues published by the journals in a year was also compared.

Microsoft Office 2007 version 12 (USA) was used to formulate the data and presented in a descriptive manner using numbers.

Results and Discussion

Publication of research work in a timely manner is as important now as always. Table 1 and Table 2 represents "median timelines" mentioned as well as the availability of "online first" facility in the websites of Indian and international journals respectively.

Table 1: Details of services provided by Indian Journals (n=19).

S No	Specialty	Journal Name	Affiliation	Median Time from Submission to First Decision	Online First Service
1	Anatomy	Journal of the Anatomical Society of India	Anatomical Society of India	Not Mentioned	Inactive
2	Anesthesiology	Indian Journal of Anaesthesia	Indian Society of Anaesthesiologists	Not Mentioned	Inactive
3	Biochemistry	Indian Journal of Clinical Biochemistry	Association of Clinical Biochemists of India	20 days	Active
4	Community Medicine	Indian Journal of Community Medicine	Indian Association of Preventive and Social Medicine	Not Mentioned	Active
5	Dermatology	Indian Journal of Dermatology	Asian Academy of Dermatology and Venereology	63 days	Inactive
6	Forensic Medicine	Journal of Indian Academy of Forensic Medicine	Indian Academy of Forensic Medicine	Not Mentioned	Not Available
7	General Medicine	Journal of the Association of Physicians of India	Association of Physicians of India	Not Mentioned	Not Available
8	General Surgery	Indian Journal of Surgery	Association of Surgeons of India	27 days	Active
9	Microbiology	Indian Journal of Microbiology	Association of Microbiologists of India	5 days	Active
10	Obstetrics and Gynecology	The Journal of Obstetrics and Gynecology of India	Federation of Obstetrics and Gynaecological Societies of India	33 days	Active
11	Ophthalmology	Indian Journal of Ophthalmology	All India Ophthalmological Society	Not Mentioned	Inactive
12	Orthopaedics	Indian Journal of Orthopaedics	Indian Orthopaedic Association	27 days	Active
13	Otolaryngology	Indian Journal of Otolaryngology and Head & Neck Surgery	Association of Otolaryngologists of India	38 days	Active
14	Pathology	Indian Journal of Pathology and Microbiology	Indian Association of Pathologists and Microbiologists	49 days	Active
15	Pediatrics	Indian Pediatrics	Indian Academy of Pediatrics	7 days	Active

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16	Pharmacology	Indian Journal of Pharmacology	Indian Pharmacological Society	Not Mentioned	Inactive
17	Physiology	Indian Journal of Physiology and Pharmacology	Association of Physiologists and Pharmacologists of India	Not Mentioned	Inactive
18	Psychiatry	Indian Journal of Psychiatry	Indian Psychiatric Society	90 days	Inactive
19	Radiology	Indian Journal of Radiology and Imaging	Indian Radiological Association	77 days	Active

Table 2: Details of services provided by International Journals (n=19).

S No	Specialty	Journal Name	Affiliation	Median Time from Submission to First Decision	Online First Service
1	Anatomy	Clinical Anatomy	AACA#, BACA#	12 days	Active
2	Anesthesiology	Anesthesiology	American Society of Anesthesiologists	14 days	Active
3	Biochemistry	Clinical Biochemistry	Canadian Society of Clinical Chemists	16 days	Active
4	Community Medicine	Public Health	Royal Society for Public Health	31 days	Active
5	Dermatology	Journal of the American Academy of Dermatology	American Academy of Dermatology	22 days	Active
6	Forensic Medicine	Journal of Forensic and Legal Medicine	Faculty of Forensic and Legal Medicine of the Royal College of Physicians	42 days	Active
7	General Medicine	European Journal of Internal Medicine	European Federation of Internal Medicine	17 days	Active
8	General Surgery	The American Journal of Surgery	SSC#, NPSA#, LSS#, AWS#, MSA#, SBAS#, SSE#	31 days	Active
9	Microbiology	Journal of Clinical Microbiology	American Society for Microbiology	33 days	Active
10	Obstetrics and Gynecology	Obstetrics & Gynecology	American College of Obstetricians and Gynecologists	42 days	Active
11	Ophthalmology	Ophthalmology	American Academy of Ophthalmology	11 days	Active
12	Orthopaedics	Journal of the American Academy of Orthopaedic Surgeons	American Academy of Orthopaedic Surgeons	30 days	Active
13	Otolaryngology	JAMA Otolaryngology–Head & Neck Surgery	American Head and Neck Society	7 days	Active

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14	Pathology	Journal of Clinical Pathology	Association of Clinical Pathologists	20 days	Active
15	Pediatrics	BMJ Paediatrics Open	Royal College of Paediatrics and Child Health	29 days	Active
16	Pharmacology	The Journal of Clinical Pharmacology	American College of Clinical Pharmacology	28 days	Active
17	Physiology	The Journal of Physiology	The Physiological Society	20 days	Active
18	Psychiatry	The American Journal of Psychiatry	American Psychiatric Association	14 days	Active
19	Radiology	Journal of the American College of Radiology	American College of Radiology	22 days	Active

#AACA - American Association of Clinical Anatomists; BACA - British Association of Clinical Anatomists; SSC - The Southwestern Surgical Congress; NPSA - The North Pacific Surgical Association; LSS - Latino Surgical Society; AWS - The Association of Women Surgeons; MSA - Midwest Surgical Association; SBAS - The Society of Black Academic Surgeons; SSE - The Society of Surgical Ergonomics.

Out of 19 Indian journals, 42.1% (n=8) did not mention the timelines from the date of submission of manuscript to first decision. Among the journals that did mention the timelines, Indian Journal of Psychiatry appears to be taking the longest duration to respond (90 days)[10] followed by Indian Journal of Radiology and Imaging (77 days), Indian Journal of Dermatology (63 days), and Indian Journal of Pathology and Microbiology (49 days). The Indian Journal of Microbiology offered the shortest timelines (5 days)[11]. It should be noted that 52.6% (n=10/19) were only providing the service of "online first" facility actively, with 36.8% (n=7/19) journals offering the service inactively and the remaining 10.5% (n=2/19) journals not providing the service completely.

On the other hand, 73.6% (n=14/19) of the international journals were offering timelines to first decision within 30 days from the date of submission of manuscript; with the remaining journals completing the process within 42 days. All the international journals analyzed in this study were actively providing the service of "online first" in their websites. By not providing the timelines or adhering to them, the confidence of authors to send their important research work will certainly decline. Additionally, the service of "online first / ahead of print / early view / articles in press" will enable the healthcare professionals to get to know the research topics of current significance and will also provide an opportunity to further work on the solutions to limitations of conducted studies.

The fastest online publication that we noticed in the recent times was the research article titled "2022 FDA approvals"[12]. The article got published in the journal "Nature Reviews Drug Discovery" on 03.01.2023 with the inclusion of the last New Molecular Entity (NME) approved by the U.S. Food and Drug Administration (USFDA) for the year 2022 on 28.12.2022[13]. The apprehension of the author to convey the important information to the healthcare professionals at large was aptly conceived by the editor as well as the reviewers of the journal resulting in the acceptance and publication of the article in record time.

Figure 1 presents an overview of the number of issues published per year by the Indian and international journals respectively. Most of the international journals (n=15/19, 78.9%) were publishing monthly issues compared to only 26.3% (n=5/19) of Indian journals. International journals such as "Journal of the American Academy of Orthopaedic Surgeons"[14] and "The Journal of

Physiology"[15] were even publishing 24 issues in a year. However, the authors of this study opine that the number of issues published by the journal is not important, provided the journal continuously updates the website with the articles accepted for publication.

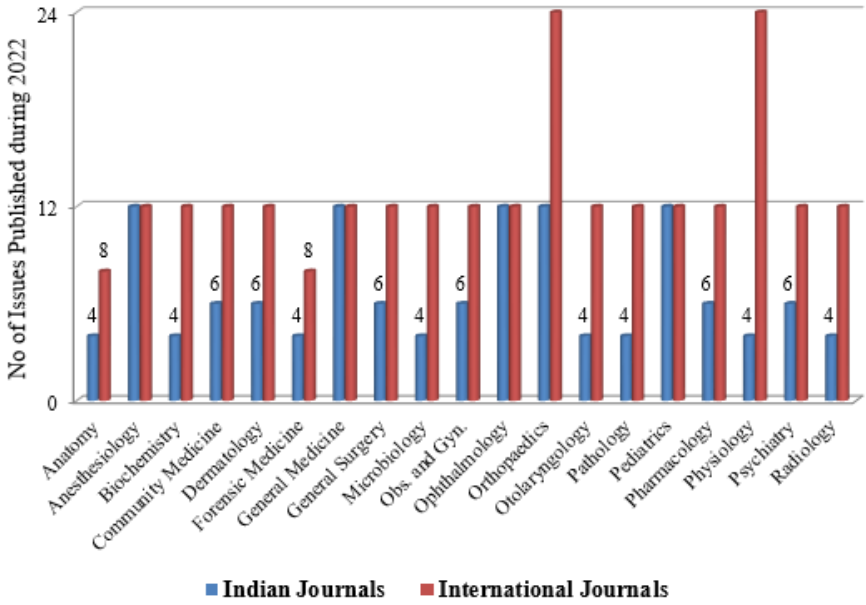

Figure 1: Number of issues published by Indian (n=19) and International Journals (n=19) for the year 2022.

Based on the above observations, the editors of the Indian journals analyzed in this study must segregate the articles for priority publication based on the impact of the information written in the articles rather than anything else. Medical journals must thrive to disseminate the health related information to all the healthcare professionals prior to the other means of communication such as television channels, social media platforms, newspapers, magazine articles, radio, and mobile messages. This can be achieved by recruiting a large number of qualified reviewers and skilled technical personnel. They must be provided with time bound assignments. Medical journals should even follow a fair and time bound article rejection criteria in case of revised articles not being received for the comments sent. This will also provide space for the eligible articles to get published in the journals as soon as possible. Some of the journals published by subject specific societies of India do not accept Article Processing Charges (APCs) for publication of accepted manuscripts[10,16-21]. However, providing this facility should not override the ethics of publishing the impactful healthcare research article at the earliest.

Reputed indexing agencies such as PubMed[22], Scopus[23], Embase[24], Science Citation Index Expanded[25], Directory of Open Access Journals[26] etc must re-write their criteria for including a medical journal not on the basis of number of published years or the number of peer-reviewed articles, but should be on the basis of timely dissemination of research data. Additionally the indexing bodies must re-evaluate their decision at regular intervals by overlooking the adherence of the permitted journals to mentioned timelines and other services on their websites. The concern that faster publication processes decrease publication quality remains to be verified, as some of the research articles published following lengthy peer-review processes were even retracted from the reputed journals after finding serious flaws[27]. Thus, to summarize, the focus of any journal or indexing body should be on the quality of research and its timely dissemination for the benefit of medical fraternity as well as policy makers of a country.

Conclusion

This study compared the Indian journals published by subject specific societies with the international counterparts about the services provided such as

"median time taken by the journal from submission to first decision" and the availability of "online first" facility in their websites. Analysis of the study data indicates that for most of the society journals in India, quick decision making on the eligibility of a research work to accept and publish appears to be a daunting task. With the rapid pace of advancements in healthcare management and services, Indian journals must thrive hard to accelerate the editorial process in a time bound manner and disseminate the results of impactful research work at the earliest. Delay in decisions and publications by the journals can hamper the confidence and trust among research community to send good scientific work, apart from having adverse consequences for the practice of evidence based medicine.

Limitations

1. This study only analyzed the journals affiliated to the subject specific societies, which implies that the journals published by non society members were not considered even though the journals might be providing accelerated publication services promptly.
2. The analysis only considered the median timelines mentioned in the journal websites without verifying actual time taken by individual articles published in the respective journals.
3. Finally, the applicability of median timelines offered by the journals to all types of articles including letters to the editor, original research, systematic reviews, case series, or short communications could not be ascertained.

Conflicts of interest: Nil.

Author's Funding: Nil.

Ethical approval: Not required as we used only publicly available data and did not include any human subjects or patient health data.

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Original Research Article

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Perception and Practices Related to Breast Milk Donation and Acceptance among Donor and Recipient's Mothers of a Breast Milk Bank at a Tertiary Care Hospital in South India

Rajesh Jayanandan[1], Ramya Rajamanickam[2], Rohith Kumaran[3], Santhiya Saravanasundaram[4], Priyadharshini Dhanasekaran[5], Shajene Sathiyamoorthi[6], Reena G Rajan[7]

[1]Associate Professor, Department of Community Medicine, Government Ramanathapuram Medical College, Ramanathapuram. [2]Assistant Professor, Department of Paediatrics, ESIC Medical College & Hospital, KK Nagar, Chennai. [3-7]Resident, Department of Community Medicine, GMC, OGE, Chennai.

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Abstract

Background: Human Milk Banks (HMB) ensure the availability of pasteurized donor breast milk for small for gestational age babies, low birth weight infants, sick new born and infants of mothers with failed lactation.

Objectives: To assess the perception, practices and associated factors of breast milk donation and acceptance among donor and recipient's mothers registered with the breast milk bank.

Methodology: This hospital based cross-sectional study was conducted between July to September 2019 among 70 donors and 70 beneficiaries who were mothers of children under 6 months of age, registered at the breast milk bank at a tertiary care hospital in Chennai. Data was collected by interview of the mothers with a predesigned semi-structured questionnaire.

Results: Only 74% of them were aware of breast milk bank services. Almost 47 (67.1%) had received more than twice from breast milk bank. Proportion of recipient's mothers who had complications during their delivery and proportion of children who were treated in NICU were significantly higher among the recipients ($p < 0.001$).

Conclusion: Awareness on breast milk bank services is required especially among the mothers of premature babies, low birthweight neonates, and newborn receiving treatment in NICU.

Keywords: Pasteurized Donor Human Milk, breastmilk bank, lactation, low birthweight, pre-term neonates.

Introduction

Breastfeeding is the most effective intervention which could prevent 0.16 million under-5 deaths in India.[1] A child who is breastfed has higher chances of survival than a child who is not breastfed. In preterm neonates breast feeding improves intelligence and cognitive development and protects against necrotising enterocolitis.[2-4] WHO recommends Donor Human milk especially in low birth weight infants, as it ensures exclusive breast feeding in situations where mothers own milk is unavailable.[5] Donor human milk (DHM) gives a higher protection than formula milk.[6] Preterm neonates who were fed with unfortified

Corresponding Author: Rajesh Jayanandan, Associate Professor, Department of Community Medicine, Government Ramanathapuram Medical College, Ramanathapuram, Tamilnadu.

E-mail: rajeshjmails@gmail.com

DHM had fewer episodes of vomiting, more feeding tolerance and less gastric stasis, compared with infants who were formula fed.[7] A human breast milk bank is a service established for collecting, screening, processing, storing, and distributing pasteurized human breast milk. It provides solution to mothers who cannot breastfeed their child.[8]

The ''National Guidelines on Lactation Management Centers in Public Health Facilities'' introduced by the Indian government in 2017 is aimed at making breast milk available to all babies.[9] Thus, relying on donor breast milk is the best alternative for the healthy survival of infants as it is safe, screened and processed. Various factors could influence the mother's willingness for donation of breast milk and receiving donor breast milk by the recipient mothers. With this background the present study was conducted with the following objectives:

1. To assess the perception and practices related to breast milk donation and acceptance among donor and recipient's mothers registered with the breast milk bank at a tertiary care hospital in Chennai.
2. To evaluate the factors associated with breast milk donation and acceptance among them.

Material and Methods

This hospital based cross-sectional study was conducted between July to September 2019 among postnatal mothers of children under 6 months of age, registered as donors and recipients of the breast milk bank at a tertiary care hospital in Chennai. According to the Melwani V et al[10] study, the willingness to donate breast milk by mothers was 84.9% and willingness to accept was 85.4%. At 95% Confidence level and 5 % level of significance (α) with 6% absolute precision (d) and assuming a non-response rate of 5%, the sample size (n) required was calculated as $n = Z^2_{1-\alpha/2} [p^* (1-p)] \div d^2$. Hence 140 mothers i.e, 70 donor mothers and 70 recipient mothers were selected as study participants. Mothers of children under 6 months of age who were registered as either donor or recipient of human breast milk of the hospital were included on obtaining informed consent.

The study subjects selected by simple random sampling were interviewed with a predesigned semi-structured questionnaire. Data was analysed using SPSS version 28.0 with descriptive statistics like proportion, mean, median, standard deviation, range, and inferential statistics like chi-square test and fisher's exact test. At 95% confidence interval and 5% level of significance a P value of ≤ 0.05 was considered as statistically significant.

Results

Table 1 shows the donor mothers were aged between 18 - 36 years with a mean (SD) age of 25.6 (3.9) years. The recipient's mothers were aged between 15 - 35 years with a mean (SD) age of 25.9 (4.5) years. Table-3 shows, that the proportion of recipient's mothers who had complications during their delivery and the proportion of children who were treated in NICU were significantly were higher among the recipients. (P < 0.001).

Table-1: Descriptive statistics of donors and recipients of breast milk bank

Descriptive statistics	Donor mothers (n = 70)	Recipient's mothers (n = 70)
Mean age at menarche:	13.53 (1.39) years	13.60 (1.53) years
Range	11 – 19 years	11 – 21 years
Menstrual Cycles:		
Regular	64 (91.4)	59 (84.3)
Irregular	6 (8.6)	11 (15.7)
Mean (SD) age at marriage	22.64 (3.96) years	22.33 (3.70) years
Range	15 – 35 years	15 - 31 years
Mean (SD) age at birth of this child	25.51 (4.07) years	25.76 (4.37) years
Range	18 – 36 years	15 – 35 years
Median (IQR) age of the last child	7 (5 - 10) days	5 (3 - 7) days
Range	2 - 32 days	1 – 25 days
Mean (SD) birth weight of the last child	2.64 (0.56) kg	2.60 (0.69) kg
Range	1.25 - 3.75 kg	1.18 – 3.80 kg

Table-2: Distribution of characteristics of donor's and recipient infants

Characteristic of the infant	Donor's infants (n =70)	Recipient infants (n =70)
Age of the child:		
Upto 1 week	40 (57.1)	55 (78.6)
1 week to 1 month	29 (41.4)	15 (21.4)
More than 1 month	1 (1.4)	0
Sex of the child:		
Male	40 (57.1)	30 (42.9)
Female	30 (42.9)	40 (57.1)
Birth order of the child:		
First	44 (62.9)	42 (60.0)
Second	22 (31.4)	24 (34.3)
Third	3 (4.3)	4 (5.7)
Above three	1(1.4)	0
Birth weight of the child:		
Very Low Birth weight (< 1.500 kg)	3 (4.3)	8 (11.4)
Low Birth weight (1.500-2.499 kg)	24 (34.3)	21(30.0)
Normal Birth weight (≥ 2.500 kg)	43 (61.4)	41 (58.6)

(Figures in parentheses denotes percentages)

Table-3: Distribution based on factors associated with delivery of the child

Factors associated with delivery of the child	Donor mothers (n = 70)	Recipient's mothers (n = 70)	P value
Mode of delivery of the child:			
Vaginal delivery	40 (57.1)	35 (50.0)	0.403
LSCS	30 (42.9)	35 (50.0)	
Type of delivery of the child:			
Pre-term delivery	11 (15.7)	19 (27.1)	0.105
Term delivery	59 (84.3)	51 (72.9)	
Locality of Delivery:			
Husband's locality	64 (91.4)	43 (61.4)	**< 0.001***
Mother's locality	6 (8.6)	27 (38.6)	
Delivered at:			
Government Facility	69 (98.6)	70 (100.0)	0.999
Private Facility	1(1.4)	0	
Complications occurred during delivery	5 (7.1)	23 (32.9)	< 0.001*
Mother was kept in ICU after delivery	13 (18.6)	19 (27.1)	0.227
Child was kept in ICU after delivery	47 (67.1)	65 (92.9)	< 0.001*

(Figures in parentheses denotes percentages, * - chi-square test)

Perceptions of breast milk donor and recipient's mothers

All the 70 (100.0%) mothers had perceived that, incentive for donating milk was not required. Majority 67 (95.7%) of the donor mothers said spousal consent to donate breast milk was not required. Among

the 61 donor mothers who accepted for donor breast milk in future, mostly 58 (95.0%) of them preferred for any healthy donor rather than a specified known donor.

Majority 69 (98.6 %) of recipient's mothers felt incentive for donating milk was not required. Almost 62 (88.6 %) of them said spousal consent to accept donor breast milk for the child was not required. Among the 66 recipient's mothers who accepted for donor breast milk in future, mostly 64 (97.0%) of them preferred for any healthy donor from breast milk bank rather than a specified known donor.

Table-4: Perceptions related to Breast milk donation and reception

Perceptions of mothers	Response	Donor mothers (n = 70)	Recipient's mothers (n = 70)
Awareness on breast milk banks	Present	70 (100.0)	52 (74.3)
Source of information on Breast milk bank	peer-group	1(1.4)	17 (24.3)
	doctors	3 (4.3)	10 (14.3)
	staff nurses	66 (94.3)	43 (61.4)
Donor breast milk is pasteurised	Yes	48 (68.6)	52 (74.3)
Donor breast milk is safe for children	Yes	70 (100.0)	68 (97.1)
Donor breast milk contains more nutrients than formula milk	Yes	70 (100.0)	67 (95.7)
Donor breast milk may transmit diseases from donor to the recipient baby	Yes	66 (94.3)	68 (97.1)
Donor breast milk reduces infections in the baby	No	69 (98.6)	68 (97.1)
Donor breast milk can increase the risk of allergy in the baby	No	70 (100.0)	67 (95.7)
Donor breast milk is completely screened for diseases	Yes	69 (98.6)	70 (100.0)
Donating mother gets side effects after breast milk donation	No	68 (97.1)	69 (98.6)
Best alternative for mother's milk	Donor milk	63 (90.0)	60 (85.7)
	Cow's milk	7 (10.0)	10 (14.3)
Donating breast milk will cause shortage of breast milk for the donor's child	No	68 (97.1)	61 (87.1)
Willingness to donate breast milk in future	Yes	69 (98.6)	67 (95.7)
In future would prefer to donate breast milk to	A known child	0	0
	An unknown	0	2 (2.9)
	child Any child in need	70 (100.0)	68 (97.1)

Figures in parentheses denotes percentages)

Practice of breast milk donation and reception from breast milk bank

Median (IQR) quantity of milk donated was 50 (25-75) ml with a range of 5 - 150 ml. Frequency of donation of breast milk was once by 30 (42.9%), twice by 23 (32.9%), thrice by 8 (11.4%), four times by 4 (5.7%) and five times by 5 (7.1%) of them. Majority 68 (97.1%) of the mothers had donated during their hospital stay in the post-natal period while only 2 (2.9%) of them had donated following a visit to Hospital for a review. None of the study subjects reported any side effects or milk insufficiency after breast milk donation.

Median (IQR) quantity of donated breast milk received for the child was 40 (30-50) ml with a range of 15 - 100 ml. Frequency of receiving donated breast milk for the child from breast milk bank was more than twice by 47 (67.1%), twice by 5 (7.1%) and atleast once by 18 (25.7%) of them. Majority 64 (91.4%) of the mothers had received donor breast milk for their child during the child's treatment period in Intensive Care Unit at the Hospital as indicated by the doctors as the best alternative for mother's milk during breast milk insufficiency while only 6 (8.6%) of them had received the donor breast milk following breast milk insufficiency during their stay in postnatal inpatient ward at Hospital. Most of the recipient's mothers 69 (98.6%) felt that the child's health status improved following consumption of donor breast milk and did not report any side effects.

Discussion

Age at child birth and parity of mothers are important factors influencing the breast milk donation and acceptance. Katke RD et al had reported that women in extremes of reproductive age group and increased parity had a decreased breast milk donation rate. Similarly, we observed that Mean (SD) age at birth of the child among the donors was 25.51 (4.07) years and almost 63% of them were primiparous.[11]Lack of awareness on breastmilk donation and advantages of PDHM among mothers is a major point of concern. In contrast to Melwani V et al study where only 10% of the mothers were aware of existence of breast milk bank in our study it was around 74%. The willingness to accept and willingness to donate breast milk in near future was 85.4% and 84.9 % respectively as per Melwani V et study which was comparable to our study results which was 94.3% and 95.7% respectively.[10] Table-4 shows, in our study only 2.9 % of mothers feared of transmission of infection through donor milk, which contrasted with Mantri et al study who reported 23.3% of mothers with fear of using donor human milk.[12]

Compared to formula milk, PDHM reduces the risk of sepsis, necrotizing enterocolitis, diarrhoea and feeding intolerance, and the length of stay in NICU.[13,14] In Melwani V et al study 55.4% of the mothers felt other animal's milk like cow or buffalo milk as best alternative for mother's milk to child and only 35% felt donor breast milk as a best alternative. In contrast in our study, we found 90% of donor mothers and 85.7% of recipient's mothers felt donated breast milk as best alternative to mother's milk compared to animal's milk.[10]

In our study we found majority 78.6% of the recipients of PDHM were neonates aged upto one week after birth and almost 92.9% of the recipients had history of treatment in neonatal intensive care unit. In similar to this Pal A et al study had reported that almost 81% of the mothers with children in NICU were more likely than mothers of well babies to accept milk from a milk bank rather than a relative or friend.[15] Sachdeva RC et al study had reported that among the recipients of DHM, 30% to 50% of them were neonates under treatment in Intensive Care Unit and 10% to 20% of the babies were in Postnatal care ward after birth.[16] In the present study we observed that 91.4% of the beneficiaries were neonates under Intensive care treatment and 8.6% were in post-natal wards. As per Nangia S et al study, reported that around 53.3% had given birth to a premature infant and 63% of the donors were from the postnatal care wards.[17] In contrast in our study, we found that 15.7 % of donor mothers had delivered pre-term babies while 38.6 % of them had low and very low birth weight babies.

Conclusion

Awareness on breast milk bank services is required especially among the mothers of vulnerable children like, those who are born with low birthweight, premature babies and neonates receiving treatment

in NICU. PDHM would also fulfill the nutritional needs of newborns whose mothers are on treatment for complications during delivery or has lactation failure, as it is a safe alternative to cow's milk and formula feed. PDHM would ensure early initiation and adherence to exclusive breastfeeding practices especially to the vulnerable infants. This would in turn translate into better nutritional status and lower infections among them.

Ethical approval: Institutional Ethics Committee (IEC) approval was obtained from our institution prior to the data collection (IEC letter no.: 16/2019/IEC/GMC, OGE. dated:15/07/2019).

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Original Research Article

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Examining the Artificial Sweeteners in Commonly Consumed Beverages, Chewing Gums, Chocolates, and Mouthwashes using HPLC and TLC Methodology

Rakesh Naik[1], Soumya Ranjan Pradhan[2], Prasanthi Prabhakaran Sobhana[3], Devindra Shakappa[4]

[1,3]Technical Officer, [2]Ph.D. Scholar, [4]Scientist, Department of Dietetics, ICMR-National Institute of Nutrition, Hyderabad.

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Abstract

Background: Artificial sweeteners (AS) are synthetic compounds extensively used in food and beverages industries due to its techno-functional role as alternatives to table sugar. Many studies report the adverse health effect on use of such compounds beyond its permitted limit. Hence, the aim of present study is to analyzed the AS contents in selected commonly consumed beverages and food products.

Methods: High-Performance Liquid Chromatography and Thin Layer Chromatography methodology was used to carry out the analysis.

Results: Concentration of Ace-K ranged from 7 to 14 mg/100 ml, sucralose from 83 to 93 mg/100 ml, and aspartame 11mg/100ml in beverages. In mouthwashes, saccharin ranged from 102 to 140 mg/100g. Among chocolates, saccharine was observed from 9 to 13 mg/100g. Chewing gums contained 9 to 193 mg/100 g of aspartame, 118mg/100g of Ace-K, and 82 to 155 mg/100g of sucralose.

Conclusion: The data could help in public awareness as well as regulatory bodies in monitoring the levels of AS found in food products and beverages with officially permitted limits.

Keywords: Artificial sweeteners, HPLC, TLC, food products, beverages

Introduction

Artificial sweeteners (AS) are synthesized carbohydrate or protein derivatives, which are 200-1300 folds, sweeter than sugars, and used as a sweetening agent in the food and dairy industries. Most of these sweeteners are excreted from the body without metabolization (sucralose and acesulfame potassium), however, some of it is metabolized to respective amino acids as in the case of Aspartame.[1] There is a strong correlation between the usage of sugars in the form of carbonated beverages and various metabolic dyshomeostasis like an increase in blood glucose insulin and triglyceride levels[2] with augmented inflammatory mediators and

Corresponding Author: Devindra Shakappa, Scientist, Department of Dietetics, ICMR-National Institute of Nutrition, Hyderabad.

Mobile: +91-40-27197265

E-mail: dr_devindra@rediffmail.com

oxygen radicals[3] which increases the risk of diabetes, cardiovascular disease, and other chronic illnesses in humans.[4] India has about 65 million diabetic patients which are predicted to reach around 100 million by 2030, and about 77 million pre-diabetic adults, and children in the age group of 13-14 suffering from diabetes which is mainly due to changes in lifestyle, food choices and of physical activity leading to overweight as well as obesity.[5] Indian diet is a rich source of carbohydrates and free sugars and has become the capital of diabetes in the world and is also leading in obesity and heart diseases, where increase in awareness about free sugars and their risk assessment in the development of metabolic syndrome, has brought about a drastic shift towards the consumption of AS.[6] Of late, AS are extensively used in the preparation of sugar-free bakery products, which can be consumed by diabetic patients.[1] The use of these AS at prescribed levels has been approved by various regulatory bodies like FDA/FAO-WHO, European food safety authorities, and EU, Canadian food inspection agency, Food Standards of Australia, and New Zealand (FSAN) and FSSAI (Food Safety and Standards Authority of India).

According to FDA, aspartame, sucralose, neotame, acesulfame potassium (Ace-K), saccharin, as well as advantame are major highly intense sugar substitutes approved for use as AS in the USA.[7] FDA guides manufacturers and consumers about the daily limits of consuming these highly intense sweeteners measured in Acceptable Daily Intake (ADI) expressed as mg/kg body weight/day (milligrams per kilograms of body weight per day). ADI for sucralose as per USFDA is 5mg/kg body weight/day USFDA.[8] For aspartame it is 50mg/kg body weight/day, Ace-K and saccharin is 15mg/kg body weight/day. According to JECFA (2004),[9] ADI for neotame is 2mg/kg body weight/day, where as in US the ADI is 18mg/person/day.[10] According to the Europe food commission, 8 AS are permitted as tabletop sugars or food additives, which include neotame, cyclamate, steviol glycosides, aspartame-acesulfame salt along with sucralose, neotame, Ace-K, saccharin, and advantame.[10] They have also reported that AS are permitted to be used in a wide range of foods and beverages in the UK and labeled as 'sugar-free' or 'diet, however, is restricted in Infant foods.

Although AS are found to be safe at the level of recommended daily intake from scientific studies, however, few studies exhibited incidences of cancer and psychological impairments in patients who consumed artificial sweeteners for a longer duration.[11] Further, a recent study published in Nature, demonstrated that artificial sweeteners are found to induce glucose intolerance in animal models which also exhibited an alteration in the gut microflora of the exposed animals at doses close to the recommended levels.[10] Therefore, ADI levels for consumption of artificial sweeteners are to be strictly fixed and proper labeling on food products is recommended for helping consumers to maintain ADI levels. Although artificial sweeteners are found to be promising in weight and diabetic management, there is a modest alarm concerning the health status of consumers.[11]

The consumption of AS is gradually increasing in India due to the availability of sugar-free products and tabletop low-calorie sweeteners which are known to regulate the patient's glycemic levels to achieve diabetic management. Amid reports by FDA as well as industry-funded investigations favor on the safety of food-additives, the lack of evidential research is still the matter of concern to draw a conclusion on their application. However, many studies depicted the adverse effect of artificial sweeteners on gut health and neurological imbalances at doses slightly higher than recommended levels in animal and human studies. Therefore, the primary focus is to quantify the levels of high intense sugars such AS present in various food products and beverages available in the local market as a public health concern.

Materials and Methods

Different branded varieties of products such as Mouthwashes, Beverages, Chocolates, and Chewing gums were obtained from local market of twin-city of Hyderabad-Secunderabad, Telangana State, India. Standard AS such as Aspartame, Saccharine, Ace-K, Neotame, and sucralose were procured from Sigma- Aldrich. All other chemicals were of analytical grade. The LC C18 column was procured from Supelco (25cmx4.6mm,5µm), and Thin Layer Chromatography (TLC) plates from Merck (TLC-Silica-gel 60G-F254 Glass Plates). The analysis of AS

such as aspartame, saccharine, Ace-K, and neotame was carried out by using High-Performance Liquid Chromatography (HPLC) (Dionex Ultimate 3000 U-HPLC), and sucralose by TLC.

Sample preparation:

For the estimation of sucralose in beverage samples, they were prepared by concentrating 10 times by heating in a water bath for 30min at 80°C. For chewing gums, about 5 g of the sample was extracted using a water and methanol mixture in a 9:1 ratio. For the estimation of aspartame, saccharine, Ace-K, and neotame, beverage samples were prepared by mixing them with water in the ratio of 1:1 and 20 µl of each sample were injected in HPLC. For chewing gums, about 5 g of sample was extracted using water-methanol (1:1 ratio). For sucralose, about 6µl of the sample was loaded on a TLC plate.

Preparation of Standards:

The stock solution of individual standard such as aspartame, saccharine, Ace-K, and neotame was prepared by dissolving (5 mg) in 10ml of water. From the stock solution, 100µl was taken and diluted with 100µl of Milli-Q water (0.25µg/µl). Standard sucralose was prepared by dissolving 0.1g in 1ml of methanol.

Preparation of Mobile Phase:

For the estimation of sucralose, the mobile phase is prepared by mixing 7 volumes of 5% w/v aqueous solution of sodium chloride and 3 volumes of acetonitrile. For aspartame, the mobile phase was of 75%water, 20% methanol, and 5% acetone. For Ace-K, and saccharine, 70% of 0.02 mol/L ammonium acetate solution and 30% methanol was used and the pH was maintained at 6 using glacial acetic-acid to prepare the mobile phase. For neotame, a mixture of 30% acetonitrile, 70% distilled water, and 0.34% phosphoric acid mobile phase was used.

HPLC Operating Conditions:

HPLC analysis of AS was carried out by the procedure described by de Queiroz Pane et al.[12] The chromatographic system consisted of a Dionex HPLC-DAD system chromatograph equipped with Chromeleon software and an integrator stainless steel Supelco C-18 column (25 cm 4.6 mm, 5µm particle size) as described by Yan et al.[13] Flow rate was set at 1 ml/min with an injection volume of 20µl. The detection wavelength for aspartame was 208nm for 10 min run time, neotame 210 nm for 16 min run time, and Ace-K and saccharine 229 nm for 3 min run time, respectively. The HPLC was calibrated daily by injecting 20 µl of standard solutions of individual AS, the concentration of each AS was 2.5 mg/ml and 0.5 mg/ml for sucralose.

Estimation of sucralose by TLC:

Sucralose was estimated by following the method of the 41st Joint FAO/WHO Expert Committee on Food Additives[9] by the TLC method with slight modification. The commercially available TLC plates (TLC Silica gel 60G F254 Glass Plates) were used for the analysis of sucralose. 5 µl of standard and test solution was applied in triplicate spots to the bottom of the chromatographic plate and dried with a hair dryer. The plate was placed in chromatography chamber containing freshly prepared mobile phase where solvent-front was allowed to mount 15 cm. Then plate was made dried after removing from chamber, after which one spot was sprayed with spraying reagent of 15% v/v solution of conc. sulfuric acid in methanol. The plate was then kept in an oven at 125^{0}C for 10 min for the color to develop and thereby locate the sucralose. For quantitative estimation, the area (2x3 cm) corresponding to sucralose was scraped and soaked in 3mL of distilled water for 12h. After 12h, the mixture was filtered through Whatman No. 1 filter paper, and the sucralose in 1ml of the filtrate was estimated using the modified anthrone method.[14]

Statistical analysis:

All experimental analysis was repeated 3 times. The results were presented as mean from three replications with standard deviation (SD). The meanvalues were tested for existence of difference by using student's t test.

Results

The HPLC-DAD chromatogram for AS is represented in figure 1, where A and B represents the peak of standard Ace-Kand its presence in Pepsi sample that was eluted at a retention time of 2.8 minutes on a maximum wavelength of 229 nm. C and D show the peak of standard aspartame and

its presence in Coke with elution at 9th minutes, at a wavelength of 208nm. E and F represents the standard saccharine and its presencein Close-up mouthwash that was eluted at a retention time of 3.5 minutes, at a wavelength of 229 nm. Similarly, G shows the chromatogram of standard Neotame eluted at a retention time of 9 minutes at a maximum wavelength of 210 nm.

The artificial sweetener content of beverages are summarized in Table 1. From the table, it is evident that the Ace-K was found to be the most commonly present AS in many of the beverages analyzed, where, highest amount was found in coke followed by Pepsi diet, Pepsi black, Red Bull and monster (plain) respectively, however coke was the only beverage containing aspartame. Sucralose content was highest in Red Bull followed by Monster (combo). None of the beverages were detected with Neotame and saccharine.

The AS in mouthwashes such as Close up and Listerine are given in Table 2.Among the AS analyzed, saccharine was found in both the mouthwashes and the highest content in Close up followed by in Listerine respectively.

The AS contents in chocolates are summarized in Table 3. Among the AS analyzed only saccharine was found in chocolates. The highest saccharine content observed in Five-star followed by in Cadbury chocolates, respectively.

The AS contents of Chewing gums are given in Table 4.Most are showed the presence of Aspartame and sucralose and the one chewing gum with Ace-K. Among the chewing gums, aspartame was found highest in mint and lowest in orbit 2, sucralose was highest in center fresh-2 and lowest in Smint, Ace-K was present in Orbit-1 respectively. Neotame was not detected in any of the food products tested.

Table 1 Artificial sweeteners content in Beverages (mg/100ml) [a]

Sample name	Aspartame	Saccharine	Acesulfame Potassium (Ac k)	Sucralose	Neotame
Coke	11± 0.0	ND	14± 0.01	ND	ND
Red Bull	ND	ND	8 ± 0.01	93± 0.00	ND
Monster (combo)	ND	ND	ND	83± 0.00	ND
Monster (plain)	ND	ND	7± 0.00	ND	ND
Pepsi Diet	ND	ND	11 ± 0.00	ND	ND
Pepsi Black	ND	ND	10 ± 0.00	ND	ND
Mirinda	ND	ND	ND	ND	ND
Mountain Dew	ND	ND	ND	ND	ND
Pepsi	ND	ND	ND	ND	ND

[a] Values are expressed as Mean ± SD of triplicates values

ND: Not Detected

Table 2 Artificial sweeteners content in Mouthwashes (mg/100ml) [a]

Sample name	Aspartame	Saccharine	Acesulfame Potassium	Sucralose	Neotame
Close up	ND	140± 0.02	ND	ND	ND
Listerine	ND	102± 0.01	ND	ND	ND

[a]Values are expressed as Mean ± SD of triplicates values

ND: Not Detected

Table 3 Artificial sweetener content in Chocolates (mg/100g) [a]

Sample name	Aspartame	Saccharine	Acesulfame Potassium	Sucralose	Neotame
Dark chocolate	ND	ND	ND	ND	ND
Five star	ND	13± 0.00	ND	ND	ND
Cadbury	ND	9± 0.00	ND	ND	ND
Kopiko	ND	ND	ND	ND	ND
Amul chocomini	ND	ND	ND	ND	ND
Imlitoffee	ND	ND	ND	ND	ND

[a]Values are expressed as Mean ± SD of triplicates values

ND: Not Detected

Table 4 Artificial sweetener content in Chewing gums (mg/100g) [a]

Sample name	Aspartame	Saccharine	Acesulfame Potassium	Sucralose	Neotame
Happy dent (sugar free)	121 ± 0.01	ND	ND	ND	ND
Mentos	131 ± 0.01	ND	ND	ND	ND
Mint	193 ± 0.00	ND	ND	ND	ND
Center fresh 2	9± 0.00	ND	ND	ND	ND
Orbit 2	9 ± 0.00	ND	ND	ND	ND
Orbit 1	ND	ND	118 ± 0.01	ND	ND
Center fresh 1	ND	ND	ND	155± 0.00	ND
Smint	ND	ND	ND	82± 0.00	ND
Double mint	ND	ND	ND	143 ± 0.00	ND

Discussion

James and Claudette, [15] have reported the use of liquid chromatography (LC) as one of the preferred methods for determining AS. Though there are other methods available to determine individual AS, less numbers of study suggests the analysis of multiple AS at a time. Spangenberg et al, [16] have described TLC-method for the determining Sucralose in different food-matrices, which rarely needs the isolation or concentration as sample preparation. Zygler et al, [17] have reported that the sample-preparation is the important step involved in nay analytical-process because of its variance in terms of components present in the sample that can obstruct in analyzing sweeteners. Therefore, the method must be customized with care for determining the determinants, contemplating the instrumental reliability. de Queiroz Pane et al, [12] reported that a combination of AS is used in most food samples, containing up to three compositional determinants. Among soft drinks, aspartame was the most used sweetener, followed by Ace-K. Kubica et al, [18] reported eight simultaneous determination of AS such as Ace-K, saccharine, cyclamate, aspartame, sucralose, alitame, neohesperidin dihydrochalcone, neotame, and five common steviol glycosides in soft and alcoholic beverages using HPLC with tandem mass spectrometry with electrospray ionization (HPLC-ESI-MS/MS). James and Claudette, [15] have analyzed seven artificial sweeteners such as aspartame, saccharin, cyclamate, alitame, Ace-K, sucralose, and dulcin in diets, soft drinks, and table top sweetener preparations by using reverse-phase LC with absorbance Detection. Carloni, [19] has estimated the saccharine from commercial AS using a potentiometric method and suggested the reliability and advantage of the method than existing methodology for analyzing commercial AS. Yan et

al, [13] have demonstrated the simultaneous analysis of Ace-K, sodium saccharin, sodium benzoate, and potassium sorbate in ham sausage samples using HPLC-DAD method and concluded that this method is appropriate for monitoring the quality-assurance.

Conclusion

Since level above officially permitted limit might adversely affect the health status, it is high time for consumers to aware of what and how much they are ingesting the AS from markedly available food products and beverages, hence it is pertinent for regulatory body to periodically evaluate the inspection of testing reports of commonly consumed food products and beverages.

Ethical clearance: Not Applicable

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Conflict of Interest: Nil

Abbreviations:

AS: Artificial sweeteners

SD: standard deviation

HPLC: High-Performance Liquid Chromatography

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Cytohistological Evaluation of Chest wall Nodules: A Series of Rare Entities from a Tertiary Care Centre

Sajeeb Mondal[1], Bidisha Chakraborty[2], Madhumita Paul[3], Rajashree Pradhan[4]

[1]Associate Professsor, Department of Pathology, Rampurhat Government Medical College & Hospital, [2]Senior resident, Department of Pathology, College of Medicine & SagoreDutta Hospital, [3]Senior Resident (Demonstrator), Department of Pathology, College of Medicine & SagoreDutta Hospital, [4]Associate Professor, Department of Pathology, College of Medicine &SagoreDutta Hospital.

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Abstract

Chest wall is a complex system which provides rigid protection to the vital organs. Many pathologic processes such as congenital and developmental anomalies, inflammatory and neoplastic lesions involve the chest wall. Due to the wide spectrum of disease involvement it is quite challenging for the clinicians as well as pathologists for an accurate diagnosis of these lesions. In many of these cases, FNAC (Fine needle aspiration cytology) is not sufficient for exact categorization of these lesions for which histopathological evaluation along with special stains and IHC (Immunohistochemistry) plays important role. In the literatures, very few studies of cytohistological evaluation of chest wall nodules are described. In this case series, we described cytohistological evaluation of four rare entities of chest wall. We reported epithelioidhemangioendothelioma, Askin's tumor, Pilomatricoma and Inflammatory pseudotumor one case each.

Key words: chest wall nodule, FNAC, Histopathology

Introduction

Chest wall is a complex system which comprises of muscles, bones, joints and soft tissues situated between the neck and the abdomen.[1] Chest wall harbors many pathologic entities such as congenital and developmental anomalies, inflammatory and infectious diseases, benign tumors, malignant tumors (epithelial/mesenchymal) or metastatic deposits.[1] Various diagnostic modalities to evaluate chest wall lesions include X-ray, CT, MRI, FNAC and biopsy. Since the various lesions of chest wall especially neoplastic lesions (nodules) differ in size, shape, rate of growth and histomorphology, the diagnosis of these entities are quite challenging for clinicians and pathologists many times.[7] In many of the cases, cytological study alone is inadequate for a definitive diagnosis. For proper management of the patients, histopathological study is required. Only few studies on chest wall lesions are described in the literature.[4,6] Scattered case reports of tuberculosis of chest wall,[5] tuberculosis of ribs[9] and sternum[18], chondrosarcoma of chest wall[3] and desmoid tumors are available in literature.[8]

Corresponding Author: Rajashree Pradhan, Associate Professor, Department of Pathology, College of Medicine &SagoreDutta Hospital.

Mobile: 7980217205

E-mail: pradhanrajashree99@gmail.com

In this study, we have elaborately described uncommon cytological features of chest wall nodules and correlate with the histopathological diagnosis of the same.

Materials and Methods

The study was conducted in the Department of Pathology, College of Medicine and Sagore Dutta Hospital, Kolkata, West Bengal. In this case series, patients presented with nodules in the chest wall underwent FNAC followed by lumpectomy, core needle biopsy/ incisional biopsy for histopathological study and a final diagnosis was made.

Case presentation (findings):

We presented a series of cases of rare entities presenting as chest nodules.

Case-1:

76 yrs old male presented with subcutaneous nodule on posterior chest wall measuring 1.5 cm in maximum dimension. FNAC smears show high cellularity, predominantly round cells with large, hyperchromatic nuclei with occasional acini. Provisional diagnosis was given as malignant adnexal tumor and differential diagnosis was given as metastatic deposit. Excisional biopsy showed presence of tumor tissue comprising of small to medium sized distinct vascular channels lined by epithelioid endothelial cells and the diagnosis was given as EpithelioidHemangioendothelioma**.(Fig -1)**

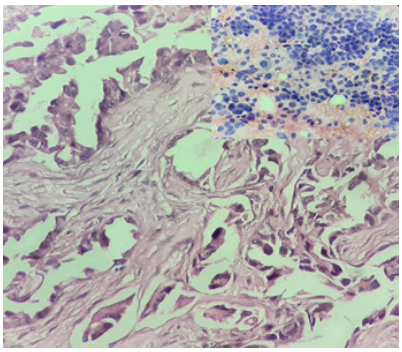

Fig 1: Cytological (Leishman stain, 100X) [Inset] & histopathological(H&E, 400X) findings of Epitheloidhaemangioendothelioma

Case-2:

A 82 yrs old male presented with large, hard, irregular mass involving the left chest wall measuring 10x8 cm^2in size. FNAC showed highly cellular smears comprising of small round cells singly and in occasional clusters. Provisional diagnosis was malignant round blue cell tumor. Core needle biopsy done and histopathology showed tightly packed small round cells with scanty cytoplasm in a lobular pattern. The final diagnosis was given as extraskeletal Ewing's sarcoma or Askin's tumor.(**Fig-2)**

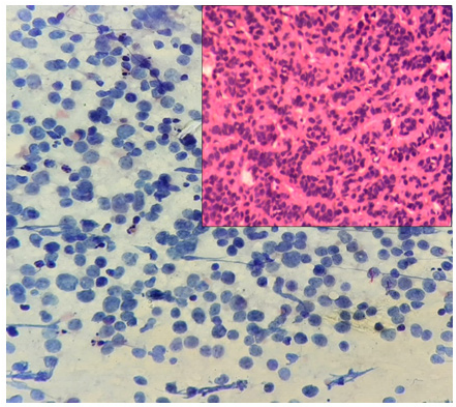

Figure 2: showing cytological(PAP stain,400x)& histological findings(H&E,100X)[Inset] of Askins tumor

Case-3:

A 32 yrs old female presented with a firm to hard swelling measuring 3 cm in dimension on left chest wall overlying left breast. Breast USG showed presence of a calcified cyst.

FNAC showed presence of anucleate squamous and calcium granules.

Histopathology showed features of Pilomatrixoma (Basaloid cells and shadow cells). Diagnosis was Pilomatrixoma of the breast**.(Fig -3)**

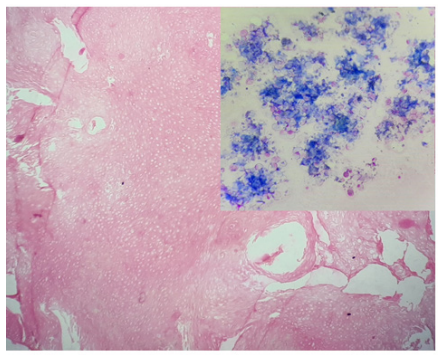

Figure 3: showing cytological (Leishman stain,100x) [Inset] & histological (H&E,100X) findings of Pilomatricoma

Case-4:

A 26 yrs old male presented with sudden onset of firm swelling measuring 4 cm in dimension over right posterior chest wall. FNAC showed fragments of spindle cells showing atypia. Provisional diagnosis was atypical spindle cell lesion. Histopathology of the excised mass showed presence of fascicles of spindle cells with mild atypia admixed with dense inflammatory cells. Diagnosis was given as inflammatory pseudotumor**.(Fig -4)**

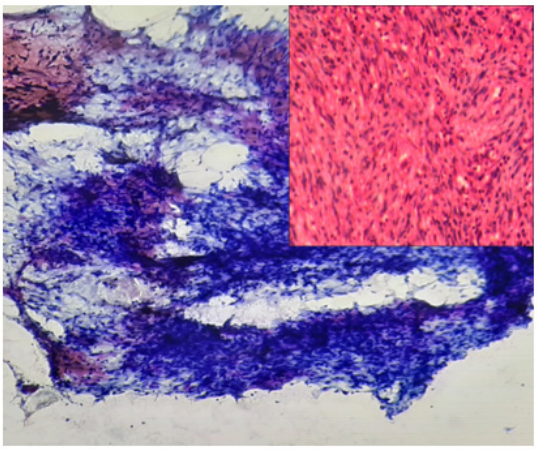

Figure 4: showing cytological(Leishman stain,100x) & Histological ((H&E,100X)[Inset] features of Inflammatory Pseudo Tumour

Discussion

In this case series of 4 cases, 1 cases were of skin adnexal tumors i.ePilomatricoma, one case of Inflammatory pseudotumor, one vascular tumor i.e Epithelioidhemangioendothelioma and one case of malignant tumor i.e extraskeletal Ewing's Sarcoma (Askin's tumor).

Epithelioid hemangioendothelioma (EHE):

It is rare vascular tumor with an epithelioid and histiocytoid appearance originating from vascular endothelial cells. The term EHE was introduced by Kleiss and Enzinger.[16] The most common sites are liver, lungs and bone.

Chest wall is an uncommon site for this tumor as in our case. Recent WHO classification categorized EHE into a locally aggressive tumor with metastatic potential. [10-11]

Askin's tumor:

This is a primitive tumor described first time in 1979 by Askin et al in the thoracopulmonary region. [2]It is rare malignant tumor characteristic histopathological features. We reported the case due to its rarity.

Pilomatricoma of the breast:

Pilomatricoma is a benign epithelial tumor of the skin originating from piliferous follicles. This is also known as 'Calcific epithelioma of Malherbe'. Usually seen in head and neck and extremities. It is rarely seen on the trunk and presence in the breast is very rare[13]and only few cases reported so far. It may simulate breast cancer both clinically and radiologically.[13]We reported the case due to its rarity and clinical significance.

Inflammatory Pseudotumor (IPT):

It is a term used to describe a benign and rare process most commonly seen in the orbit and lungs.[14]It can present as single or multiple masses with polymorphous inflammatory infiltrate, necrosis, fibrosis, spindle cells and fibrosis. [12]

It is a great mimicker of various soft tissue malignancies histopathologically such as low grade fibrosarcoma.[14]

So definitive diagnosis of these lesions preoperatively can prevent unnecessary surgical intervention.[17]We reported the case due to its uncommon location and clinical significance.

Conclusion

Chest wall is a site for various non-neoplastic and neoplastic lesions. Though FNAC is a useful, safe and rapid diagnostic procedure, simultaneous histopathological evaluation bears an important role for exact categorization of the chest wall lesions for better patient management.

Conflicts of interest: Nil

Funding: Self

Patient consent: In all the cases consent was taken before performing the FNAC procedure.

Ethical clearance: was taken

Author contribution: All are having equal contribution

Acknowledgement: We like to acknowledge the Department of Surgery for contribution of the specimens of this study.

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Original Research Article

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Effectiveness of ligation of Inter Sphincteric Fistula Tract (LIFT) in the Management of Fistulas in ano in Maharashtra Population: Retrospective Study

Sampat Tukaram Waghmare

Assistant Professor, Department of General Surgery, School of Medical Sciences, S. S. U. T and M. C Sehore, Madhya Pradesh.

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Abstract

Background: Anal fistula is one of the most common ano- rectal problems, resulting in very negative patient experiences. The objectives of anal fistula treatments are to achieve healing with a low recurrence rate and preserve anal function.

Method: 55 adult patients were confirmed to be competent for surgery. USG examination with 7 to 10 MHZ transducer passed into the anal canal, which is carried out with the patient in the left lateral position. Serial radial images were taken to study the location and position of the fistula. The LIFT procedure was similar to Rojanaskul proposed method. The duration of surgery and healing time were also noted.

Results: 48 (87.2%) were as per Parks classification, 5 (9.09%) intersphincteric, 2 (3.63%) suprasphincteric, Classification based on course of fistula – 20 (36.3%) anterior straight, 28 (50.9%) posterior straight, 5 (9.09%) curved, and 2 (3.63%) semi-horse shoe. Classification based on the tract – 50 (90.9%) single tracts, 5 (9.09%) multiple tracts.

Conclusion: LIFT technique is simple and safe, with a high rate of healing and no risk of incontinence.

Keywords: MHz trasducer, Park's classification, Rojanaskal, Sitzbath Sitz bath, Vicry / suture

Introduction

Peri-anal fistula is defined as abnormal communication between the anorectal mucosa and the perianal skin [(1)]. It usually results from an anorectal abscess that bursts spontaneously or after inadequate abscess drainage. It causes recurrent pain and purulent discharge, with or without abscess formation. Fistula in ano is a benign, treatable lesion of the rectum and anal canal. Cryptoglandular infection accounts for about 90% of the cases. The majority of the infections are acute, and a minority are chronic low grade infections, pointing to varying aetiogenesis. The pathogenesis has been attributed to the bursting open of an acute or inadequately treated anorectal fistula developed in an anal gland lying within the sub-muscosa of the anal canal, which is the direct cause of most of the fistula in ano[(2)]. It can be associated with a number of conditions, including tuberculosis, crohn's disease, and malignancies.

Corresponding Author: Sampat Tukaram Waghmare, Assistant Professor, Department of General Surgery, School of Medical Sciences, S. S. U. T and M. C Sehore, Madhya Pradesh.

E-mail: sampatwaghmore@yahoo.com

Fistula in ano is characterised on the basis of its location in relation to the anal sphincter muscles according to Park's classification; intersphincteric, transsphincteric, suprasphincteric, or extrasphincteric. A fistula can be simple or complex. Sub-mucosal, low inter-sphincteric, and low trans-sphincteric fistulas are considered as simple. Fistula in ano is considered complex if found to have any of the following characteristics:[3] tract crosses more than 30-50% external sphincter, anterior fistula in ano in a female, presence of multiple tracts; recurrent fistula; pre-existing incontinence, local irradiation; and crohn's disease.

There are number sphincter sparing methods such as Fibrin or cynoacrylate, glue injection anal fistula plug, endorectal muscular or mucosal advancement flap, care-out fistulectomy, ligation of inter-spineteric Fistula tract (LIFT). As LIFT procedure is simple, safe, minimally invasive technique [4]. It was also effective with high and rapid healing rate without any resultant incontinence. Hence attempt was made to evaluate the LIFT in different age group patients.

Material and Method

55 adult patients regular visiting to surgery department Prakash Institute of Medical Sciences and research Islampur (dist) Sangli, Maharashtra-415409 were studied.

Inclusive criteria: Patients above the age of 20 with recently diagnosed complex perianal fistulas of infectious aetiology who gave written consent were selected for study.

Exclusion criteria: Patients with superficial fistula, recurrent fistula, recurrent fistula secondary to tumour in inflammatory bowel disease, TB or trauma, pre-existing incontinence, or extra-sphincteric fistula immune compromised patients were excluded from the study.

Method: A detailed history was collected from every patient's demographics, type of fistula, extent of sphincter involvement, location of external and internal openings, presence of multiple tracts, and tract collection (perianal or submucosal collection). Every patient had an anal ultrasound examination. It involves the passage of 7 to 10 MHz transducer into the anal canal, which is carried out with the patient in the left lateral position.

Operative techniques: patients were prepared with an evacuation enema 6-8 hours before the time of the operation. All operations were performed under regional anaesthesia. Broad spectrum antibiotics and metronidazole were given before the operation. The positions of the patient were lithotomy, where the external opening of the fistula lies anteriorly, and prone Jack-knife with the buttocks strapped apart, where the external opening of the fistula lies posteriorly. A detail of the LIFT procedure is similar to that proposed by Rojanasakul et al. (2007). The first internal opening was identified by palpation or by injection of saline through the external opening. A curvilinear incision was made in the intersphincteric groove over the site of the internal opening. The intersphincteric plane was dissected by scissor and diathermy meticulously until the fibrous fistulous tract was identified. Once the tract was identified, the tract was then transfixed with 2/0 Vicryl close to the internal sphincter. Saline was injected through the external opening to confirm that the tract was no longer patent, and it was then divided distally to the point of ligation. After traction, a segment of the distal tract was excised. From the external opening, the tract was opened, curetted and washed with a 10% povidone iodine solution. Finally, the intersphincteric incision wound was repaired with interrupted 2/0 vicryl sutures.

Post-operative Management and follow up – post-operatively antibiotics were given for gram negative organism and anaerobes for 5 to 7 days. Analgesics were given according to patients need. Patients were discharged with antibiotics, analgesics, stool softener and advice to take sitz bath. Patients were asked to come after1 week of operation for stitch removal of intersphincteric wound. The subsequent follow up consultation was weekly after the first visit till complete wound healing. At each visit patients were interviewed for pain, discharge, and wound healing and clinical continence status. On examination intersphincteric incision wound, site of previous external and internal opening of fistula and sphincter tone were assessed. After healing, the patients were asked to visit if any recurrent pain, swelling or discharge occurs.

Clinical healing was defined as healing of intersphincteric and external opening wound, absence of fistula drainage and no evidence of abscess formation at any time during follow up. Recurrence was defined as non-healing wound 6 weeks after

surgery or reappearance of an external opening, persistent discharge or reappearance of fistula after the initial wound had healed.

The duration of study was December-2015 to November-2019.

Statistical analysis: Fistulae of different types were classified with percentage. The duration of surgery and healing was compared with z test. The statistical analysis was carried out in SPSS software. The ratio of male and female was 3:1.

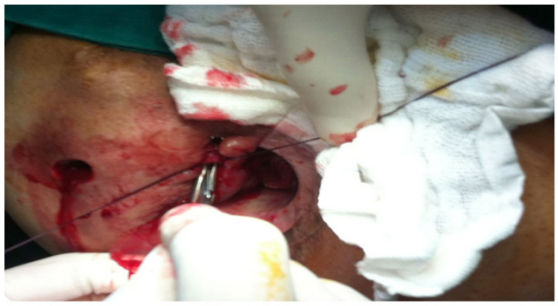

Figure 1: Repairing the fistula tract: the right one next to the edge of the internal sphincter and the left is by the external sphincter

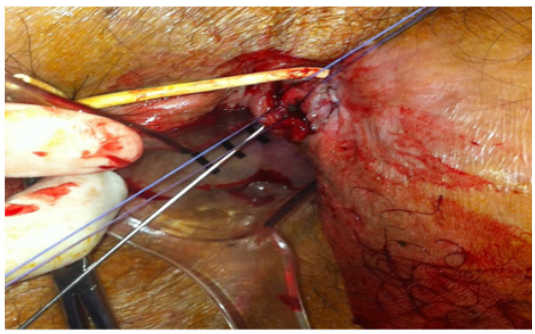

Figure 2: The second step of the technique, with correct identification of the fistula tract

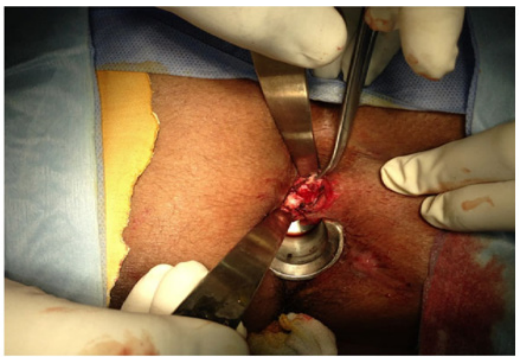

Figure 3 (a): The tract was transfixed close to the internal sphincterwith 2/0 Vicryl and divided distal to the point of ligation

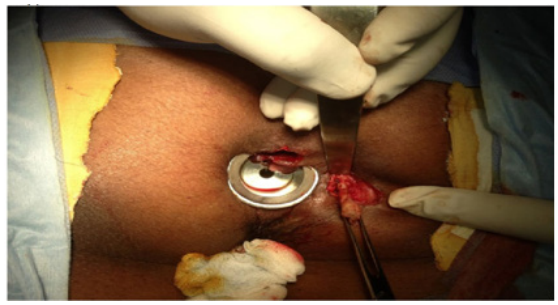

Figure 3 (b): Partial core-out fistulectomy performed from the external opening to the outer border of the external sphincter

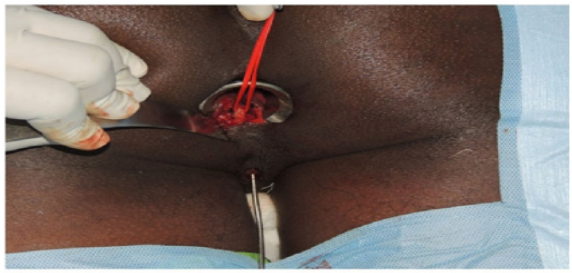

Figure 3 (c): The intersphincteric tract, identified by meticulousdissection and hooked using a vascular loop, was confirmed by passing a probe

Observation and Results

Table-1: Study of the classification and characteristics of fistulas

Classifications of Fistulae	Number	Percentage %
(a) Park's classification		
Trans–sphincteric	48	87.2
Intersphincteric	5	9.09
Supra sphincteric	2	3.13
(b) Classification based on the course of fistulae		
Anterior Straight	20	36.3
Posterior Straight	28	50.9
Curved	5	9.99
Semi horse-shoe	2	3.63
(c) Classification based on the tract		
single tract	50	9.09
Multiple tract	5	9.09

48 (87.2%) park S classification, trans-spineter, 5 (9.99%) intersphincteric, and 2 (3.63%) intra-sphincteric

Classification based on the course of the fistula 20 (36.3%) anterior straight, 28 (50.9%) posterior straight, 5 (9.09%) curved, and 2 (3.63%) semi-horseshoe.

Classification based on the tract: single tract 50 (90.9%), 5 (9.09%) multiple tracts.

Table-2: Duration of surgery and wound healing – 35.4 (±4.36) operating time; 23.22 (±5.13) inter-sphincteric wound healing, 25.86 (±7.82) external opening wound healing.

Table 2: Duration of surgery and wound healing

Various	Mean value (SD±)
(a) Operating time	35.4 (± 4.36)
(b) Intersphincteric wound healing	23.22 (± 5.13)
(c) External opening wound healing	25.86 (± 7.82)

Discussion

The current study looks at the effectiveness of ligation of the inter-sphincteric fistula tract (LIFT) in the treatment of ano fistula in the Maharashtra population.48 (87.2%) were as per Parks classification: 5 (9.09%) inter-sphincteric, 2 (3.63%), supra-sphincteric classification based on the course of fistulae: 20 (36.3%) anterior straight, 28 (50.9%), 5 (9.09%) curved, 2 (3.63%) semi-horseshoe, classification based on tract – 50 (90.9%) single tract, 5 (9.09%) multiple tract (Table-1). The operating time mean value was 35.4 (±4.36), 23.22 (±5.13) was intersphincteric wound healing time, and 25.86 (±7.82) was external wound healing time (Table-2), (Figure-1, 2 and 3) These findings are more or less in agreement with previous studies [(6)(7)(8)].

There is a growing interest in the ligation of LIFT because the procedure is minimally invasive, easy to learn and perform, and can be used on recurrent cases. The early results of the LIFT procedure were quite impressive, with success rates ranging from 57% to 97% with minimal morbidity and little or no impact on continence status. Some surgeons have used modifications of LIFT by combining it with additional procedures such as the trans-anal advancement flap or bioprosthetic prosthetic plug[(9)]. The healing rate improved to 95% in the LIFT with the anal fistula plug procedure but did not improve with the combination of the advancement flap.

Another advantage of the LIFT procedure is that it can be performed in cases of recurrence even when failure occurred with previous use of LIFT technique [(10)]. Recurrence of an anal fistula is mainly due to infection and technical errors. Infection was one of the reasons for the non-healing of internal opening wounds because it is caused by the breakdown of the closure wound on the internal sphincter. So in cases with persistent anal abscesses or infected incisional wounds, infection could be a factor for treatment failure.

Summary and Conclusion

Ligation of the intersphincteric fistula tract (LIFT) has a high success rate in primary or recurrent complex fistulae-in-ano. Recurrence is related to diabetes mellitus, perianal collections, abscesses along the tract, and multiple tracts. It can be successfully managed by repeated LIFT.

Limitation of study – Due to the tertiary location of the research centre, the small number of patients, and the lack of the latest techniques, we have limited findings and results.

This research work is approved by the Ethical Committee of the Department of Prakash Institute of Medical Sciences and researches Islampur (dist.) Sangli, Maharashtra 415409.

Conflict of Interest: No

Funding: Self

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Original Research Article

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Morbidity Pattern Amongst Women of Reproductive Age Group (15-44 Years) Residing in Rural and Urban Field Practice Areas of Government Medical College, Amritsar: A Cross-Sectional Study

Sandeep kaur[1], M.L. Sharma[2], Sanjeev Mahajan[3], Tejbir Singh[4], Vineet Bal[5]

[1]Junior Resident, [2]Professor, [3]Professor and Head, [4]Professor, [5]Assistant Professor, Department of Community Medicine, Government Medical College, Amritsar, Punjab.

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Abstract

Background: Health of a woman in the family is far more important because whole family revolves around her. Any deviation from the state of normal physical, mental and social well being is morbidity and the morbidity in women at any stage of the life cycle , more so during reproductive age group, adversely affects the quality of life of her own as well as that of whole family. It creates hinderances in the overall development at the individual level and that of the nation as well.

Objectives: To assess the morbidity pattern of women in reproductive age group (15-44 years).

Material and methods: A cross- sectional study was conducted on the females of reproductive age group (15-44 years) in rural and urban field practice areas of Government Medical College, Amritsar from 1st March 2021 to 28th Feb. 2022. Sample size was calculated using formula $N \geq Z^2 \times P \times (1-P) / d^2$. A pre-tested, semi structured questionnaire was used for collection of the required data.

Participants: All females in the age group of 15-44 years who gave a consent to participate in the study were selected. Any female with any congenital disease / malformation / intellectual disability, pregnant female and females who failed to give written informed consent / not willing for participation in the study were excluded.

Results: Out of 330 study participants, 146 (44.2%) had one or more types of morbidities at the time of study. The majority (95%) of these morbidities were chronic in nature while a small proportion i.e. 5% were acute. The system involved in multiple morbidities was reproductive and gynaecological system in majority (43.8%) of study participants which was followed by cardiovascular system (9.6%), musculoskeletal system (9.3%), central nervous system (4.2%), metabolic, ENT and urinary system (3.9% each), gastrointestinal system (3.3%), skin (2.4%) and respiratory system (2.1%).

Conclusions: The pattern of morbidity in females of reproductive age group turned out to be Reproductive and Gynecological inclusive of menstrual disturbances, PID, fibroid, RTIs, STIs, vaginal discharge etc. followed by cardiovascular system (9.6%), musculoskeletal system (9.3%), central nervous system (4.2%), metabolic, ENT and urinary system (3.9% each), gastrointestinal system (3.3%), skin (2.4%) and respiratory system (2.1%).

Keywords: Morbidity pattern, Reproductive age group, Gynecological system.

Corresponding Author: Vineet Bal, Assistant Professor, Department of Community Medicine, Government Medical College, Amritsar, Punjab.

E-mail: vineetbal@gmail.com

Introduction

From the very beginning of life on the planet, health has been considered to be the most important entity, an individual must enjoy. To be healthy in life is normal while it is abnormal to be unhealthy or diseased. Health of a woman in the family is far more important because whole family revolves around her. She is playing multiple roles like that of a mother, a care giver, a wage earner etc. Her interaction with the social, economic and cultural circumstances influences her daily life.[1] Hence, when her health deviates, the health of whole family has a risk of getting disturbed.

Any deviation from the state of normal physical, mental and social wellbeingis morbidity. No one can play the expected role if he or she falls prey to any kind of morbidity.

Morbidity in women at any stage of the life cycle, more so during reproductive age group, leaves a more adverse impact on the quality of her own life as well as that of whole family. Reproductive age (15-44years) in the life of a woman is extremely important.As during this period, she discharges multiple responsibilities.

Reproductive morbidity is defined as - any morbidity or dysfunction of the reproductive tract or any morbidity which is a consequence of reproductive behaviours including pregnancy, contraceptive use, abortion, child birth, or sexual behaviour.[2]

During different phases of life, the women are exposed to different types of risk factors and suffer from different kinds of morbidities. A newly married woman on starting her new phase of life may suffer from reproductive ill health, early pregnancies and childbirth which further exposes her to various morbidities.[3]

For improvement in various health indicators, it is required to know the crucial stages in the process of motherhood, where possible interventions could be done for improvement.[4] Different studies have indicated a high prevalence of reproductive morbidity and at most of the instances especially in rural areas it is being under reported also. Hence, the present study has been able to throw light on pattern of the morbidity during the most crucial and productive part in the life of a woman.

Objectives:

To assess the morbidity pattern of women in reproductive age group (15-44 years).

Material and Methods

Study design: Cross sectional study.

Study population: All females of reproductive age group (15-44years).

Inclusion criteria:

All the selected and willing females in the age group of 15-44 years who gave a written informed consent to participate in the study.

Exclusion criteria:

Any female with any congenital disease/ malformation/intellectual disability, pregnant females, females who failed to give written informed consent / not willing to participate in the study and any selected house if found locked on 3 consecutive visits.

Study period: From 1st March 2021 to 28th Feb 2022.

Sample size: A total of 330 females were studied **(**including 165 from rural and 165 from urban area). Sample size was calculated by using the prevalence rate of morbidity among females in reproductive age group i.e. 30.5%[5], observed in a similar study conducted in Kozhikode, Kerala. Formula[6] $N \geq Z^2 \times P \times (1-P) / d^2$ was used (where p= prevalence of the problem taken as 30.5%, q = (1-p), d = absolute error/precision taken as 5% and power of the study assumed as 80%).

Data collection tool: A pre-tested semi structured questionnaire developed by the investigators.

Methodology

After getting the approval from the institutional ethical committee, the study was conducted in rural

and urban field practiceareas of Government Medical College, Amritsar. One village and one ward were selected from rural and urban areas each by Simple Random Sampling Technique (lottery method) from the lists prepared at the time of study. All the females in reproductive age group were line listed and then divided into 3 strata of age groups 15-24 years, 25-34 years and 35-44 years. A sample of 165 females (55 from each stratum) was drawn from selected village/ ward in both rural and urban areas by simple random sampling technique. Thus, a total of330 females were studied. All the selected females were subjected to one-to-one interview by the investigator herself in their homes by paying house to house visits of which prior information was given to them well in time. Each interview was conducted as per structured proforma after obtaining the written informed consent (ascent from a parent/guardian in case of girls 15-18 years of age) on the standard format in vernacular language.

From every selected house, only one female was interviewed. If any house had more than one female of selected age group, the participant was selected by lottery method. In no case, more than one female belonging to any stratum was studied.

Statistical analysis: Data, thus collected, was compiled and analysed using Microsoft Excel and valid conclusions were drawn.

Results

After applying the various pre-decided inclusion and exclusion criteria, 330participants were studied and following results were drawn:

Table 1: Distribution of study participants according to their socio-demographic profile (N= 330)

Variables	Urban (n =165)	Rural (n =165)	Total (N= 330)
	Number (%)	Number (%)	Number (%)
Caste			
General	93 (56)	24 (15.5)	117 (35.4)
SC/BC/OBC	72 (44)	141 (85.4)	213 (64.5)
Religion			
Sikh	65 (39.4)	136 (82.4)	201 (60.9)
Hindu	94 (56.9)	4 (2.4)	98 (29.6)
Others	6 (3.6)	25 (15.1)	31 (9.4)
Type of family			
Nuclear	134 (81.2)	99 (60)	233 (70.6)
Joint	31 (18.1)	66 (40)	97 (29.4)
Family size			
≤ 4	80 (48.5)	48 (29)	128 (38.8)
5-7	76 (46)	83 (50.3)	159 (48.2)
≥ 8	9 (5.45)	34 (20.6)	43 (13)
Total	**165 (100)**	**165(100)**	**330 (100)**

(All figures in the parenthesis are percentages)

Table 1 revealed the socio-demographic profile of all the 330 study participants showed that by caste 213 (64.5%) belonged to SC/BC/OBC category and 201 (60.9%) followed Sikh religion. A vast majority 233 (70.6%) participants resided in nuclear families against 97(29.4%) in joint families. In total 13.03% of study participants resided in large families with ≥ 8 members.

Table 2: Distribution of study participants according to their educational, marital and occupational status (N= 330)

Variables	Urban (n =165)	Rural (n =165)	Total (N= 330)
	Number (%)	Number (%)	Number (%)
Educational status			
Illiterate	9 (5.4)	32 (19.4)	41 (12.4)
Primary	10 (6)	16 (9.7)	26 (7.9)
Middle	10 (6)	25 (15.1)	35 (10.6)
High	69 (41.8)	58 (35.1)	127 (38.9)
Intermediate	17 (10.3)	14 (8.5)	31 (9.4)
Graduate and above	50 (30.3)	20 (12.1)	70 (21.2)
Total	**165 (100)**	**165(100)**	**330 (100)**
Marital status			
Married	86 (52.1)	113 (68.5)	199 (60.3)
Unmarried	67 (40.6)	43 (26)	110 (33.3)
Widow	7 (4.2)	6 (3.6)	13 (3.9)
Divorced/Separated	5 (3)	3 (1.8)	8 (2.4)
Total	**165 (100)**	**165(100)**	**330 (100)**
Occupational status			
Student	66 (40)	43 (26)	109 (33)
Housewife	81 (49)	105 (63.6)	186 (56.4)
Salaried (govt./private)	10 (6)	8 (4.8)	18 (5.4)
Self Employed	3 (1.8)	1 (0.6)	4 (1.2)
Labourer (Skilled/ Unskilled)	5 (3)	8 (4.8)	13 (3.4)
Total	**165 (100)**	**165(100)**	**330 (100)**

(All figures in the parenthesis are percentages)

Table 2 revealed that out of all 330 study participants, 41 (12.4%) were illiterate and 26 (7.9%) were educated just up to 5th standard only. Though, a good number ie. 127 (38.9%) had studies up to matric level. 199 ie. 60.3% of study participants were marriedwhile 110 ie. 33.3% were unmarried. A small proportion ie. 13 (3.9%) were widows and divorced. Occupation wise 56.4% participants were found to be housemakers and 33% were yet to complete their studies.

Table 3: Distribution of study participants according to their socio-economicstatus (BG Prasad's Classification (Rs/Month) (N=330)

Social class (monthly income)	Urban (n =165)	Rural (n =165)	Total (N= 330)
	Number (%)	Number (%)	Number (%)
Social class I (8283 and above)	78 (47.2)	28 (16.9)	106 (32.1)
Social class II(4142-8282)	66 (40)	51 (30.9)	117 (35.4)
Social class III(2485-4141)	18 (10.9)	57 (34.5)	75 (22.7)
Social class IV(1243-2484)	2 (1.2)	26 (15.7)	28 (8.4)
Social class V (1242 and below)	1 (0.6)	3 (1.8)	4 (1.2)
Total	**165 (100)**	**165(100)**	**330 (100)**

(All figures in the parenthesis are percentages)

Table 3 shows that a vast majority (87.2%) of urban study participants belonged to Social class I and Social class II while majority of rural study participants (52%) belonged to lower classes ie. Social class III, IV and V. Out of 330, only 4 (1.2%) study participants belonged to Social class V.

Figure 1: Distribution of study participants according to their morbidity status (N= 330)

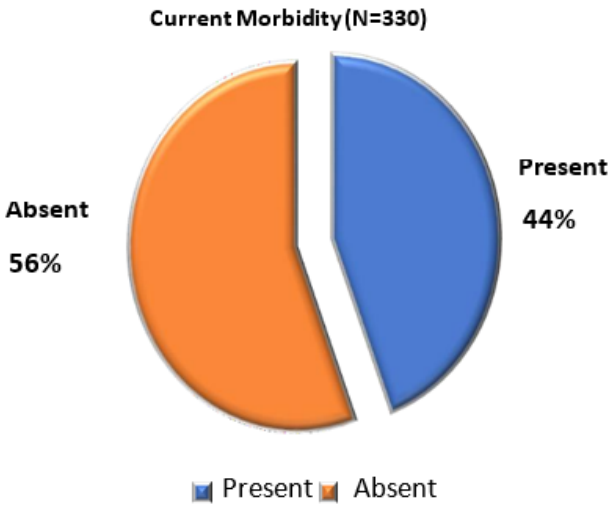

Figure 1 (a)

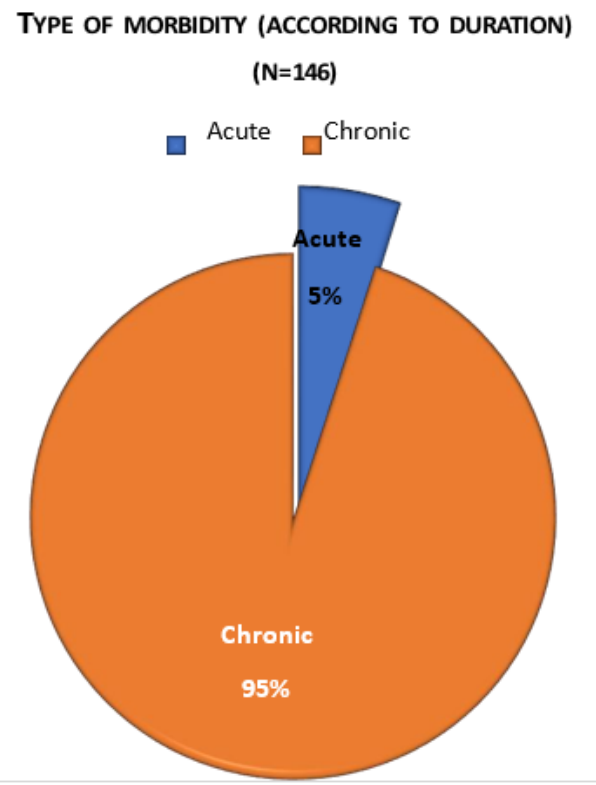

Figure 1 (b)

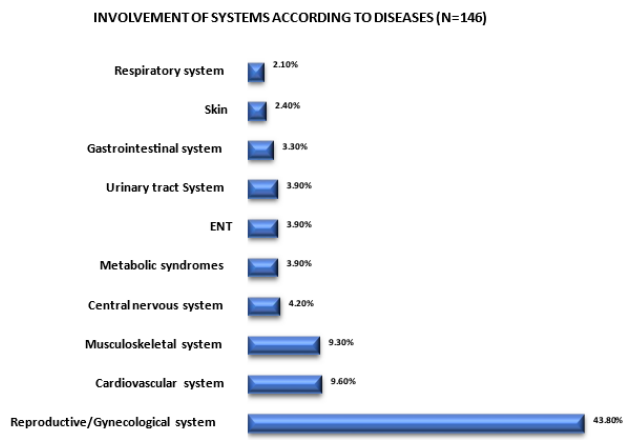

Figure 1 (c)

Multiple responses were allowed.

Figure 1(a) revealed that out of 330 study participants, 146 (44.2%) had one or more types of morbidities at the time of study.

Figure 1(b) revealed that morbidities were acute in case of 7 (5%) and chronic in 139 (95%).

Figure 1(c) revealed that shows the involvement of systems according to diseases. 146 participants who reported one or more types of morbidities, 43.8% had health issues related with reproductive and gynaecological system followed by cardiovascular system (9.6%), musculoskeletal system (9.3%), central nervous system (4.2%), metabolic, ENT and urinary system (3.9% each), gastrointestinal system (3.3%), skin (2.4%) and respiratory system (2.1%).

Discussion

The present study was conducted on 330 study participants (165 in urban and 165 in rural field practice area). The purpose of the study was to find out the morbidity pattern among females of reproductive age group. Main observations in different areas revealed were as under:

Socio-demographic profile of study participants:

Out of total 330 study participants, majority 233 (70.6%) participants residedin nuclear families while 97 (29.4%) in joint families. In total, 61.2 % of study participants were residing in large families with ≥ 5 members of which 13% were residing in families with ≥ 8 members. 213 (64.5%) study participants belonged to SC/BC/OBC category in comparison to

117 (35.4%) who belonged to general category. In this study, 201 (60.9%) study participants followed Sikh religion, 98 (29.6%) Hindu religion while 31 (9.4%) followed the other religions like Christianity.

Morbidity pattern among females of reproductive age group:

Out of 330 study participants, 146 (44.2%) had one or more types of morbidities which indicated that nearly half of females in reproductive age group suffer from some disease or the other. Overall morbidity (44.2%) included 95% of chronic illnesses.

Under pattern of morbidity, it was observed that predominantly affected Reproductive system presenting gynaecological disorders (43.8%) inclusive of menstrual issues, PID, fibroid, RTIs, STIs, vaginal discharge etc. It was found to be followed by cardiovascular system (9.6%), musculoskeletal system (9.3%), centralnervous system (4.2%), metabolic, ENT and urinary system (3.9% each), gastrointestinal system (3.3%), skin (2.4%), respiratory system (2.1%).

In another study conducted by Rahael et al. in Kerala, however, reported reproductive morbidity as 30.5% which is much lower than this study with 43.8% of reproductive morbidities. The observations related to other morbidities are in contrast to this study that among the morbidities, 27.8% women had gynaecologicalmorbidity, prevalence of contraceptive morbidity was 1.3%. Reproductive tract infections (10.5%).[7]

This is probably due to the reason that women in Kerala having more awareness about seeking care and treatment early. Hence the morbidity is less when compared with other states.

A study conducted in slums of Amritsar city, Punjab by Gill et al. revealed that 53.1% women had one or more health problems. Common health problems observed were discharge per-vaginum (6.6%), backache (14.9%), lice infestation (15.3%), pain abdomen (9.4%), urinary problems (7.3%), menstrual problems (5.1%) and others (5.1%). However, the predominating problem in the study had been anaemia (48.5%), excessive fatigue (26.4%).[8]

A study conducted by Chowdhury et al. also showed that women reported with 32.3% of morbidity.[9]

A study conducted by Coffey et. al. showed that 24.4% of women reported with one or more gynaecological complaints.[10]

Limitations of the study:

1. Study was based more on history taking so recall bias could not be ruled out.
2. The present study was conducted in urban and rural field practice areas of Government Medical College, Amritsar but slum areas were not included.

Conclusion

The study highlighted the morbidity pattern among females of reproductive age group (15-44 years) which indicated that among total, 44.2% of study participants had one or more type of morbidities revealed that nearly half of females in reproductive age group suffer from some disease or the other. Overall morbidity (44.2%) included 95% of chronic illnesses. The results of the study also revealed the importance of expanding women's access to a broader range of sexual and reproductive health services.

Conflict of interest: The author declares that there is no conflict of interest.

Source of funding: No funding

Ethical clearance: Clearance was granted by Institutional Ethics Committee (IEC), Government Medical College, Amritsar.

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Original Research Article

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A Cross Sectional Study to Measure the level of Depression and the Quality of life among the Geriatric Population Residing in Old Age Home

Sandeep Soni[1], Deepak Vishwakarma[2], Aravindh AJ[3]

[1]Ph.D. Scholar Parul University, Deepak Vishwakarma[2], Assistant Professor, P P Savani University and PhD scholar Parul University, [3]Assistant Professor, P P Savani University, IIPH Delhi Plot No. 47, Sector 44, Institutional Area, Sector 32, Gurugram, Haryana.

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Abstract

Background: Aging can cause reduced physical and mental ability, economic dependence, and depression in the elderly, lowering their quality of life. The study aims to determine depression prevalence and assess quality of life among geriatric populations in Old Age Homes.

Material and Methods: A cross sectional study was conducted among the elderly (age≥60 years) residing in an old age home (n=90) in district Bhopal (M.P). Multistage simple random sampling was used to select the study participants in all elderly people living in the OAH were included. The tools used are Geriatric Depression Scale-Hindi (GDS-H) to estimate the level of depression and The World Health Organization Quality of Life-BREF (WHOQOL-BREF) in Hindi to assess the quality of life.

Results: The prevalence of depression in OAH nearly 90 percent were suffering from depression either mild (61.11 percent) or severe (27.78 percent).

Conclusion: This study also revealed that the level of depression is inversely proportional to the quality of life. As the level of depression increases the quality of life of an elderly individual decreases.

Key words: elderly people; geriatric population; old age home; institutional; vriddhashram; non institutional; depression; depressive disorders; quality of life.

Introduction

Aging is associated with decreased immunity, increased morbidity, and significant life changes, which can contribute to depression(1). Depression is a common mental disorder characterized by persistent sadness and loss of interest in activities, with major depressive disorder and dysthymia accounting for 2.5% and 0.5%, respectively, of the 2.5 billion disability-adjusted life years generated globally in 2010 (2).

Nearly half of the world's total cases of depression, which stands at 322 million, are in the South East Asia region (2). The quality of life (QOL) of the elderly is influenced by factors such as lifestyle, family support, income, and psychological factors such as depression and dementia (3,4), and

Corresponding Author: Deepak Vishwakarma, Assistant Professor, P P Savani University and PhD scholar Parul University.

E-mail: deepak.vishwakarma@ppsu.ac.in

can be significantly affected by factors such as aging, poor economy, education, cultural factors, health condition, and poor social interaction [3,4].

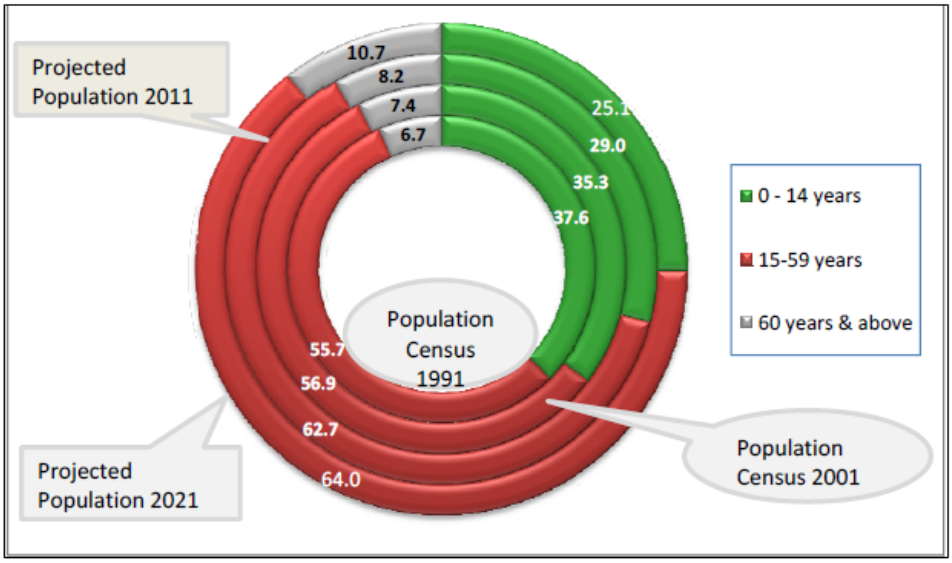

Figure 1: Age Distribution of population in India over decades

Aim of the Study: A cross sectional study to measure the level of depression and the quality of life among the geriatric population residing in old age home (OAH).

Material and Methods

A cross sectional study was conducted among the elderly in old age home in Bhopal, India.

Study Population:

The study population were the elderly individuals ≥60 years of age of both the sex residing in old age home in one of the village of MP.

Inclusion Criteria:

Participants for a study on aging were selected based on inclusion criteria such as age ≥60 years, residency in an old age home for at least 1 month or 6 months, ability to understand Hindi or English, and willingness to give informed consent.

Exclusion Criteria:

Exclusion criteria included serious medical conditions, communication difficulties due to hearing loss, cognitive impairment, or language problems, and being a visitor or guest.

Study Duration:

Study was conducted during 2017 and 2018.

Sample Size: The sample size was calculated by online software Openepi (Version 3.01) by assuming anticipated frequency 6.93, population size 1000000, level of significance 0.5, and design effect 1. The estimated sample size was 100 and after adding 10% non-response rate, it was 110. All eligible elderly person living in old age home were included in the study.

Sampling Technique:

For old age home: All the eligible elderly people living in old age home since ≥1 month. All selected individuals were the unit of analysis.

Study Tools:

The study utilized validated tools to assess depression and quality of life: the Geriatric Depression Scale (GDS) and The World Health Organization Quality of Life-BREF (WHOQOL-BREF).

Structured Data Collection Tool:

A structured data collection tool was developed to capture information on independent variables and socio-demographic information[5]. This tool was pretested on a similar population before finalizing.

Geriatric Depression Scale:

The GDS is a validated questionnaire that was

developed by J.A. Yesavage in 1982, with 92% sensitivity and 89% specificity. In this study, the Hindi version of GDS (GDS-H) was used, which was developed and validated by Ganguli et al. in 1998 [5,6]

The World Health Organization Quality of Life-BREF:

The WHOQOL-BREF is a self-assessment instrument for the assessment of quality of life, consisting of two general items and 24 specific facets (Programme on mental health, 1998). In this study, the Hindi version of WHOQOL-BREF was used, which was developed by Saxena et al. in 1998[5].

Dependent Variables: Depression, Quality of life

Independent Variables:

Age, sex, religion, marital status, place of residence, education, occupation, income, financial dependency, addiction, physical activity and co-morbidity.

Results

Table 1: Prevalence of depression in OAH

Level of Depression n (%)	OAH (n=90)
No Depression	10 (11.11)
Mild Depression	**55 (61.11)**
Severe Depression	25 (27.78)

Table 2: Relationship between level of depression and Socio-demographic characteristics of geriatric population in OAH (n=90)

Variable	No depression n (%)	depression n (%)	P- Value
Age (Years)			
60-69	2 (7.79)	24 (92.31)	0.91
70-79	5 (13.16)	33 (86.84)	
≥80	3 (11.54)	23 (88.46)	
Sex			
Male	7 (13.21)	46 (86.79)	0.51
Female	3 (8.11)	34 (91.89)	
Religion			
Hindu	9 (12)	66 (88)	0.9
Muslim/Others	1 (6.67)	14 (93.33)	
Marital Status			
Married	1 (20)	4 (80)	0.45
Unmarried/Divorced/Separated/ Widowed	9 (10.59)	76 (89.41)	
Education Profile			
Illiterate	4 (8.70)	42 (91.30)	0.52
Literate	6 (13.64)	38 (86.36)	
Occupation			
Unemployed	5 (14.29)	30 (85.71)	0.44
Retired	5 (9.09)	50 (90.91)	
Financial Dependency			
Independent/			0.62
Partially dependent	0 (0)	4 (100)	
Fully dependent	10 (11.63)	76 (88.37)	

Continue....

Reason for living in OAH			
Nobody to look after in the family	10 (12.99)	67 (87.01)	0.35
Does not wish to stay with the family	0 (0)	13 (100)	
Duration of stay in OAH			
<5 years	3 (6.52)	43 (93.48)	0.19
>5 years	7 (15.91)	37 (84.09)	
Any Illness			
Present	4 (8.16)	45 (91.84)	0.50
Absent	6 (14.63)	35 (85.37)	

Table 3: Multivariable regression analysis of depression in OAH

Variables	Unadjusted odds ratio	P- Value	Adjusted odds ratio	P-Value	LRT p-value
Age Groups					
60-69	Reference		Reference		
70-79	0.55 (0.09-3.07)		0.8 (0.1-6.1)		
80 & above	0.64 (0.09-4.18)	0.66	0.8 (0.1-7.7)	0.9	0.24
Sex					
Male	Reference		Reference		
Female	1.72(0.41 -7.16)	0.45	4.01(0.54-29.74)	0.17	0.34
Religion					
Hindu	Reference		Reference	0.86	
Others	1.91 (0.22-16.31)	0.56	1.25 (0.11-14.60)		0.32
Marital Status					
Married	Reference		Reference	0.19	
Unmarried/ Separated/ Divorced/ Widowed	2.11(0.21-21.01)	0.52	6.44 (0.39-106.76)		0.32
Education Profile					
Illiterate	Reference		Reference		
Literate	0.06 (0.1-6.2)	0.46	0.35 (0.06-2.06)	0.25	0.34
Occupation					
Unemployed	Reference		Reference		
Retired	1.29 (0.67-2.49)	0.45	7.55 (1.02 55.70)	0.04	0.34
Duration of stay in OAH					
<5 years	Reference		Reference		
>5 years	0.37(0.09-1.53)	0.15	0.29 (0.05-1.56)	0.15	0.47
Any Illness					
Present	Reference		Reference		
Absent	1.92 (0.50-7.36)	0.34	3.53 (0.68-18.40)	0.13	0.37

Table 4: Description of domains of QOL by different characteristics in OAH

Domains QOL				
Characteristics	**Physical Health Mean ± SD**	**Psychological Health Mean ± SD**	**Social Relationship Mean ± SD**	**Environmental Health Mean ± SD**
Age group				
60-69	11.46 ± 2.37	11.65 ± 2.53	8.04 ±2.73	8.77 ± 1.79
70-79	10.89 ± 1.69	11.34 ± 1.93	8.34 ± 1.82	8.39 ± 1.00
≥80	10.69 ± 1.89	10.84 ±2.20	8.35 ± 1.49	8.31 ± 1.12
Sex				
Male	11.15 ± 2.12	11.21 ± 2.37	8.45 ± 2.16	8.58 ± 1.35
Female	10.78 ± 1.72	11.40 ± 1.93	7.97 ± 1.81	8.32 ± 1.24
Religion				
Hindu	11.00 ± 2.03	11.18 ± 2.19	8.34 ± 2.01	8.49 ± 1.25
Muslim	11.28 ± 1.89	11.57 ± 1.81	7.00 ± 2.08	7.71 ± 1.38
Other	10.75 ± 1.49	12.00 ± 2.56	8.50 ± 2	9.00 ± 1.60
Marital Status				
Married	10.40 ± 1.82	12.80 ± 1.48	8.60 ± 3.78	9.60 ± 2.19
Unmarried	11.82 ± 2.52	11.00 ± 2.68	8.54 ± 2.42	8.54 ± 1.51
Separated/ Divorced	11.00 ± 1.41	11.40 ± 2.97	9.60 ± 1.82	8.60 ± 2.61
Widowed	10.91 ± 1.91	11.21 ± 2.10	8.09 ± 1.82	8.38 ± 1.06
Education Profile				
Illiterate	10.69 ± 1.88	10.96 ± 1.97	8.17 ± 1.80	8.24 ± 1.12
Primary Pass	11.18 ± 1.90	11.22 ± 2.17	8.07 ± 2.33	8.37 ± 1.27
High School	11.9 ± 2.42	12.20 ± 2.97	9.20 ± 1.39	8.9 ± 1.19
Graduate/Diploma	11.00 ± 2.64	11.33 ± 3.21	8.33 ± 4.04	9.67 ± 2.08
Post Graduate	11.00 ± 1.82	13.25 ± 0.5	8.00 ± 2.45	10.00 ± 2.16
Occupation				
Unemployed	10.40 ± 1.24	11.03 ± 1.99	7.86 ± 1.75	8.28 ± 1.23
Retired	11.38 ± 2.24	11.45 ± 2.32	8.51 ± 2.17	8.60 ± 1.35
Financial Dependency				
Independent	10.50 ± 0.71	12.00 ± 1.41	5.00 ± 0.02	10.5 ± 3.53
Partially dependent	10.00 ± 1.41	9.50 ± 0.71	4.00 ± 0.01	7.50 ± 0.71
Fully dependent	11.03 ± 1.99	11.31 ± 2.2	8.43 ± 1.90	8.45 ± 1.23
Health related issues				
Present	10.22 ± 1.47	11.02 ± 2.01	8.16 ± 2.12	8.45 ± 1.37
Absent	11.93 ± 2.09	11.61 ± 2.39	8.36 ± 1.93	8.51 ± 1.25

Table 5: Correlation between GDS and Quality of Life (QOL) in OAH

QOL (Range 4-20)	Correlation with GDS	P-value	Correlation with GDS*	P-value
Domain 1 Physical Health	-0.53	<0.001	-0.52	<0.001
Domain 2 Psychological Health	-0.65	<0.001	-0.64	<0.001
Domain 3 Social Relationship	-0.43	<0.001	-0.45	<0.001
Domain 4 Environment Health	-0.35	<0.001	-0.36	0.001

*Adjusted for age, sex, religion, marital status, education, occupation, financial dependency and co-morbidities.

Discussion

This study highlights the higher prevalence of depression among elderly populations in the old age home (88.9%) settings, which is consistent with previous research (7,8). The level of depression is also higher among females than males, in old age home (91.9%) settings, which is supported by previous studies [6,9]. The study also reports on the co-morbidities among the elderly, with a higher prevalence of co-morbidity in the old age home (54.4%) with hypertension, diabetes mellitus, arthritis, asthma, and misty vision being the most commonly reported conditions, consistent with previous research (9).

Financial dependency was found to be significantly correlated with geriatric depression, which is consistent with other studies (10). Additionally, the study found that the quality of life among the elderly was better in the physical health domain, but worse in the psychological domain, with marital status, financial dependency, and mobility status influencing quality of life (4,11).

Strength of study:

In this study multistage simple random sampling technique was used. The screening tools which were used in this study were validated and widely used worldwide. All the tools used were administered by a trained Clinical Psychologist. This study also reported the relationship between the depression and the quality of life among the elderly population.

Limitations of study:

The major limitations of this study were the relatively small sample size and the study was conducted in only one OAH due to time and resource constraints. This can contribute to an under-generalization of the study results.

Conclusion

India's traditional joint family system provided care for the elderly, but the shift towards nuclear families has left them without support. This has led to increased depression and a decrease in quality of life. Financial dependency exacerbates these issues. To improve the situation, the government should establish more friendly and homely old age homes with recreational facilities, as well as create elderly people's clubs for education on diseases, healthy diets, exercise, and recreational activities.

Recommendations: The study found that some elderly individuals receive pensions as low as 200 to 300 rupees. To improve the quality of life for the elderly population, policies and programs should be implemented.

Conflict of Interest: The study on depression among OAH elderly population has no conflict of interest. The researchers have no financial or personal relationships that could influence the outcome. Their sole objective is to investigate depression prevalence and risk factors, following ethical guidelines. The study aims to provide valuable insights for prevention and treatment strategies.

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Ethical Clearance: The study obtained ethical clearance from the Indian Institute of Public Health, Delhi, which verified all aspects of the study and its perspectives. This ensures the study was conducted ethically, with consideration for the protection and rights of human participants.

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Factors Determining Place of Delivery in Rural Area of Punjab: A Cross-Sectional Study

Sanyogita[1], Tejbir Singh[2], S S Deepti[3]

[1]Assistant Professor, Department of Community Medicine, SGRDUHS, Amritsar, Punjab, India, [2]Professor, [3]ExProfessor, Department of Community Medicine, Govt. Medical College, Amritsar, Punjab, India.

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Abstract

Context/Background: Institutional delivery has been found to be one of the key predictors of neonatal mortality prevention and is a recognized intervention to reduce maternal mortality. Despite this known fact, mothers still prefer to deliver at home.

Methodology: 359 mothers of 2 months to 24 months old children were selected from Verka block of district Amritsar using stratified random sampling technique. Data was collected using a semi structured and pretested questionnaire. Analysis was done using frequency distribution, simple percentages and inferential statistics of chi-square was used to test hypothesis at 5% level of significance.

Results: The overall prevalence of institutional delivery was 64.9%. Study revealed that parity, proximity to public health facility, high education, socioeconomic status and utilization of full antenatal package had significantly increased the institutional delivery.

Conclusions: Therefore there is a need to enhance education, expand public health institutions and create awareness about antenatal care and institutional delivery by utilizing existing platform of village level workers to increase the rate of institutional delivery.

Key words: maternal, institutional delivery, determining factors, rural Punjab

Introduction

Worldwide burden of maternal deaths is 295,000, out of which 35,000 maternal deaths occur in India responsible for 12% of global deaths.[1] The current maternal mortality ratio in India is 97/100,000 live births which is more than the target of Sustainable Development Goal.[2]

Multiple factors are responsible for such a huge number of maternal deaths. Home delivery has been recognized as one of the important factor specially in developing countries as majority of deaths occur during and within one week after delivery. In fact, it has been documented that skilled care before, during and after the birth of child can save the lives of women and newborns by preventing complications

Corresponding Author: Sanyogita, Assistant Professor, Department of Community Medicine, SGRDUHS, Amritsar, Punjab, India.

Mobile: 9814788138

E-mail: sanyogita7325@gmail.com

which are quite unpredictable and may become life-threatening.[3]

World Bank estimated that providing skilled care during delivery and particularly access to emergency obstetric care would reduce maternal deaths by about 74 per cent.[4] It has been documented that Sri Lanka, Malaysia, Thailand and Egypt were able to bring down their maternal mortality by providing skilled attendance at birth and improving access to emergency obstetric care.[5]

The World Health Organization (WHO) defines a skilled attendant as "an accredited health professional such as a midwife, doctor or nurse-who has been educated and trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, childbirth and the immediate postnatal period and in the identification, management and referral of complications in women and newborns".[6] In this study institutional delivery was used as a measure of skilled attendance at birth because of inability to decide whether a home delivery is a skilled delivery.

There are various factors that influence the utilization of health care facilities for institutional delivery. Not only the personal and socioeconomic conditions but geographical access particularly in rural areas with limited health facilities also has great impact on utilization.[7-9]

Yoseph et al in a study in Southwest Ethopia found high wealth index, education level of husband, woman age below 40 years, and number of ANC visits showing positive association with institutional delivery.[10] Whereas education level of women, early registration of antenatal case, previous delivery in institution, complications in previous pregnancy, urban residence and health facility related factor such as quality of care were the few factors showing positive association with institutional delivery in different studies conducted in Eritrea and Zambia.[11-13]

Despite the efforts made by government, the Institutional delivery rate still remains low at national as well as at regional level .So far only a few studies have been conducted in Punjab regarding institutional delivery and none in our study area. Therefore, this study was conducted to assess the prevalence of institutional delivery and identify associated factors among rural women who gave birth in the past 24 months in Verka block of District Amritsar, Punjab.

Methodology

A cross sectional study was carried out in Verka block of district Amritsar from January 2011 to December 2011. Three villages i.e. Mudhal (with subsidiary health centre), Sanghana (with sub centre) and Dhaulkalan (with no public health centre) were selected by stratified random sampling. All the houses of chosen area were visited, numbered and inquired about 2 months to 2 years old children. Total children of required age group were 359, out of which 171 belonged to Mudhal, 78 belonged to Sanghana and 110 were from Dhaulkalan. Mothers of 2 months to 24 months old children were personally interviewed by the author. Purpose of study was explained, confidentiality was assured and informed consent was taken. Information obtained was recorded by the author on a semi structured, pretested questionnaire in their local language. Modified Kuppuswamy socioeconomic status scale 2010 was used to assess the socioeconomic status of the family. Approval of college ethical committee was sought and granted at the time of submission of the plan of the study. All the information so collected was compiled, analysed statistically with the help of Epi info version 3.5.3. Chi-square test was used to evaluate different variables and valid conclusions were drawn.

Results and Discussion

Out of total sample of 359 mothers 171 (47.6%) mothers were from Mudhal, 78 (21.7%) from Sanghana and 110 (30.7%) from Dhaulkalan. Table 1 also shows almost three fourth 264 (73.5%) belonged to joint family. Majority 352 (98.1%) were Sikhs. According to Census 2011 in Punjab 57.7% were Sikhs, 38.5% were Hindus whereas in rural Amritsar 91.2% were Sikhs and 5.01% were Hindus.[14] In our study proportion of Sikhs was more as study was conducted in rural area where majority of Sikhs reside. Nearly two third 230 (64.1%) belonged to schedule caste and 99 (27.6%) were of general category. According to Census 2011, in Punjab 31.9% and in Verka block 46.7% population belonged to scheduled caste.[15] In our study area proportion of schedule caste is higher as study was conducted in Verka block where proportion of

population belonging to schedule caste is more as compared to Punjab (46.7% versus 31.9%). Almost two third respondents 216 (60.2%) belonged to upper lower socioeconomic status. Around one third 114 (31%) mothers were illiterate. According to census 2011, female literacy rate in India is 65.46% and in Punjab is 71.34%, as was found in our study.[16] Table reveals that 163 (45.4%) mothers were with parity 1, 131 (36.5%) with parity 2 and 65 (18.1%) with parity ≥3.

Table 1: Table showing sociodemographic profile of respondants

Characteristics		**N=359**	
		Frequency	%
Place of Residence	Mudhal	171	47.6
	Sanghana	78	21.7
	Dhaulkalan	110	30.7
Religion	Sikh	352	98.1
	Hindu	7	1.9
Caste	General	99	27.6
	OBC	30	8.3
	SC	230	64.1
Type of family	Joint	264	73.5
	Nuclear	95	26.5
Socioeconomic status of family	Upper middle	87	24.2
	Lower middle	48	13.4
	Upper lower	216	60.2
	Lower	8	2.2
Education of Respondent	Matric and above	126	35.1
	Below Matric	119	33.1
	Illiterate	114	31.8
Parity	Parity 1	163	45.4
	Parity 2	131	36.5
	Parity ≥3	65	18.1

Table 2 shows that out of 359 deliveries, 126(35.1%) took place at home and 233 (64.9%) in institution. In Punjab according to Coverage evaluation survey (2009) 40% delivered at home.[17] Thind et al (2008) in Maharashtra observed 37% home and 63% institutional deliveries similar to our study.[18] Punia et al (2010) observed, 43.3% home and 56.7% institutional deliveries in rural Haryana.[19] Whereas Garg et al (2010) reported 66.1% home and 33.9% institutional deliveries in Verka block of Amritsar Punjab.[20] The probability of delivering in institution was higher among those who belonged to General category as 86.9% mothers belonging to General category had institutional delivery as compared to 70% and 54.8% belonging to other backward class and scheduled caste respectively. Punia et al (2010) reported that 69.6% mothers belonging to general category, 31% and 36% belonging to other backward class and scheduled caste respectively had institutional delivery.[19] Over the past decade research consistently shows that high cost is an important constraint to service utilization particularly for the poor. Recent analysis of the third National Family Health Survey (2005/6) shows 13% of women in the lowest wealth quintile accessing institutional delivery care compared with 84% in the highest.[21] Similar findings were observed in our study where only 12.5% belonging to lower socioeconomic status opted for institutional delivery as compared to 89.7% belonging to upper middle class. ($p<0.001$, significant). Study showed that 66.7% mothers from joint and 60% from nuclear family had institutional delivery and difference was found to be insignificant ($p >0.05$). Among the maternal attributes, increasing the educational level of women can increase the use of maternal health care services. This is because education promotes new values and attitudes that are favourable to modern health care services.[22] In our study mothers with higher education preferred institutional delivery as 45 (39.5%) illiterate mothers opted for institutional delivery in comparison to 113 (89.7%) with matric or above ($p < 0.001$, significant). Similar results were reported by Garg et al (2010) where 20.0% illiterate women opted for institutional delivery as compared to 58.0% women with higher secondary education and 80.9% women with graduation or above.[20] In our study, mothers with higher parity preferred home delivery, as 50.7% mothers with parity three or more delivered at home as compared to 27.6% with parity one. Thind et al observed that 30% women with parity less than two had home delivery as compared to 48.2% with parity two or more.[18]

Our study showed that 81.4% mothers who availed full antenatal package opted for institutional delivery as compared to 47.7% who did not avail

full antenatal package. Association was statistically significant. Similar results were shown by Thind et al who observed that 39.5% mothers with less <3 antenatal visits had institutional delivery as compared to 85.9% mother with >3 antenatal visits.[18] Some studies (including in India) have found that geographical access has a greater effect on utilisation than socioeconomic factors, particularly in rural areas with limited service provision.[23] In our study mothers belonging to village with subsidiary health centre showed preference for institutional delivery as 68.4% from Mudhal and 60% from Sanghana delivered in institution as compared to 57.3% from Dhaulkalan (with no health facility). The difference could be due to more motivation by ASHA workers may be due to presence of Subsidiary Health Centre or could be due to proximity to PHC Verka and Amritsar city.

Table 2: Table showing association of sociodemographic factors, parity and full antenatal package with place of delivery

Factors		Home Delivery n=126 (35.1%)	Institution Delivery N=233 (64.9%)	Total N=359	Chi Square	P value
Place of Residence	Mudhal	54(31.6%)	117(68.4%)	171	42.02	<0.05
	Sanghana	25(32.0%)	53(68.0%)	78		
	Dhaulkalan	47(42.7%)	63(57.3%)	110		
Caste	General	13 (13.1%)	86 (86.9%)	99	31.65	<0.001
	OBC	09 (30%)	21(70%)	30		
	SC	104(45.2%)	126(54.8%)	230		
Socio-economic status	Upper middle	9(10.3%)	78(89.7%)	87	54.14	<0.001
	Lower middle	9(18.7%)	39(81.3%)	48		
	Upper lower	104(48.1%)	112(51.9%)	216		
	Lower lower	7(87.5%)	1(12.5%)	8		
Type of Family	Joint	88(33.3%)	176(66.7%)	264	1.36	0.24
	Nuclear	38(40.0%)	57(60.0%)	95		
Education Status	Illiterate	69(60.5%)	45(39.5%)	114	77.73	<0.001
	Primary	32(50.8%)	31(49.2%)	63		
	Middle	12(21.4%)	44 (78.6%)	56		
	Matric and above	13(10.3%)	113(89.7%)	126		
Parity	Parity 1	45(27.6%)	118(72.4%)	163	14.89	<0.05
	Parity 2	48(36.6%)	83(63.4%)	131		
	Parity ≥3	33(50.7%)	32(49.3%)	65		
Availed full Antenatal Package	Yes	34(18.6%)	149(81.4%)	183	44.71	<0.05
	No	92(52.3%)	84(47.7%)	176		

When enquired about reasons for home delivery as depicted in Table 3, 47 (37.3%) were advised by elderly, 45 (35.7%) said not necessary, 30 (23.8%) had fear of hospital (fear of caesarean section or likelihood of getting referred from one place to other) whereas 22 (17.5%) faced financial constrains, 15 (11.9%) said none to accompany and 46 (36.5%) gave other reasons like no one to take care of children, lack of transport, no time to go, delivered at parent's house etc. According to Coverage evaluation survey (2009) reasons for not delivering at institution were, no time to go (40.6%), not necessary (24.6%), better care at home(20.1%), too much cost(17.9%), too far/no transport (10.4%), family did not allow (10.3%), any other (5.3%), lack of knowledge (3.8%), poor quality service (3%) and not customary (2.3%).[17] Ansari and Khan (2011) observed various reasons for not delivering at institution as not necessary (38.6%),

not customary (3.0%), too far (10.9%), no time to go (16.8%), no money (15.8%), not aware (12.9%) and others (2.5%) in rural area of Aligarh.[24]

Table 3: Distribution of mothers according to reasons for home delivery

Reasons of home delivery	Number	Percentage
As told by elderly	47	37.3%
Not necessary	45	35.7%
Fear of hospital	30	23.8%
Financial constraints	22	17.5%
None to accompany	15	11.9%
Any other	46	36.5%

*Multiple Answers

Conclusion

More attention should be given towards education of women so that they are in a better position to take decision regarding institutional delivery. Efforts should be made to improve financial condition of families, ensure 100 percent antenatal registration and improve antenatal care in public health facilities. Expansion and strengthening of public health infrastructure will also increase the rate of institutional delivery and will contribute towards achieving the SDG of reducing maternal mortality ratio.

Declaration

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Ethical Approval: The study was approved by college ethical committee

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Original Research Article

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Study of Total Intravenous Anaesthesia in laparoscopic Surgery

Simran Pal Singh Bhatia[1], Pawan Kumar Dutta[2], Kumar Naren Chandra[3]

[1]Senior Resident, [2]Associate Professor and Head of the Department, [3]Assistant Professor, Department of Anaesthesia, MGM Medical College and Hospital Jamshedpur, Jharkhand.

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Abstract

Background: Total intravenous anaesthesia in laparoscopic surgery is safer than open laparotomy operations because propofol, a sedative hypnotic agent with excellent recovery drug and having anti-emetic properties, and new synthetic opioids (fentanyl congeners) provide excellent analgesia; hence, TIVA has become more popular in laparoscopic surgery.

Method: 45 adult patients aged between 18 to 65 undergoing laparoscopic surgery were studied. A solution of propofol containing different concentrations of sufentanil (1 µgm per ml and 2 µgmper ml) was infused. Patient's HR, SBP, DBP, MAP, and peripheral O_2 saturation from the anaesthesia monitor was taken as a baseline measurement. All the hemodynamic parameters were recorded intra-operatively at different intervals of duration.

Results: The changes in mean values of hemodynamic values were insignificant, and only significant parameters were noted. 158.12 (± 80.9) mean value time to rescue analgesia (in minutes) Post-surgical complications are 3 (6.6%) Nausea and vomiting

Conclusion: Propofol, containing different concentrations of sufentanil, provides hemodynamic stability with the least post-surgical complications; hence, total intravenous anaesthesia is an ideal substitute for inhalation anaesthesia in laparoscopic surgery because inhalation anaesthesia has a higher risk of hemodynamic instability.

Keywords: hemodynamic parameters Total intra venous, Anaesthesia, Propofol, Sufentanil, laparoscopy.

Introduction

A minimally invasive technique called laparoscopic surgery has been widely used in the surgical field due to its advantages such as less incisional bleeding, less trauma, and quick post-operative recovery. Though a large number of studies have shown that, the degree of stress caused by laparoscopic surgery is less than that caused by conventional laparotomies, CO_2 pneumoperitoneum, intra-abdominal pressure, hypercapnia, and surgery at the end of an internal pressure drop similar ischemia and reperfusion injury factors can induce the body stress response(1). This can lead to changes in endocrine metabolism, triggering an inflammatory immune response. Moreover, the imbalance of homeostasis does not stop with the end of the operation, but excessive stress lasting for a certain period can change the homeostasis of the body. Anaesthesia of such patients is a great challenge

Corresponding Author: Simran Pal Singh Bhatia, Senior Resident, Department of Anaesthesia Mahatma Gandhi Medical College and Hospital Jamshedpur, Jharkhand.

E-mail: drpawandutta.pd@gmail.com

for an anaesthesiologist[2]. Anaesthesiologists need careful preoperative evaluation and correct intra-operative management to ensure that the side effects of anaesthesia can be reduced and patients can recover quickly.

Total IV anaesthesia (TIVA) is commonly applied during gynaecological laparoscopic surgery. Total IV anaesthesia is an evolved concept of general anaesthesia. Propofol, a sedative hypnotic agent with excellent recovery characteristics at the end of infusion and additional anti-emetic properties, has become the drug of choice for TIVA. Newer synthetic opioids (fentanyl congeners) provide excellent analgesia for various types of surgeries due to their advantages like synergistic action with propofol, rapid induction, less cardiovascular and respiratory depression, and rapid recovery[3][4]. Hence, an attempt is made to evaluate the efficacy of TIVA.

Material and Method

45 adult patients aged between 18 to 65 regularly visited Mahatma Gandhi Medical College and Hospital in Jamshedpur, Jharkhand were studied.

Inclusive Criteria: patient grade-I, II gave written consent and were ready to undergo laparotomy were selected for the study.

Exclusion Criteria: Patients with known drug allergies, type II diabetes, cardiovascular disease, and immune compromised patients were excluded from the study.

Method

A detailed history of occupation and social status was noted. Pre-anaesthetic checkups were done, and solutions of propofol containing different concentrations of sufentanil were prepared as per the protocol 1 µg/ ml and 2 µg/ ml. Pre induction measurements of heart rate (HR), systolic blood pressure (SBP), diastolic blood pressure (DBP), mean arterial pressure (MAP), and peripheral oxygen saturation from the anaesthesia monitor were taken as the baseline measurements. All the hemodynamic parameters were recorded intraoperatively; separate recording of the time duration required for rescue analgesia was done, as was the prevalence of postoperative complications.

Duration of study from February – 2022 to February - 2023

Statistical analysis: The hemodynamic parameters indicating the prevalence of complications were also noted. The mean values of hemodynamic variables were statistically insignificant, and only significant parameters were noted. This was done in SPSS software. The ratio between the male and female was 1:2.

Observation and Results

Table-1: Out of 45 patients mean time to rescue for analgesia (minutes) was 158.12 (± 80.94).

Table-2: Post-surgical complication were Nausea and vomiting in 3 (6.66%) patients

Table 1: Mean time to rescue Analgesia

Parameter time to rescue	Total No. of Patients	Mean value
Analgesia (minutes)	45	158.12 (± 80.94)

Table 2: Post surgical complication during study

Parameters	No. of patients	Percentage (%)
Nausea and vomiting	3	6.6

Discussion

Present study of TIVA in laparoscopic surgery in the Jharkhand population. The mean time to rescue analgesia (in minutes) was 158.12 (± 80.94) (Table-1) and the most common post-surgical complication was nausea and vomiting in 3 (6.6%) patients (Table-2). All hemodynamic parameters were insignificant. These findings are in more or less agreement with previous studies[5][6][7].

Day care surgery is a planned surgery where patients requiring early recovery and discharge are admitted for a short stay for surgery on a non-resident basis[8]. Laparoscopic surgery is the most common surgical procedure performed worldwide and is widely used now days for laparoscopic appendectomy, lap cholecystomy, laphernioplasty, other urology surgeries, and gynaecological surgeries like diagnostic laparoscopy for infertility, hysteroscopy for embryo transfer, etc. TIVA is an

evolved concept of general anaesthesia that obviates the need for volatile anaesthetics. Though laparoscopic surgical technique has a minimally invasive method, a stress response exists and runs throughout the peri-operative period of laparoscopic surgery, which alters hemodynamic parameters and may cause morbidity and mortality. Hence the appropriate anaesthetic drugs like propofol in combination with sufentanil in different concentrations as per the need of reducing stress during the peri-operative period. Sufentanil is analogue of fentanyl suitable for post-operative pain control because it has no active metabolites, shows a higher therapeutic index, and has a lower frequency of respiratory suppression[9]. For outpatient surgeries, intravenous sufentanil produces equivalent anaesthesia to isoflurane or fentanyl. Recovery tends to be more rapid after sufentanil, and the requirement for post-operative analgesia is lower[10].

Propofol is the preferred intravenous agent in day care surgeries as it has smooth induction, rapid recovery, and some antiemetic properties [11]. In the present study only few patients required additional sufentanil boluses to maintain adequate depth of anaesthesia. Surfentanil mixed with propofol provides better hemodynamic stability in laparoscopic cholecystectomies with good post operative analgesic.

Summary and Conclusion

Present TIVA in laparoscopic surgeries. Propofol is a sedative and hypnotic agent with excellent recovery properties, and sulfentanil, an opioid analgesic, enhances its properties. It is an ideal combination for laparoscopic surgery, but this study demands that such clinical trials of TIVA must be conducted where larger numbers of patients and the latest technologies are available to confirm the significance of the present TIVA study.

Limitation of Study: Owing to the tertiary location of the research centre, the small number of patients, and the lack of the latest techniques, we have limited findings and results.

This research paper was approved by the Ethical Committee of Mahatma Gandhi Medical College and Hospital, Jamshedpur, Jharkhand, 831011

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Original Article

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A Cross-Sectional Study on Physical Activity Patterns and Dietary Habits of a Nursing College Students in Central Karnataka

Sindhu BM[1], Abhinandan S Kumbar[2], Shashank KJ[3], Rashmi BM[4]

[1]Assistant Professor, Department of Community Medicine, Basaveshwara Medical College & Hospital, Chitradurga, Karnataka, [2]Associate Professor, Department of Respiratory Medicine, Basaveshwara Medical College & Hospital, Chitradurga, Karnataka, [3]Associate professor, Department of Community Medicine, CIMS , Chamarajanagar, Karnataka, [4]Associate Professor, Department of Community Medicine, Basaveshwara Medical College & Hospital, Chitradurga, Karnataka.

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Abstract

Introduction: Nutritional habits and physical activity influence the health status of young adults. Non-communicable diseases (NCDs) such as obesity and cardiovascular diseases (CVD) are the major human health problems of 21st century. NCD risk factors like sedentary lifestyle, increased consumption of diet rich in sugar, fats and salt, tobacco and alcohol consumption are increasingly found among youth. Having proper dietary habits (nutritional behaviour) and moderate physical exercise are the best methods for reducing CVD risk.

Objectives: To assess patterns of physical activity and dietary habits followed by students studying at a nursing college in Chitradurga.

Methodology: It was a cross-sectional study. Assessments, by questionnaire, included daily food intake, frequency of consuming foodstuffs with an adequate nutritional value and evaluating adverse dietary habits and types of physical activity undertaken.

Results: 175 students participated in the study. Physical activities of moderate and vigorous intensity were followed by 65.7% and 65.1% students respectively. Foods with good nutritional value were consumed in lesser quantities. 14.9% consumed < 1 vegetable serving/day, 38.3% consumed < 1 fruit serving / week. There were students who did not consume vegetables (8%) or fruits (14.9%) at all. Higher frequencies (2-6 days/week) of consumption of junk food (12.6%) and soft drinks (10.3%) were found.

Conclusion: It is an encouraging fact to know that students were involved in moderate or vigorous physical activities on regular basis. Whereas healthy dietary practice was less and consumption of junk food and soft drinks was more. Present study highlights areas of nutritional concerns that must be addressed to bring about reduction in proportion of modifiable risk factors of NCDs among youth in health care professional courses.

Key words: Non communicable diseases, modifiable risk factors, physical activity pattern, dietary habits.

Corresponding Author: Rashmi B.M., Associate Professor, Department of Community Medicine, Basaveshwara Medical College & Hospital, Chitradurga, Karnataka.

E-mail: dr.rashmi.bgm@gmail.com

Introduction

Non-communicable diseases (NCDs) are one of the major public health challenges of the 21st century. Along with the significant human sufferings, NCDs also inflict harm/burden on the socioeconomic development of the country.[1] Non-communicable diseases result in about 41 million deaths every year, i.e., nearly 71% of all deaths globally.[2] India is witnessing an epidemic of non-communicable diseases due to increase in prevalence of diabetes, hypertension, stroke, cancers, coronary heart disease and obesity. [1] Simultaneously, deaths due to NCDs have also increased in India from 37.9% in 1990 to 61.8% in 2016. Around 55.4% of the Disability Adjusted Life Years (DALYs) lost are due to NCDs. [3] Many factors like high salt intake, high fats, junk foods, fast foods, soft-drinks intake, low physical activity, tobacco usage, alcohol consumption among others are associated with NCDs. These risk factors are modifiable and preventable.[4] Fit India Movement was launched by the Government of India (GoI) with the aim to bring about behavioural changes towards more physically active lifestyle. [5] Eat Right India Movement is a large-scale effort by the GoI to ensure safe, healthy and sustainable food for all Indians.[6] Eat Right Campus, the flagship initiative by the Eat Right India Movement promotes healthy eating for people at workplaces, hospitals and higher education institutions.[7]

It is seen that dietary habits usually change when youth enter the professional courses. Moving away from home, independent living arrangements, freedom to opt for personal preferred lifestyles are more likely to result in increased consumption of fast foods that are high in saturated fats, energy and fat dense snacks whereas less consumption of dietary fibers and fruits.[8-11]

Health-care professionals are the important links for promoting healthy dietary and lifestyle habits among the general population. The dietary and lifestyle practices among the nursing students have to be explored to understand the existent NCD risk factors in them. If the healthy life style is promoted among these students, they are more likely to bring about positive changes in the general public.[12,13]

There are limited number of studies done to assess the lifestyle and physical activity among nursing students in Central Karnataka. So, this study was conducted to understand the dietary patterns, physical activity and lifestyle practices among the nursing students in central Karnataka.

Methodology

For the present cross-sectional study, the sample size was calculated considering 97.5% prevalence of vegetables consumption among nursing students as per study conducted by van den Berg VLet al.[14] At 99% confidence level and 4% margin of error, minimum sample size calculated by Openepi was 102. [15] After obtaining institutional ethics committee clearance, this study was conducted among nursing students studying in SJM Institute of Nursing Sciences, Chitradurga, Karnataka from August to September 2022. With the prior permission from the head of the institution, complete enumeration of all nursing students of the institution were considered for the study. The purpose of the study was explained and a pre-designed self-administered questionnaire was sent to all these students via google forms. All the nursing students who were willing to participate in the study and who gave informed consent were included in the study. The proforma from those students that were not returned or incompletely filled were excluded from the analysis.

First part of the questionnaire consisted of socio-demographic details. Second part consisted of food frequency questionnaire. This included questions on frequency of consumption of low-salt, low-fat, low-sugar diet, fruits, vegetables, junk foods and soft drinks. Further, the questionnaire also elicited information regarding consumption of alcohol and tobacco. In the final section of proforma, physical activity pattern practiced by the students was elicited utilizing 'Global Physical Activity Questionnaire (GPAQ)'. GPAQ is a component of World Health Organization's STEPwise approach to Surveillance (STEPS) that identifies chronic disease risks. GPAQ comprises of 16 questions that ask information about physical activities performed at work place, during day-to-day travel and during recreational activities. 'Vigorous-intensity activities' are defined as activities that require heavy physical effort and cause large increases in breathing or heart rate. 'Moderate-intensity activities' are activities that require

moderate physical effort and cause small increase in breathing or heart rate. GPAQ also included a question 'Do you walk or use a bicycle for at least 10 minutes continuously to travel to and from places such as work place, for shopping, to market, to place of worship?' [16]

Data was compiled in Microsoft Excel spreadsheet and analysed using Statistical Package for the Social Sciences version 20 (SPSS Inc., SPSS for Windows, Chicago, USA). Qualitative variables are presented as frequencies and percentages. Quantitative variables are presented as Mean±SD. Chi square test is applied to assess the significance of associations among the qualitative variables, and those associations with $p < 0.05$ were considered to be statistically significant. Data is presented in tables and figures.

Results

A total of 175 nursing students participated in the study. Socio-demographic characteristics of respondents are given in Table 1. A majority of the study respondents were aged between 18-22 years (96.6%). Majority were females (77%). Nearly half of them were from Karnataka (53%). A 29% of students were from the state of Kerala and 16% students were from West Bengal. Most of the students were from rural areas (68%). A majority of students were studying B.Sc. Nursing (87.4%) and stayed at hostels (76.6%). A higher proportion of students (73.7%) were reportedly studying nursing course by their choice. (Table: 1).

Table 1: Socio-demographic characteristics of participants

Characteristic	Frequency	Percentage
Age (in years)		
18-20	115	65.7
21-25	60	34.3
Female	135	77.1
Male	40	22.9
State of origin		
Karnataka	93	53.1
Kerala	51	29.1
West Bengal	28	16.0
Not answered/ improper answer	3	1.7
Place of origin		
Rural	119	68.0
Urban	56	32.0
Course		
BSc Nursing	153	87.4
General Nursing and Midwifery (GNM)	22	12.6
Residence during course		
Home	28	16.0
Hostel	134	76.6
Paying guest	6	3.4
Share flat with friends	7	4.0
Year of studies		
1st year	69	39.4
2nd year	49	28.0
3rd year	31	17.7
4th year	26	14.9
Studying nursing by choice		
No	46	26.3
Yes	129	73.7
Mother's education		
Illiterate	11	6.3
1-5 standard	12	6.9
6-10 standard	81	46.3
Pre-University	34	19.4
Graduation and above	28	16.0
Improper response	9	5.1
Father's education		
Illiterate	9	5.1
1-5 standard	10	5.7
6-10 standard	78	44.6
Pre-University	19	10.9
Graduation and above	55	31.4
Improper response	4	2.3
Total	175	100.0

The dietary practices of participant students are given in Table 2. One fifth of the students (20%) reportedly did not consume fruits at all and 38.3% had less than one serving of fruit per week. Nearly one tenth (8%) of students reportedly did not consume vegetables at all. A 14.9% of students reportedly consumed less than one vegetable serving per day.

Higher frequencies (2-6 days per week or daily) of junk food and soft drinks consumption were found among 22.3% and 13.1% of students respectively. A higher proportion of students did not consume tobacco or alcohol (non-smokers: 98.9%, non-users of smokeless tobacco: 97.7% non-consumers of alcohol: 97.7%).

Table 2: Frequency of consuming fruits, vegetables, junk foods and others.

	Frequency (Percentage)
Frequency of consuming fruits	
Never	35 (20.0)
Rarely	1 (0.6)
Sometimes	1 (0.6)
< 1 serving/wk	67 (38.3)
Two time per week	1 (0.6)
1 serving/day	45 (25.7)
≥ 2 servings/day	25 (14.3)
Frequency of consuming vegetables	
Never	14 (8.0)
< 1 serving/day	26 (14.9)
1 serving/day	50 (28.6)
2 servings/day	43 (24.6)
≥ 3 servings/day	37 (21.1)

Continue Table 2.....

Others	5 (2.9)
Frequency of consuming junk foods	
Never	15 (8.6)
Once a month	27 (15.4)
Once in 2 weeks	23 (13.1)
Once in a week	71 (40.6)
2-6 days in a week	22 (12.6)
Daily	17 (9.7)
Frequency of consuming soft drinks	
Never	25 (14.3)
Once a month	63 (36)
Once in 2 weeks	25 (14.3)
Once in a week	39 (22.3)
2-6 days in a week	18 (10.3)
Daily	5 (2.9)
Smoking tobacco	
Yes	2 (1.1)
No	173 (98.9)
Smokeless tobacco usage	
Yes	4 (2.3)
No	171 (97.7)
Alcohol history	
Yes	4 (2.3)
No	171 (97.7)

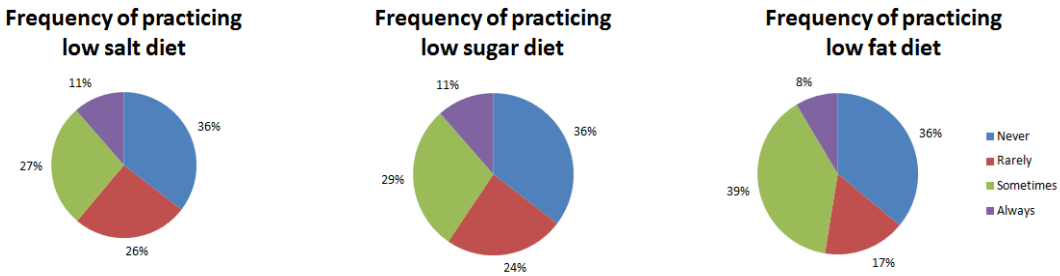

Figure 1: Frequency of practicing low salt, low sugar, low fat diet

The physical activity pattern among the students was assessed in the present study. A majority of 64.6% of respondent students reported to walk or use bicycle for their routine commute purposes, which was significantly higher among males (85%) than females (58.5%). It was significantly more among 1st (72.5%) and 2nd year (71.4%) students than 3rd (51.6%) and 4th year (46.2%) students. Vigorous intensity activities and moderate intensity activities were performed by 65.1% and 65.7% students respectively. Vigorous intensity physical activity was significantly more among males (85%) than females (59.3%). (Table 3 and 4)

Table 3: Physical activity pattern among nursing students

Response	Walk or use a bicycle n (%)	Vigorous intensity activities n (%)	Moderate intensity activities n (%)
Yes	113 (64.6)	114 (65.1)	115 (65.7)
No	62 (35.4)	61 (34.9)	60 (34.3)
Total	175 (100)	175 (100)	175 (100)

Table 4: Factors affecting physical activity among nursing students

	Walk or use a bicycle Frequency (Percentage)	Moderate intensity activities Frequency (Percentage)	Vigorous intensity activities Frequency (Percentage)
Sex			
Male	34 (85.0)	27 (67.5)	34 (85.0)
Female	79 (58.5)	88 (65.2)	80 (59.3)
χ2,df, p	χ2= 9.459, df = 1, p < 0.05	χ2 = 0.073, df = 1, p > 0.05	χ2= 9.004, df = 1, p < 0.05
Place of origin			
Urban	34 (60.7)	37 (66.1)	31 (55.4)
Rural	79 (66.4)	78 (65.5)	83 (69.7)
χ2,df, p	χ2= 0.536, df = 1, p > 0.05	χ2= 0.005, df = 1, p > 0.05	χ2= 3.473, df = 1, p > 0.05
Place of residence during course			
Hostel	82 (61.2)	90 (67.2)	89 (66.4)
Home	20 (71.4)	17 (60.7)	16 (57.1)
Others	11 (84.6)	8 (61.5)	9 (69.2)
χ2,df, p	χ2= 3.527, df = 2, p > 0.05	χ2= 0.536, df = 2, p > 0.05	χ2= 0.981, df = 2, p > 0.05
Year of nursing studies			
1st year	50 (72.5)	52 (75.4)	49 (71.0)
2nd year	35 (71.4)	32 (65.3)	33 (67.3)
3rd year	16 (51.6)	16 (51.6)	17 (54.8)
4th year	12 (46.2)	15 (57.7)	15 (57.7)
χ2,df, p	χ2= 9.017, df = 3, p < 0.05	χ2 = 6.333, df = 3, p > 0.05	χ2 = 3.238, df = 3, p > 0.05

Discussion

NCDs have risen in alarming proportions in the modern rapidly evolving world. [1-3] Globalization and industrialization have brought about the deleterious changes in the lifestyle and dietary patterns of the general population. The focus has to be shifted to understand the effect of these changes on the youth population. In this regard, the present study was conducted in the Central Karnataka among nursing students to understand their dietary, physical activity patterns and habits.

In our study, 40% students were consuming minimum one serving of fruit daily, and a 59.5% were consuming fruit at less than once per week frequency. (Table 2) In the study conducted on nursing students in Athens by Evagelou E et. al., 36.1% were consuming fruits daily and 13.2% consumed less than once per week.[12] In a study conducted by Shekhar R. et.al. on medical and nursing students in India, it was seen that 18.4% of students consumed one or more fruits per day.[13] Whereas in a study done on undergraduate nursing students in South Africa by Van den Berg VL et.al., 57.8% were consuming 2 or more servings of fruits per day [14] WHO recommends adults to consume 2 cups (4 servings) of fruits daily. [17]

In the present study, 76% were consuming less than three servings of vegetables per day. (Table 2) Similarly, van den Berg VL et. al., reported a very high percentage (97.5%) for the same. [14] 77.7% consumed junk food once a week or still less. In the study by Shekhar R et al, 81.9% nursing students consumed junk foods < 3 times/week. [13] WHO recommends adults to consume 2.5 cups (5 servings) of vegetables daily. [17]

In the present study, a majority of students did not use any forms of tobacco (98.9% were non-smokers and 97.7% were non-consumers of smokeless tobacco). The results of the study are comparable with the studies done by Shekhar R et al., (88.2%).[13] Whereas, a 66.9% of non-users of tobacco was found in study conducted by Evagelou E. et. al.[12] In our study, a high proportion of 97.7% of students did not consume alcohol. The study results are similar to the findings in study conducted by Shekhar R et. al. (86.9%).[13] It was nil in the study by Evagelou E et al.[12] (Table 2)

Daily physical activity patterns followed by the nursing students was elicited in the present study. 64.6% of participant students regularly walked or used a bicycle for daily commuting purposes and a 65% of students were reportedly doing regular moderate or vigorous physical activity. Walking or using bicycle for commute purpose was significantly lesser among females (58.5%) compared to males (85.0%) and this was significantly in lesser proportion among the participants studying in 3rd or 4th year of professional degree courses (51.6% and 46.2% respectively) compared to those in the first or second years of studies (72.5% and 71.4% respectively). (Table 3 and 4) The pattern of walking or using bicycle was substantially lesser in study done on nursing students in Slovenia by Cilar L et al., (50% and 18% respectively).[18] Whereas, comparable results of moderate to vigorous physical activity practice was found in the study done on nurses in Kingdom of Saudi Arabia and Lebanon by Al-Tannir MA et al. (65% nurses practicing moderate to vigorous physical activity).[19] Lower percentage (53.1%) was reported for moderate physical activity in the study on nursing students in India by Kaur M. [20]

Conclusion

Healthy dietary practices such as daily consumption of low salt, low sugar and low fat diet as well as daily consumption of fruits and vegetables were found to be lesser among the nursing students in the present study. Whereas higher frequencies of consumption of junk food and soft drinks were found. An encouraging result that was noted in the study was that a higher proportion of students adopted walking or cycling mode for daily commute purposes. Also, nearly three-fourth of students performed moderate or vigorous physical activity on a regular basis. Whereas, physical activity was significantly lesser among females compared to males. And the physical activity practice was on a declining trend with the 3rd or 4th year of the professional course.

Limitations of the study:

The present cross-sectional study which was conducted on students studying at a nursing college. The present study results are not generalizable to the students of all the health care system professional courses. Regional or national level multi-centric studies have to be done to analyse the pattern of dietary, physical activity patterns practiced by the students across all the levels of the health care system professional courses. Minutes per week for walk/ bicycle, moderate and vigorous activity could not be calculated as students did not give proper responses.

Conflict of interest: Nil

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Ethical Clearance taken from the institutional ethics committee of Basaveshwara Medical College & Hospital, Chitradurga.

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Case Series

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Tuberculosis of Ankle Joint: Case Series

Sonali Parida[1], Priyadarshini Behera[2], Chaitanya Kiran Gara[3], Sangita Jena[4]

[1,3,4]Assistant Professor, [2]Associate Professor, Department of Pulmonary Medicine, IMS and SUM Hospital, Siksha 'O' Anusandhan, Deemed to be University, K8, Kalinga Nagar, Bhubaneswar, Odisha, India

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Abstract

Despite the widespread awareness campaigns going on worldwide for elimination of tuberculosis, knowledge on unsual forms of tuberculosis still remains low. We need to realize that tuberculosis can present in any form and thus, a greater degree of suspicion is important always especially in countries with high tuberculosis prevalence. Although skeletal tuberculosis is being increasingly diagnosed and treated, still tuberculosis of the ankle joint is uncommon and often misdiagnosed as septic arthritis and thus leads to unnecessary delay in treatment. Sometimes another focus of tuberculosis elsewhere in the body may be not found nor do the patients have any presumptive tuberculosis symptom. It is equally important to know that surgery alone might not help these patients. a combination of surgery and appropriate anti tubercular therapy is the right approach. So, a multidisciplinary role and co operation of the surgeon as well as the physician is essential especially in cases of skeletal tuberculosis. Hence, it is imperative to know about tuberculosis irrespective of the system or anatomical structure involved.

Key words: tuberculosis, ankle joint

Introduction

Tuberculosis continues to haunt mankind since its inception. Tuberculosis affected 9.9 million people worldwide in 2020 and causing death in 1.3 million people [(1)] 23-30 % of all TB cases are extra pulmonary TB and 1-3% of those cases are skeletal tuberculosis[(2)] Foot and ankle joint tuberculosis constitutes about 1% of all cases of tuberculosis[(2,3,4)]. Ankle joint tuberculosis is very uncommon. The most commonly affected bone in ankle joint tuberculosis is the Calcaneum[(2)]. Unusual site, similarity to other ankle joint disorders, lack of awareness regarding skeletal tuberculosis lead to delay in appropriate diagnostic evaluation and treatment. We present a series of 5 cases of ankle joint tuberculosis presenting to the department of Pulmonary Medicine with varied manifestations.

Material and Methods

All the cases mentioned here were OPD or Indoor patients of the department of Orthopedics and Pulmonary medicine. Other causes of ankle joint arthritis were excluded by appropriate imaging studies, histopathological tests and routine blood tests.

Case 1:

A 28 year old male without any co morbidities presented to the hospital with left severe foot pain

Corresponding Author: Sangita Jena, MD, Department of Pulmonary Medicine, IMS and SUM Hospital, Siksha 'O' Anusandhan, Deemed to be University, K8, Kalinga Nagar, Bhubaneswar-751003, Odisha, India.

Mobile: 7682959171

E-mail: sangini.dr@gmail.com

and restriction in movement which was gradually progressive since last 6 months. The pain increased in intensity since last 1 month after a minor blunt trauma to the left foot.There was absence of presumptive TB symptoms. He was a farmer and was addicted to tobacco and was of low socio economic status. He did not have any past history of Tuberculosis or contact history with any TB patient.He also did not have any hereditary blood disorders .Physical examination revealedBP – 110/60 mm Hg, respiratory rate of 18/min, pulse rate of 90/min and SpO2- 99 % at room air and a marked reduction in movement and swelling and tenderness of the left ankle joint. Dorsalis pedis artery pulsation was normal.There was no abnormality in other joints and rest of the systems were normal on examination.Routine blood tests were all normal.

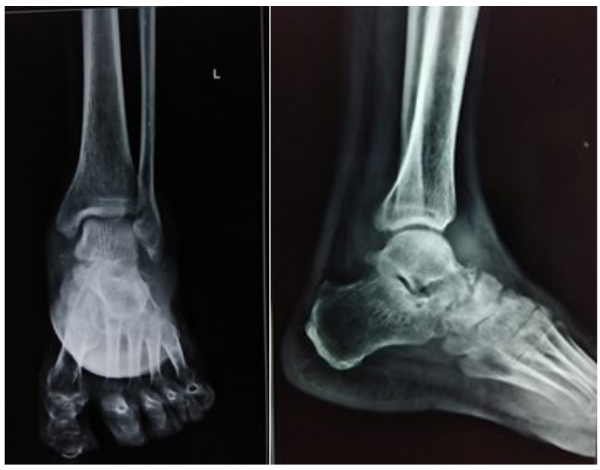

Fig 1 **Fig 2**

X Ray of left ankle joint showed talonavicular and calcaneocuboid joint arthritis features and reduction in joint space and pathological fracture of anterior tubercle of talus and a prominent poster lateral tubercle of talus. Orthopedics opinion was taken and the patient underwent debridement and biopsy which was on histopathopathology was suggestive of TB. However, the biopsy sample on AFB staining and CBNAAT did not detect *Mycobacterium tuberculosis*. He was administered weight appropriate anti tubercular treatment and showed good weight gain and clinicoradiological improvement during follow up visits.

Case 2:

A 46 year old male without any comorbidity presented to the hospital with moderate pain and swelling of right foot for 3 years. He also complained a low grade intermittent fever for last 2 months and an unintentional weight loss of 7 kg in 2 months as well as low appetite. He denied any trauma history. He was a bank clerk and was of low socioeconomic status. He did not have any addictions or habituations and never had any past or contact history of tuberculosis. On examination BP was 130/80 mm Hg , pulse rate was 80/min,respiratory rate- 20/min, SpO2 was 98 % with room air and there was swelling, tenderness and restriction in range of motion of the right ankle joint with preserved normal pulsation of the Dorsalis pedis artery and without any distal neurovascular deficit. Other systems were normal on examination. Routine blood tests were normal except for a hypochromic, microcytic anemia and a high ESR.

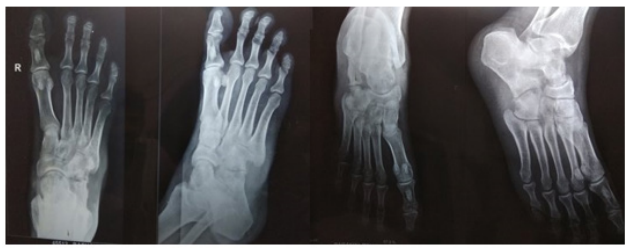

Fig 3 **Fig 4**

X ray of right ankle joint showed tibiotalarjoint space reduction with destruction of talus. As per Orthopedics opinion the patient underwent calcaneocuboid joint capsulotomy and synovial tissue was sent for histopathology which was favorable for tuberculosis. AFB staining was negative but *Mycobacterium tuberculosis* sensitive to rifampicin was detected in CBNAAT in the tissue. Antitubercular therapy was initiated and he showed significant improvement during the two month follow up with subsidence of fever, decrease in pain, weight gain, improvement in appetite.

Case 3:

A 25 year old male presented to the hospital with progressive pain in the left foot interfering with his routine activitiesand loss of appetite for 1 year. There was no fever or weightloss. He did not have any pre existing co morbid illness. He never had any contact with any TB patient nor did he have TB in the past. There was no trauma history or any other presumptive TB symptoms. General examination revealed BP- 120/74 mm Hg, pulse rate of 78/min,

respiratory rate of 18/min, SpO2- 99 % with room air. On examination there was left ankle joint swelling and tenderness, decrease range of motion but no distal neurovascular deficit and preserved Dorsalis pedis artery pulsation. All other joints and systems were normal on examination. Routine tests were normal except for a hypo chromic, microcytic anemia.

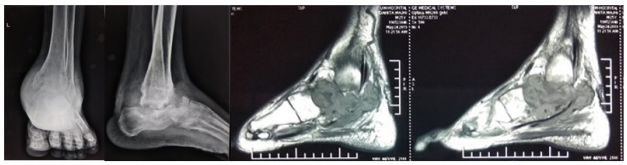

Fig 5 **Fig 6** **Fig 7**

X ray of left ankle showed erosion of talarbody, tibiotalar joint space erosion and erosion of articular margins. MRI left ankle was suggestive of septic arthritis. After Orthopedics consultation he underwent left ankle athrotomy, joint clearance and biopsy was taken from the site which on histopathological examination indicated Tuberculosis. AFB stain and CBNAAT tests were however negative for mycobacteria. He was started on Antitubercular treatment and underwent physiotherapy after 1 month of surgery. He responded well with resolution of symptoms on subsequent follow up visits.

Case 4:

A 26 year old male without any previous illness including TB presented to the hospital with progressive swelling and pain of left foot for 6 months. He also had loss of appetite and a weight loss of 8 kgs over 3 months. On examination pulse rate was 100/min, SpO2 was 98 % with room air, respiratory rate – 20/min and BP- 126/70 mm Hg. There wastenderness, swelling of left ankle joint with decreased range of motion but without any distal neurovascular deficit or reduction in Dorsalis pedis arterial pulsation. Rest of the joints and other systems were normal on examination. Routine tests were all normal except an elevated ESR.

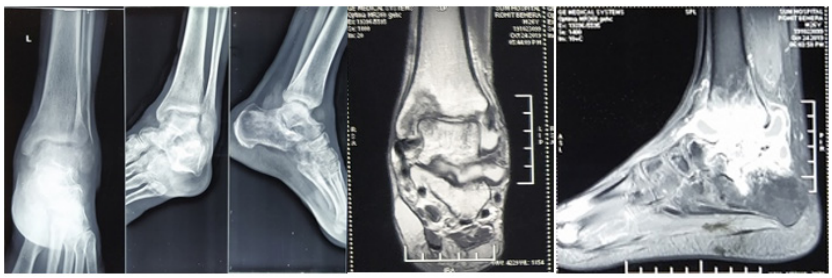

Fig 8 **Fig 9** **Fig 10**

X ray of left foot showed reduction of tibiotalar joint space, erosion of talus and Calcaneum. MRI of left ankle joint showed features of septic arthritis. A left ankle athrotomy was done and synovial tissue biopsy was taken which on histopathology revealed granulomatous inflammation. AFB staining was negative but tissue CBNAAT detected Mycobacterium tuberculosis. He had good clinico radiological improvement with ATT.

Case 5:

A 50 year old female without any comorbidity presented with right ankle pain and swelling and a low grade intermittent fever for 1 year. There was no weight loss or loss of appetite. On examination pulse rate was 78/min, SpO2 was 99% with room air, respiratory rate – 18/min and BP- 100/70 mm Hg. There was swelling, tenderness and crepitus in the ankle joint on the right and decreased range of motion and no signs of neurovascular deficit. All routine blood tests were normal. X ray revealed mild osteopenia involving talus, calcareous, navicular as well as cuneiform bones. MRI ankle joint showed features of acute arthritis.

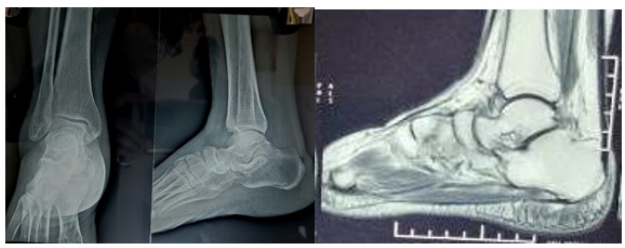

Fig 11 **Fig 12**

She underwent right talonavicular arthrodesis with biopsy of the hypertrophied synovium which was suggestive of Tuberculosis. AFB staining

and CBNAAT were negative for Mycobacterium tuberculosis. She was started on ATT and has shown good clinical improvement in subsequent follow ups.

Findings

Table 1: Routine blood investigations:

Serial no	Hb	TLC	sodium	pot	urea	creat	LFT	FBS	PPBS	ESR
1	12.1	5600	131	3.5	60	1.0	N	100	123	20
2	9.0	6700	135	3.2	40	0.8	N	92	110	120
3	8.2	8800	130	3.7	30	0.5	N	90	100	30
4	13	7300	133	3.6	40	0.7	N	116	120	130
5	12	6700	135	3.2	43	0.3	N	105	119	92

Table 2: Radiological profile:

Serial no	X ray – ankle joint	MRI- ankle joint
1	talonavicular and calcaneocuboid joint arthritis features and reduction in joint space and pathological fracture of anterior tubercle of talus and a prominent posterolateral tubercle of talus	Not done
2	Tibiotalarjoint space reduction with destruction of talus	Not done
3	Erosion of talar body, tibiotalar joint space erosion and erosion of articular margins	Gross destruction of talus with destructive changes in the distal tibial articular margin, articular margin of subtalar joint replaced by thick rim enhancing intercommunicating pockets of fluid collection and subarticular marrow STIR hyper intense signal changes showing post contrast enhancement
4	Reduction of tibiotalar joint space, erosion of talus and Calcaneum	Irregular synovial thickening, joint effusion with intense peripheral rim of synovial enhancement, sub chondral erosion and marrow edema involving tibiotalar and talocaolcaneal joint
5	Mild osteopenia involving talus, calcareous, navicular and cuneiform bones	Diffuse synovial thickening of tibiotalar, talocaolcaneal and mid foot joints with post contrast enhacement of talus, calcareous, tibia, navicular, and cuneiform bones No joint effusion

Table 3: Mode of diagnosis of tuberculosis:

Serial no.	Surgery done	Histopathology	Microbiological confirmation
1	debridement and biopsy	Numerous lymphoctyes, epitheloid cells, necrotizing granulomas	AFB staining and CBNAAT negative
2	calcaneocuboid joint capsulotomy and synovial tissue biopsy	Caseating necrosis alongwith epitheloid cells and numerous multi nucleated giant cells	-AFB staining negative -CBNAAT - *Mycobacterium tuberculosis* detected
3	athrotomy, joint clearance and biopsy	Numerous epitheloid cell granulomas with necrosis	AFB staining and CBNAAT negative
4	left ankle athrotomy and synovial tissue biopsy	Laghan's giant cells with necrosis, lymphocytic infiltration	-AFB staining negative -CBNAAT detected *Mycobacterium tuberculosis*
5	talonavicular arthrodesis with biopsy of the hypertrophied synovium	Predominant lymphocytes with epitheloid cells forming granulomas, some areas of necrosis	AFB staining and CBNAAT negative

Discussion and Conclusion

Skeletal tuberculosis constitutes 11.3% of cases of Tuberculosis majority of which involve the spine followed by hip and knee joints[2]. Ankle joint involvement is quite uncommon.

Pathogenesis:

Hematogeneous dissemination of the tubercle bacilli leading to their growth in the joints is the primary mechanism involved. The joints which encounter trauma or inflammation are more prone to such infection in view of increased vascularity. Calcaneum is the most commonly affected bone in ankle joint tuberculosis owing to its high vascularity and continuous wear and tear[5]. Talus, first metatarsal and navicular are also affected commonly. If the synovium is infected first there is pannus formation leading to involvement of articular cartilage and subsequent spread to subchondral region whereas if only bone is infected first it leads to direct involvement of subchondral region by granulation tissue. Subchondral region involvement may lead to detachment of articular cartilage and collapse and degeneration of the joint[6].

Stages of articular tuberculosis

First stage –only synovial lining involved without bony erosion

Second stage –bony erosion without reduction of joint space

Third stage- involvement of synovium and erosion of bone as well as joint space reduction

Fourth stage- bony architectural destruction, involvement of contiguous joints or phylogenic arthritis[6,7].

Clinical features:

Pain, swelling, redness and reduced range of motion of the joint. Enlargement of inguinal lymph nodes. If untreated discharging sinuses and ankylosis can be seen. Other symptoms of tuberculosis like fever, loss of weight and appetite can also be seen. There can be many differentials of tuberculosis ankle joint like sarcoidosis, septic arthritis, amyloidosis, Charcot's athropathy, malignancy. Favorable outcomes are seen with early diagnosis and appropriate treatment.

Investigations:

X rays usually show articular erosions which can take 2-5 months to be visible on radiographs. The investigation of choice is MRI which can show joint edema, synovial thickening, effusion, subchondral lytic lesions, osteopenia[7]. Usually diagnosis is confirmed by histopathological examination of bone or soft tissue from the infected site revealing caseation

necrosis, Langhan's giant cells, granulomas. Tissue can also be sent for CBNAAT test for quick detection of Mycobacterium tuberculosis.

Management:

Anti tubercular treatment should be continued for 6 to 18 months depending on the clinic radiological response[5]. Since it is paucibacillary prolonged therapy should be considered always in view of dormant bacilli. Surgical procedures may be required like arthrodesis, debridement, curettage, surgical removal of sequestrated/destroyed bones [8].

Conclusion

In high TB prevalence areas any chronic ankle joint inflammation should be thoroughly worked up for evidence of TB. Early diagnosis and prompt initiation of treatment plays a great role in achieving clinicoradiological resolution.

Declaration of conflicting interests: The authors declared no potential conflicts of interests

Informed consent: Written informed consent was obtained from the patient.

Funding Resources: Self

Ethical clearance: Approved by Institutional Ethical Committee.

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Study on Types of Umbilical Cord Insertion in Normal and Intrauterine Growth Restriction

Sudhakara Babu Chelli[1], Vinaya G[2], Surekha S M[3]

[1]Assistant Professor, Department of Anatomy, MediCiti Institute of Medical Sciences, Hyderabad, Telangana, India, [2]Assistant Professor, [3]Associate Professor, Department of OBG, Koppal Institute of Medical Sciences, Koppal, Karnataka, India.

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Abstract

Background: Intrauterine growth restriction (IUGR) is said to be in neonates whose birth weight is less than tenth percentile of the average for gestational age. IUGR is associated with short and long-term complications which can severely impact quality of life. Placental size, weight and shape may vary within wide extreme values. Ability to transfer nutrients is related to placental size. Decreased placental surface area and size are associated with increased risk of IUGR. Umbilical cord is the key marker for intrauterine complications. It is one of the most important part of fetoplacental unit that transfer vital nutrients to fetus. This current study was taken to find out the difference in placental morphometric features and to find the correlation between placental and neonatal weight.

Materials and methods: This study included 100 samples which were equally divided into cases and controls. Placenta was collected after delivery and the data is measured quantitatively.

Results: Central insertion of umbilical cord observed in IUGR in our study was 40%, eccentric was 20%, marginal was 38%, velamentous insertion was 2% while furcate insertion observed was nil in our study.

Conclusion: Central and marginal insertion was prevalent in IUGR in our study. Types of cord insertion plays also plays role in transfer of nutrients. Vasculature being the most important factor the growth of fetus, any imbalance in it will alter the growth.

Keywords: intrauterine growth restriction, placental insufficiency, feto placental ratio, placental coefficient.

Introduction

Birth weight less than 10th percentile for gestational age is considered as intrauterine growth restriction (IUGR). In antenatally diagnosed IUGR, mortality in neonates is significantly increased in term and preterm neonates[1]. It affects neonatal and maternal health around world which accounts about 5-10%[2-4]. IUGR causes includes fetal conditions, utero-placental and pre-utero-placental conditions. One of the key risk factors for growth restriction is placental insufficiency. Lack of sufficient transplacental transport of nutrients and oxygen leads to IUGR

Corresponding Author: Sudhakara Babu Chelli, Assistant Professor, Department of Anatomy, MediCiti Institute of Medical Sciences, Hyderabad, Telangana, India.

E-mail: sudhakarababuchelli@gmail.com

which is a result of placental insufficiency [5]. Increased perinatal morbidity and mortality are the causes of still birth, IUGR and low birth weight. When compared to normal weight babies low birth weight mortality is 20 times more[6]. The efficiency with which nutrition and oxygen are transferred through the placenta is the most important factor in determining birth weight [7-11]. Umbilical cord is the link between placenta and fetus which delivers nutrients and oxygen to developing fetus. Hence umbilical cord is essential factor for growth of fetus.

Materials and Methods

This a prospective case control study carried out in department of Anatomy, Koppal Institute of Medical Sciences (KIMS), Koppal, Karnataka after taking institutional ethical committee clearance (No. KIMSKoppal/IEC/37/2020-21). Informed consent was taken from the patients. All the normal and IUGR pregnancies were included in the study. Maternal age between 18-35 and gestational age between 34-41 weeks were included in our study. We excluded woman with diabetes, HIV, unknown gestational age and maternal age more than 35 years. After delivery, 100 placental samples were collected washed thoroughly under running tap water. Placenta was observed and various types of umbilical cord insertions were noted and photographed.

Results

Umbilical cord insertion to center of placenta is central insertion. In present study central insertion of umbilical cord was 56% in normal and 40% in IUGR. Cord attachment greater than 2 cm from placental margin is eccentric or lateral insertion. Eccentric attachment observed was 24%, 20% in control and cases respectively. Cord insertion less than 2 cm from placental margin is margin type. 16% marginal attachment was observed in normal placenta and 38% in IUGR placenta. Insertion of umbilical cord on fetal membrane is velamentous insertion. This type observed was 4% in normal while 2% in IUGR. We didn't observe any furcate type in our study both in cases and control (Table-1).

Table -1: Various types of umbilical cord insertion

Insertiontypes	Normal N=50	Frequency (%)	IUGR N=50	Frequency (%)
Central	28	56 %	20	40%
Eccentric	12	24 %	10	20%
Marginal	08	16 %	19	38%
Velamentous	02	4%	01	2%
Furcate	0	0	0	0

The most common type of cord insertion we observed in IUGR was central type (Image-1).

Second common type of insertion which was observed in IUGR in our study was marginal type (Image-2). Eccentric was third variety which was observed in our study (Image-3) while velamentous was least variety in our cases.

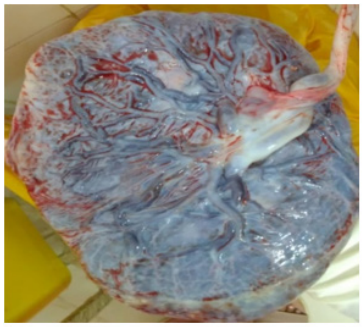

Image-1: Central insertion of umbilical cord

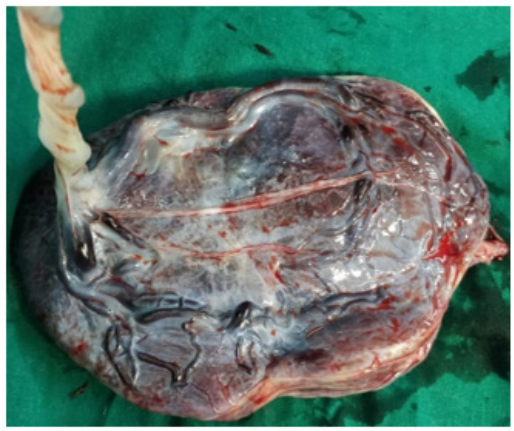

Image-2: Marginal insertion of umbilical cord

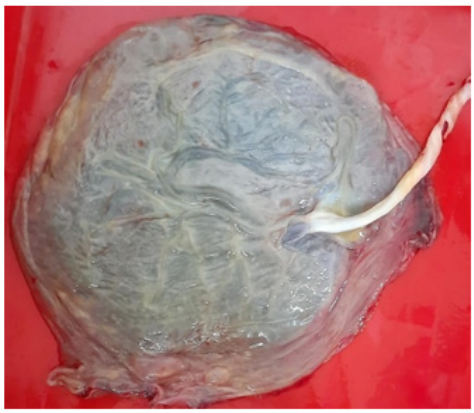

Image-3: Eccentric insertion of umbilical cord

Discussion

Velamentous insertion of 9 umbilical cords in B-mode combined with 3D Power Angio Doppler and color /Power Doppler through ultrasound was reported by Markov D et al [12]. Ghomian N et al reported 60.9% of cords with velamentous insertion in IUGR and 39.1% with central insertion which is close to present study with 40% central type of cord insertion. General foetal abnormalities were only seen in a small percentage of cases where the cord was inserted incorrectly[13]. Meeejus G et al observed 54.5 % and 70.8% of central and velamentous insertion respectively[14]. Londhe P S et al observed 1.8% and 8.5 % of velamentous insertion in normal and IUGR which differ to our findings where velamentous type was 4% in normal and 2% in IUGR [15].Dhabhai MP and Gupta G in their study found 22% lateral type and 35 % of marginal type cord insertion in IUGR placenta[16]. Our findings are coinciding with the findings of the above authors where eccentric was 20% and marginal type was 38% in IUGR placenta. Kaur R and Sapkal U reported a velamentous insertion of cord with asymmetrical IUGR and PIH [17]. Incidence of marginal insertion of cord was 7.2% and 9.45%[18,19]. Manikanta Reddy V et al observed 0.9% velamentous insertion ,7.27% furcate ,16.63 % marginal and 75.45% normal insertion[20]. Possible causes of IUGR according to Fox & Maulik & Benirschke & Faye-Petersen & Salafia et al were circummarginate placentas, velamentous cord insertion, circumvallate placentas and placenta previa [21-23]. Udainia A & Mehta CD found 4% marginal, 60% eccentric, 36% central insertion in control group[24]. Saha RR et al observed 50% central, 30% Intermediate, 10% marginal & 10% velamentous insertion of cords[25]. Circumvallate placenta with concentric cord insertion but no sign of velamentous insertion was reported by Dukatz R et al in a case report[26]. Furcate insertion of umbilical cord is a rare abnormality. Kosian et al observed 0.16% furcate type of insertion which was linked to intrauterine fetal death in their study. In our study we didn't observe any furcate type of insertion in our study [27].

Conclusion

The current study stresses the incidence of umbilical cord insertion site. We observed the most common type of insertion in IUGR was central insertion followed by marginal insertion. Least variety was velamentous insertion while furcate was nil. Data on umbilical cord insertion in IUGR are scanty in literature. Aberrant cord insertions are uncommon, but they are essential since they can lead to serious pregnancy difficulties. An inspection of the umbilical cord in detail can reveal information about several aspects of foetal development.

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Original Article

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Assessment of Knowledge, Attitude and Practices among Healthcare Professionals Regarding Hepatitis B Infection and Vaccination in a Tertiary Care Hospital

Suraj Sirohi[1], Shivam Dixit[2], A.K.Khatri[3], Ayushi Shrivastava[4], Shweta Goswami[5]

[1]Associate Professor, [2]Assistant Professor (Statistics), [3]Professor, [4]PG Resident, [5]Medical Graduate, Department of Community Medicine, MGM Medical College & MY Hospital, Indore (M.P.).

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Abstract

Background: Hepatitis B infection is an occupational risk for Healthcare workers (HCWs).[3] They have a greater risk of acquiring HBV infection due to exposure to blood or bodily fluids. Compared to the general population, the risk is four times higher for this group of professionals. The present study was carried out to know the vaccination status of Hepatitis B; assess knowledge and attitude towards Hepatitis B vaccination; and to assess the awareness about Hepatitis B infection among health care professionals.

Methods and Materials: A cross sectional study was conducted in the MY Hospital, Indore for a period of 6 months after getting approval from institutional ethics committee. The sample size of 210 healthcare professionals was selected using simple random sampling technique. The data was collected by using a pre-designed, validated semi-structured questionnaire. Data collected through the questionnaires were coded, entered into a database and analysed using a statistical software SPSS version 25(trial version).

Results: 63.81% of HCWs knew about HBV infection. 43.81% were aware about its spread through saliva. 77.36% doctors, 74.78% nurses and 80.95% of the other health care workers never used PPE while handling blood and body fluids. All the doctors, 54.78% nurses and 21.43 of others knew about the HBV vaccine (p-value<0.00001). 88.68% doctors and 41.27% nurses and only 33.33% of the other staff knew that there were three doses of HBV vaccine. Majority of the doctors (83.02%) and nurses (53.04%) had received HBV vaccine, while 69.05% of other health care workers did not receive any dose of HBV vaccine.

Conclusion: The study shows that complete knowledge regarding the hepatitis B infection, its mode of transmission, preventive measures and screening is still lacking among the health care workers. Although doctors seem to be the most knowledgeable, there is a need to improve the knowledge and practices among the other workers as well.

Key words: Hepatitis B, Healthcare workers, Hepatitis B vaccination, prevention.

Introduction

Hepatitis B is caused by Hepatitis B virus and is an infection of the liver which can be acute or chronic.[1] As per World Health Organization (WHO), highest burden of Hepatitis B is found in the WHO Western Pacific Region and the WHO African Region, with 116

Corresponding Author: Ayushi Shrivastava, PG Resident, Department of Community Medicine, MGM Medical College & MY Hospital, Indore (M.P).

E-mail: shrivastavaayushi92@gmail.com

million and 81 million people infected chronically, respectively. 18 million people are infected in the WHO South-East Asia Region.[1] It is an important public health challenge in India as well.[2] As per Ministry of Health and Family Welfare (2019) India has 40 million chronic Hepatitis B and 6–12 million chronic Hepatitis C infected individuals. In India, chronic HBV infection causes 20–30% instances of cirrhosis and 40–45% cases of hepatocellular carcinoma (HCC).[2]

Hepatitis B infection is an occupational risk for Healthcare workers (HCWs).[3] They have a greater risk of acquiring HBV infection due to exposure to blood or bodily fluids. Compared to the general population, the risk is four times higher for this group of professionals. As per a report by WHO, each year 5.9% of the health care workers are exposed to HBV infections that are blood-borne.[4] Physicians, surgeons, laboratory technicians, assistants in surgery and pathology, and blood bank workers form the occupational group with a higher infection risk.[3]

Hepatitis B can be prevented by use of vaccines which is a safe and effective method.[1] CDC (Centers for Disease Control and Prevention) has recommended all health workers who are exposed to blood or bodily fluids to be vaccinated against hepatitis B.[5] Therefore, it is necessary that HCWs have knowledge about the virus, its infectivity and the available vaccines and vaccine strategy so as to protect themselves and prevent acquiring the infection. Also, since HCWs are the group that impart knowledge to the community, their understanding and knowledge is crucial.

Objectives

- To assess knowledge and attitude towards Hepatitis B infection and vaccination among health care professionals.
- To evaluate the status of Hepatitis B vaccination among health care professionals.

Materials and Methods

A cross-sectional study was conducted in tertiary care hospital (MY Hospital) Indore for a period of 6 months from April 2022 to September 2022.

The sample size was calculated using a Cochran's Formula: $n = 4pq/d^2$; where: n = required sample sizep = proportion of knowledge of healthcare professionals (which is assumed to be 50% i.e. 0.5) d = margin of error (0.07)

After calculation, the minimum required sample size was determined to be approximately 210 participants. The participants were selected using a simple random sampling technique.

Ethical consideration: The study was started after obtaining the ethical approval from Institutional Ethic Committee, MGM Medical College and MY hospital, Indore.

Data collection and analysis: Data was obtained from the healthcare professionals working in the tertiary care hospital. Informed consent was obtained from them after explaining the purpose of the study. The study participants were interviewed using a predesigned semi-structured questionnaire. The data collected was coded, entered into a database and analysed using a statistical software SPSS version 25(trial version).

Table 1: Demographic characteristics of healthcare workers

DEMOGRAPHY			
1.	**Gender**	**Frequency (n)**	**Percentage (%)**
	Male	75	35.71%
	Female	135	64.29%
2.	**Age (Years)**		
	21-30	140	66.67%
	31-40	50	23.81%
	41-50	15	7.14%
	>50	5	2.38%
3.	**Occupation**		
	Doctor	53	25.24%
	Nurse	115	54.76%
	*Others	42	20%
4.	**Place of Vaccination**		
	Government Setup	123	58.57%
	Private Setup	87	41.43%
*Others include Lab technicians, Ward boys,			

Table 2: Basic Knowledge about HBV Infection

		Frequency	Percentage
A)	Do you know about HBV Infection		
	Yes	134	63.81%
	No	76	36.19%
B)	Mode of Transmission of Infection*		
	Blood	68	32.38%
	Saliva	92	43.81%
	Vertical Transmission	87	41.43%
	Body Fluids	77	36.67%
	Don't Know	111	52.86%
C)	Do you think, you are at risk for HBV Infection		
	Yes	123	58.57%
	No	87	41.43%
* This is a multiple-choice question			

Table 3 - Awareness about HBV Infection and Vaccination

		DOCTOR	NURSE	OTHERS
(A)	Do you use PPE* while handling blood and body fluids?			
	Always	0	0	1(2.38%)
	Sometimes	2(3.77%)	3(2.61%)	1(2.38%)
	Rarely	10(18.87%)	27(22.61%)	6(14.29%)
	Never	41(77.36%)	86(74.78%)	34(80.95%)
p value - <0.0001				
(B)	What do you think about the risk of getting infected with HBV infection?			
	High risk	43(81.13%)	23(20%)	11(26.19%)
	Moderate risk	10(18.87%)	73(63.48%)	24(57.14%)
	Low risk	0	5(4.35%)	2(4.76%)
	No risk	0	14(12.17%)	5(11.91%)
p value - <0.0001				
(C)	Have you ever been Screened for HBV Infection?			
	Yes	37(69.81%)	49(42.61%)	8(19.05%)
	No	16(30.19%)	66(57.39%)	34(80.95%)
p value - <0.00001				
(D)	When was the last time you screened for HBV Infection?			
	< 6 months	3(8.11%)	1(2.04%)	0
	6-12 months	11(29.73%)	5(10.20%)	2(25%)
	>12 months	23(62.16%)	43(87.76%)	6(75%)
p value - 0.079				
(E)	Is there HBV Vaccination facility available at your Work Place?			
	Yes	48(90.57%)	47(40.87%)	8(19.05%)
	No	3(5.66%)	17(14.78%)	11(26.19%)
	Don't Know	2(3.77%)	51(44.34%)	23(54.76%)
p value - <0.05				

Table 4: Knowledge and Attitude towards HBV Vaccination

		DOCTOR	NURSE	OTHERS
(A)	Do you know about HBV Vaccine?			
	Yes	53(100%)	63(54.78%)	9(21.43%)
	No	0	52(45.22%)	33(78.57%)
p value <0.00001				
(B)	How many doses are there for HBV Vaccine?			
	1	1(1.89%)	11(11.49%)	0
	2	4(7.55%)	21(14.94%)	2(22.22%)
	3	47(88.68%)	26(41.27%)	3(33.33%)
	Don't Know	1(1.89%)	5(7.94%)	4(44.45%)
p value - <0.0001				
(C)	How long HBV Vaccination protects you from Hepatitis B Infection?			
	<5 years	2(3.77%)	5(4.34%)	7(16.67%)
	5-10 years	48(90.57%)	90(78.26%)	11(26.19%)
	>10 years	1(1.89%)	7(6.09%)	5(11.91%)
	Don't Know	2(3.77%)	13(11.31%)	19(45.23%)
p value < 0.0001				
(D)	Have you Received HBV Vaccination?			
	Yes	49(83.02%)	61(53.04%)	13(30.95%)
	No	9(16.98%)	54(46.96%)	29(69.05%)
p value - <0.00001				
(E)	Have you been tested for Antibodies level after Complete HBV vaccination?			
	Yes	3(6.12%)	7(9.59%)	1(7.69%)
	No	46(93.88%)	66(90.41%)	12(92.31%)
p value - 0.595				

Results

Table 1 shows the demographic characteristics of health care workers included in the study. A major proportion of the study participants belonged to the age group of 21-30 years (66.67%), followed by those of 31-40 years (23.81%). Female preponderance was observed (64.29%). 54.76% were nurses, 25.24% were doctors while the rest 20% included lab technicians, ward boys etc. Table 2 depicts the basic knowledge about HBV infection among the health care workers. 63.81% of them knew about HBV infection, 43.81% were aware about its spread through saliva, while 41.43%, 36.67% and 32.38% were aware of its vertical transmission, transmission through body fluids, and blood respectively. 52.86% did not know about any mode of transmission. 58.57% believed they were at risk for HBV infection. The doctors, nurses and others were assessed for awareness regarding HBV infection and vaccination separately as shown in Table 3. 77.36% doctors, 74.78% nurses and 80.95% of the other health care workers never used PPE while handling blood and body fluids. Only 2.38% of the lab technicians/ward boys reported always wearing PPE (p-value<0.0001; significant). 81.13% doctors, 20% nurses and 26.19% of the other workers agreed that they were at a high risk of getting infected with HBV (p-value<0.0001; significant). 69.81% doctors and 42.61% nurses were screened for HBV infection in the past, while 80.95% of the other health care

workers had never been screened (p-value<0.00001; significant). Most of the heath care workers (62.16% doctors; 87.76% nurses and 75% of the other workers) had been screened >12 months back (p-value=0.079; significant). 90.57% doctors, 40.87% nurses and 19.05% of other staff were aware of the presence of a HBV vaccination facility at their workplace, while 3.77%, 44.4% and 54.76% of doctors, nurses and other staff did not know whether such a facility existed or not (p-value=<0.05; significant).Table 4 depicts the knowledge and attitude of health care workers towards HBV vaccination. All the doctors (100%), 54.78% nurses and 21.43% of others knew about the HBV vaccine (p-value<0.00001; significant). 88.68% doctors and 41.27% nurses and only 33.33% of the other staff knew that there were three doses of HBV vaccine. 7.94% and 44.45% of nurses and other workers did not know about the number of doses (p-value<0.0001; significant). 90.57% of the doctors and 78.26% of the nurses reported that HBV vaccine protected against the infection for 5-10 years; 45.23% of the other health workers did not know about it (p-value=<0.0001; significant). Majority of the doctors (83.02%) and nurses (53.04%) had received HBV vaccine, while 69.05% of other health care workers did not receive any dose of HBV vaccine. Only 6.12% doctors, 9.59% nurses and 7.69% of other staff had been tested for antibody titre after the complete HBV vaccination.

Discussion

The present study was carried out in a government tertiary care hospital among the various health care workers. Basic knowledge about HBV infection among the health care workers was assessed. 63.81% of them knew about HBV infection, 43.81% were aware about its spread through saliva, while 41.43%, 36.67% and 32.38% were aware of its vertical transmission, transmission through body fluids, and blood respectively. 52.86% did not know about any mode of transmission. 58.57% believed they were at risk for HBV infection. In a study by Qin et al[6] similar findings were observed where most (70.1%) were knowledgeable regarding the routes of transmission, which comprised mostly doctors. Saroshe et al[7] in a study carried out among nurses of government and private hospitals reported that all nurses (100%) knew about the Hep B infection; 73.3% and 43.3% nurses from government and private hospitals believed that they were at high risk for infection and almost 90% of them from both sectors knew blood as a mode of transmission. Paul P, Arumugam B[8] reported 90% medical and dental students with knowledge that Hepatitis B is a viral infection. On the contrary, Bhadoria A et al[9] in their study reported that only 55% and 33.88% of medical students and nurses respectively, had knowledge regarding the Hep B infection. Baig VN et al[10] observed that 59.04% clinicians had adequate knowledge about the infection, while 77.7% were knowledgeable regarding the routes of transmission.

The doctors, nurses and others were also assessed for awareness regarding HBV infection and vaccination separately in the present study. 77.36% doctors, 74.78% nurses and 80.95% of the other health care workers never used PPE while handling blood and body fluids. 81.13% doctors, 20% nurses and 26.19% of the other workers agreed that they were at a high risk of getting infected with HBV. 69.81% doctors and 42.61% nurses were screened for HBV infection in the past. Qin et al[6] observed that 55.9% had poor knowledge regarding the preventive measures and 77.3% were not aware of the clinical outcomes of HBV infection similar to our study.On the contrary, Saroshe et al[7] reported that 86.6% and 93.3% nurses from government and private sectors respectively, practiced universal precautions in the hospital. Yasobant S et al[11] stated that only 85.7% of the doctors used gloves regularly while handling patients. Bhadoria A et al[9] found that majority followed the universal precautions while 75.6% and 47.5% medical students and nurses respectively were aware regarding screening of Hepatitis B. Baig VN et al[10] found that 48.9% were not aware of screening.

The present study also assessed the knowledge and attitude of health care workers towards HBV vaccination. All the doctors, 54.78% nurses and 21.43% of others knew about the HBV vaccine (p-value<0.00001). 92.45% doctors and 65.52% nurses and only 11.76% of the other staff knew that there were three doses of HBV vaccine. Majority of the doctors (83.02%) and nurses (53.04%) had received HBV vaccine, while 69.05% of other health care workers did not receive any dose of HBV vaccine. Only 6.12% doctors, 9.59% nurses and 7.69% of other staff had

been tested for antibody titre after the complete HBV vaccination. Mabunda N et al[12] reported only 40.9% vaccination of which only 31.8% were completely vaccinated. Qin et al [6] reported only 17.5% HCWs were vaccinated against Hepatitis B, contrary to our study. Saroshe et al [7] reported vaccine coverage of 36.67% and 93.33% in the government and private hospital respectively, of which 81.82% and 82.15% respectively had received the complete course. Bhadoria A et al [9] found that among medical students vs. nurses, 98.3% vs. 86.9% were aware of the vaccine, 74.6% vs.69.2% knew about the number of doses, 82.8% vs. 70% received the vaccine of which 62.4% vs. 49.2% received the complete dose; and 83.9% vs. 62.3% identified the need for titre assessment post-vaccination respectively. Batra V et al[13] reported 49.6% vaccination which was highest among the doctors, while Yasobant S et al[11] reported it to be only 46.4%. Baig VN et al[10] found it to be 81.9%. Paul P, Arumugam B[8] found that 86% medical and dental students were aware of the vaccine while 73.6% were completely vaccinated.

Conclusion

The present study shows that complete knowledge regarding the hepatitis B infection, its mode of transmission, preventive measures, vaccination, vaccination doses and screening is still lacking among the health care workers. Though doctors seem to be the most knowledgeable, there is a need to improve the knowledge and practices among the other workers as well. This calls for a need to implement adequate trainings and policies which will help to create awareness regarding this infection among the healthcare workers who in turn can educate the general population about the various aspects of this infection as well.

Recommendation: The results of this study highlight the need for regular refresher training for all healthcare workers about Hepatitis B infection, modes of transmission and its prevention. Health education campaigns can be conducted in the hospitals to raise awareness regarding preventive measures. Hepatitis B vaccinations should be made compulsory for all health care workers on joining duties in the hospitals. There should be formulation of policies for timely screening of all healthcare workers for the infection, and also post-vaccination assessment of titres should be ensured.

Limitations of the study: The present study was conducted in a small sample size. Also, it was conducted among health care workers of a government tertiary care hospital only. Inclusion of more health care workers, as well as, those from private sectors could have provided a better insight on the knowledge, attitude and practices of the workers.

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Original Research

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Devising A Nurse Led Care Program on Breast Cancer Prevention (NLCP): Awareness among South Indian Women regarding Breast Cancer and Its Prevention: Phase I Study

Jolly Daniel [1], Abhilash Venunathan[2], Aflah Abdullah[3], Aliya Sherin[4], Ameena Fiza[5], Rabeeha Rahman[6], Shibila[7]

[1]Professor & Head, Department of Obstetrics & Gynaecology Nursing, JDT Islam College of Nursing, Kerala, India, [2]Associate Professor, Department of Medical surgical Nursing, JDT Islam College of Nursing, Kerala, India, [3-7]Student, JDT Islam College of Nursing, Kerala, India.

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Abstract

Background: Breast cancer is the most common cancer among women in both developed and underdeveloped countries, comprising 23%of all female cancers around the globe, with an estimated 1.15 million cases diagnosed in 2002. The present study was aimed to explore the awareness of women regarding breast cancer and its prevention, with a plan to formulate A Nurse Led Care Program on Breast Cancer Prevention (NLCP) under the light of the study findings.

Method: The present study research adopted a quantitative research approach. A cross sectional survey was used to assess the knowledge and attitude of women regarding breast cancer and its prevention. The study was conducted at selected communities of South India. The data was collected from 320 samples with a help of awareness questionnaire prepared by the investigators and data was collected using Google forms. A quota sampling technique was adopted in the present study. The data were analysed with descriptive and inferential statistics.

Results: The result of the study shows less than half of the (12.81%) sample had good level of awareness regarding breast cancer. Majority (65%) of samples had average awareness. It shows, about 22.19% of samples had poor level of awareness about breast cancer. The study also indicated that there is a significant relationship between awareness regarding breast cancer and prevention with age, domicile, educational status, marital status and social media influence.

Keywords: Nurse Led Care Program, NLCP, Awareness, South Indian Women, Breast Cancer.

Introduction

In women, breast cancer is the second most prevalent type of cancer. Both men and women can develop breast cancer. People's support of breast cancer sufferers has led to an increase in the survival rate. Because of early discovery and treatment, fewer people died as well. Breast cancer can be found at any age, however it is typically found in adults over

Corresponding Author: Abhilash Venunathan, Associate Professor, Department of Medical surgical Nursing, JDT Islam College of Nursing, Kerala, India.

E-mail: abhilashvenunathan@gmail.com

50 years. You may feel a lump in your breast or notice a change in the appearance of your breast skin as signs of breast cancer. Always developing silently is breast cancer. Most patients become aware of it while being screened regularly. Breast cancer accounts for more than one in ten new cancer diagnoses each year. Breast cancer develops slowly and is typically detected through routine screenings[1]. Breast cancer is made up of various subtypes, each of which is associated with a variety of clinical outcomes. The development of specific cancer-preventative and -therapeutic therapies depends on an understanding of this heterogeneity[2]. In 2020, there were 2.3 million women diagnosed with breast cancer and 685000 died globally. One in twenty-eight Indian Women are likely to develop breast cancer during their lifetime[3].

Previous research found that various immigrant groups used breast cancer screening services less frequently, which is consistent with the pattern seen among women from lower social strata. Numerous factors, such as the social, economic, employment, and health circumstances in the three destination nations as well as the country of origin, contribute to this inequality. Additionally, migration, health issues connected to movement, the importance of health and prevention in the culture of origin, language barriers, etc. all has an impact. As a result, migration represents an axis of inequality that is based on distance, social classes, and gender4. Women's depressed symptoms are made worse by receiving a breast cancer diagnosis, which also has a considerable negative impact on their quality of life, physical health, and mental well-being. The most difficult health issue and a top priority for binaural research is breast cancer. The creation of a strategy to enhance breast cancer prognosis is urgently required. The likelihood of discovering breast cancer can rise with early detection and screening[5].

According to epidemiological studies, the number of people with breast cancer worldwide is predicted to reach about 2 million by the year 2030. Between 1965 and 1985 in India, the incidence rose dramatically, by about 50%. In India, there were an estimated 118000 incident cases in 2016, 98.1% of whom were female, and 526000 prevalent cases. From 1990 to 2016, the age-standardised incidence rate of breast cancer in females increased by 39.1%, and this rise was seen in all 50 states. According to Globocan statistics 2020, breast cancer accounted for 10.6% (90408) of all cancer cases and 13.5% (178361) of all cancer cases in India[6]. A population-based strategy to reduce exposure to modifiable risk factors and a precision prevention strategy to identify women at higher risk and target them for particular therapies would likely be needed to reduce the incidence of breast cancer[7]. Studies were reported that the early identification of the breast cancer is drastically reduced among the women due to lack of their awareness regarding the breast cancer and its preventive strategies[8]. Evidences shows that an effective nurse led programs in cancer care might be beneficial to improve the preventive care approaches[9]. Hence, the present study aimed to assess the awareness among the women in the southern part of India, and it was conducted as an initial phase of developing a nurse led program in breast cancer prevention.

Materials and Methods

A cross-sectional study with a descriptive survey design used to assess the awareness among the women regarding breast cancer and its prevention. The present study conducted in selected communities of the south India residing at Kerala. The sample size calculated at 95% confidence interval and 5% margin of error. Finally, 320 women in the age group of 16-55 years with the attrition rate of 4% based on the inclusion criteria set by the investigators. A quota sampling technique used to recruit the samples for the present study.

A self-reported awareness questionnaire used to assess the awareness among the women. The investigators based on the literature review, interactions with clinical experts, healthy women, women with breast cancer and professional experiences, developed it. The content validity of the tool established with the help of the public health experts. The reliability of the tool achieved by test-retest reliability method and it seems to be reliable (correlation coefficient (R) = 0.86).The research tool having two sections: Section A- demographic profile of the participants and Section B – Awareness questionnaire (18 items).Maximum awareness score is 18.

After getting the permission from the institutional research and ethical committee, a formal permission

from the authorities, the investigators conducted a pilot study in order to find out the practicability of the study. Pilot study conducted in 30 samples, it found to be feasible, and those samples excluded from the main study. An informed consent obtained from the all study subjects before data collection and the confidentiality of the data ensured. After obtaining the informed consent from the study participants, the data collected with the help of an electronic survey form.

Results

Among the recruited samples, 85.62% belonged to the age group of 16-29 years. More than half (58.6%) of the samples were residing at panchayath area. Majority of the samples (39.2%) studied up to bachelor's level. Most of the subjects (72.1%) participated in the present study were unmarried. 59.9 % of the subjects were above the poverty line. Among the study, participants (74.0%) had a strong influence by the social media in their life.

Table 1: Awareness score of women regarding breast cancer and its prevention

Mean score	Median	Standard deviation	Range	Minimum score	Maximum Score
8.18	8	2	10	13	3

Table 1 depicts that median awareness score 8 with arrange of 10. Maximum score obtained by the participants was 13 and minimum was 3.

Table 2: Level of awareness of the women regarding breast cancer and its prevention

Level of awareness	Score	Frequency	Percentage
Poor	0-6	71	22.19
Average	7-11	208	65
Good	12-18	41	12.81

Table 2 shows more than half of the sample (65%) of samples had an average level of awareness, 22.19% of the sample had a poor level of knowledge, and 12.81% of the sample had a good level of awareness. The above shown data highlights a considerable variation in the awareness level of the women regarding breast cancer and its prevention.

Table 3: Correlation between awareness of women regarding breast cancer and its prevention with selected demographic variables

Variable	Spearman's rho	P value
Age	0.26	0.03
Domicile	0.062	0.02
Educational status	0.108	0.043
Marital status	0.038	0.501
Financial status	0.097	0.318
Social media	0.131	0.049

* Significant at P< 0.05

Discussion

The awareness regarding the breast cancer diagnosis and prevention varied among the women. In the present study concluded that awareness about breast cancer is low among the women in the southern part of India. This is similar to results of studies done in urban resettlement colonies of India[10] and among the female school students of Turkey[11].

Many factors correlated with the awareness of the women regarding the breast cancer and its prevention. Age of the study participants, domicile, educational status, and their marital status. The highly educated or those from higher socioeconomic classes were those who were aware. Women with low socioeconomic status are less likely to get breast cancer than are those with higher socioeconomic status, but because of more late-stage diagnoses, they also die from the disease more frequently. Older women and women who had never held a job showed less knowledge of symptoms. Nipple eczema, alterations in the size or form of the breast, and nipple retraction were less frequently regarded as breast cancer signs by older women. It is possible that older women attribute these symptoms to getting older, as has been observed with other complaints in the past [12,13].

Social media act a driving force for upgrading the knowledge awareness among the public regarding the breast cancer screening and providing insight regarding the early intervention and screening [14,15]. The present study concluded that the awareness among the women regarding breast cancer and its prevention strongly influenced by the social media campaigns or platforms.

Early detection and prevention is the key stone of the Nurse Led Care Program on Breast Cancer Prevention (NLCP). Hence, the awareness status of women regarding breast cancer and its prevention would a valuable pieces evidence for devising the operational plan of the NLCP program.

We acknowledge the following study's limitations: (1) The study is limited to 320 samples only. (2) Time constraints, and (3) this study was done in selected parts of south India; hence the findings of this study could be generalized with utmost caution.

Conclusion

The scope of nursing practice has significantly increased throughout time. Nurse-led care is one example of cutting-edge nursing practice. Since the 1960s, when the phrase "nurse-led care/service" was first used, it has been a part of the nursing discipline. Later, in the 1980s and 1990s, a number of nurse-led services were documented. These units shared the traits of having extraordinarily high standards of practice and nurses who went above and beyond to improve patients' care.

Conclusion

Treatment for breast cancer patients includes thorough education and resources to help people get ready for treatment and the possibility of side effects. A high degree of patient knowledge should be maintained via new methods of information organization. Nurse led clinics are the novel concept in cancer care, so these clinics can serve as a driving force in improving the knowledge and attitude of the public regarding breast cancer and its prevention, through early diagnosis and prompt treatment. Hence the investigators are planning to formulate a nurse-led breast cancer prevention and early referral clinic under the umbrella of JDT college of nursing based on the findings of the present study.

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Ethical Clearance: The study was approved by the institutional ethical committee of JDT Islam College of Nursing.

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Original Article

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Effects of Intra-Articular Platelet Rich Plasma on Clinical Outcomes in Knee Osteoarthritis

Umang Sanghvi[1], Abhishek Rupavatiya[2]

[1]Assistant Professor, [2]Second Year Resident, Department of Orthopedics, Gujarat Adani Institute of Medical Science, Bhuj, Kutch, Gujarat.

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Abstract

Background and Aim: With increasing frequency, platelet-rich plasma (PRP) preparations have been used to treat cartilage lesions to regenerate tissue homeostasis and retard the progression of knee osteoarthritis (OA). The aim of our research was to study the effectiveness of intra-articular PRP injections in early-stage OA patients and to evaluate the clinical outcome and QOL at 6 months.

Material and Methods: Present study was conducted on 80 patients at tertiary care institute of Gujarat for the Period of 1 year. Intraarticular administration of PRP was done by injecting 5 mL of platelet concentrate in the supra-patellar pouch through supero-lateral approach with a 22-gauge needle. The patients were followed up for reduction in pain, reduction in stiffness and improvement in physical function in accordance with WOMAC scoring system on day 0 and at the end of 6th week, 3rd and 6th months and QOL in accordance with WHOQOL questionnaire before PRP therapy and at the end of 6th month.

Results: In our study of 80 patients 26 had very poor, 23 had poor and 1 had neither poor nor good QOL before PRP injection evaluated by WHOQOL. At 6 months post PRP therapy 5 had very good, 59 had good, 15 had neither good nor poor and 1 had poor QOL which showed highly significant improvement in QOL.

Conclusion: Intra-articular injection of autologous PRP is a safe, cheap, easy to prepare and use, and has a therapeutic role in early knee OA. Hence, PRP therapy can be used in management of early stage knee OA to provide relief from symptoms and to improve QOL with negligible complication, low cost and ultimately with good results.

Key Words: Osteoarthritis, Pain, Platelet-Rich plasma, Quality of Life

Introduction

Osteoarthritis (OA) is the fourth leading cause of years lived with disability at the global level. Increased longevity teamed with the epidemic of obesity and the resultant motivation to exercise, often through sports, the burden and prevalence of OA are expected to grow further. Clinically, OA presents with recurring episodes of pain, particularly after prolonged activity and weight bearing that

Corresponding Author: Umang Sanghvi, Assistant Professor, Department of Orthopedics, Gujarat Adani Institute of Medical Science, Bhuj, Kutch, Gujarat.

Mobile: 97279 79919

E-mail: uk_cool494@hotmail.com

decreases with rest, stiffness felt after inactivity (gel phenomenon), progressive limitation of movement, and synovitis with effusion.[1,2,3]

OA is one of the major causes of pain and disability in the elderly population (>70 years).[4] OA alters the normal joint metabolism promoting increased catabolism and decreased anabolism. In OA knees, chondrocyte senescence and loss of cartilage integrity are prominent features. There is a surge in the water content of hyaline cartilage, accompanied by decrease in corresponding proteoglycan concentration, length and aggregation, causing cartilage stiffness and fibrillation of the cartilage surface. From this stage, cartilage proceeds to erode resulting in deep clefts. Concurrently, subchondral bone shows morphological changes. The synovial fluid infiltrates into subchondral bone causing the formation of subarticular cysts. Osteophytes are characteristic features of knee OA in non-pressure areas, caused due to the flattening of bone from pressure in high-wear areas.[5]

American College of Rheumatology (ACR) recommends various pharmacological and non-pharmacological treatment modalities for the management of knee OA.[6] Weight reduction, joint offloading, exercises, Tai Chi, and therapeutic modalities are a few of the nonpharmacological therapies.[7,8] Pharmacotherapy chiefly includes acetaminophen, non-steroidal antiinflammatory drugs (NSAIDS) oral as well as topical, intra-articular corticosteroids, opioids, and topical capsaicin. Surgical management includes arthroscopic debridement, osteotomy of the proximal tibia or distal femur, uni-compartmental knee replacement, total knee replacement, etc. are mostly reserved for more severely disabled patients who have failed conservative management [9,10] Conservative treatments increase the quality of life of patients, especially in the early phase. Current researchers are investigating new methods of stimulating repair or replacing damaged cartilage.[11] Platelet Rich Plasma (PRP) has the function of chondrogenesis, proliferation of fibroblasts in vitro, regulation of metalloproteinases, collagen synthesis, and stimulation of synovial fibroblast to produce hyaluronic acid that repairs the damaged articular cartilage.[12]

PRP is an autologous mixture of highly concentrated platelets and associated growth factors and other bioactive components produced by centrifugal separation of whole blood, which is used in orthopaedic and sports medicine practices to treat bone, tendon and ligament injuries.[13] PRP may induce a regenerative response by improving the metabolic functions of damaged structures, and has been shown to have a positive effect on chondrogenesis and mesenchymal stem cell proliferation.[14-16]

The combined effects of PRP make it a potential option for management of knee OA, especially as a primary analgesic agent. This is due to an increase in proliferation of tenocytes, osteoblasts and mesenchymal stem cells resulting in decreased pain levels postoperatively.[7] The aim of our research was to study the effectiveness of intra-articular PRP injections in early-stage OA patients and to evaluate the clinical outcome and QOL at 6 months.

Material and Methods

Present descriptive study was conducted on 80 patients at tertiary care institute of Gujarat for the Period of 1 year. The study included a total of 80 patients with clinically and radiologically diagnosed OA of knee joint/ joints with age of 50 years and above coming to the outpatient department of orthopaedics at tertiary care institute. Ethical approval was taken from the institutional ethical committee and written informed consent was taken from all the participants.

Patients with active infective pathology around the knee joint, on anti-coagulant therapy or with bleeding disorders, platelet functional and morphological disorders, any primary or secondary malignancies, severely anaemic, uncontrolled diabetes mellitus, and OA other than knee joints were excluded from our study.

After proper informed consent and history taking, clinical assessment was done. Severities of symptoms were assessed by WOMAC score, the patients were explained about the procedure and the risks associated with it. For the preparation of PRP, l0 mL of peripheral blood was collected maintaining strict sterility protocol. The collected blood underwent a series of centrifugation process with 3000 rotations per minute for l0 to 12 minutes, thereby delivering the

desired PRP with four- to six-fold increase in platelet concentration. Intraarticular administration of PRP was done by injecting 5 mL of platelet concentrate in the supra-patellar pouch through supero-lateral approach with a 22-gauge needle. No form of local anaesthetic was used. Immediately after the injection, passive flexion and extension of the affected knee was performed.

The patients were observed for 30 minutes, following which they were given injection paracetamol for pain on "SOS basis" and prophylactic oral antibiotics for 3 days. They were instructed to limit the use of their affected knee for 24 hours. The patients were especially instructed not to use any/asked to stop medications 48 hours before the follow-up assessment. The patients were followed up for reduction in pain, reduction in stiffness and improvement in physical function in accordance with WOMAC scoring system on (pre-procedure) day 0 and (post-procedure) at the end of 6th week, 3rd and 6th months and QOL in accordance with WHOQOL questionnaire before PRP therapy and at the end of 6th month.

WOMAC consisted of a questionnaire which is aimed to assess three items in subscales of 0-4 containing total of 24 questionnaires.

Statistical analysis

The recorded data was compiled and entered in a spreadsheet computer program (Microsoft Excel 2007) and then exported to data editor page of SPSS version 15 (SPSS Inc., Chicago, Illinois, USA). For all tests, confidence level and level of significance were set at 95% and 5% respectively.

Results and Discussion

OA being a progressive degenerative and one of the oldest diseases in mankind still lacks a definite therapeutic or pharmacological agent to treat or stop the progression other than total knee replacement.[17] Increased understanding of anatomy, pathophysiology and biochemical events occurring at the articular cartilage has led to invention of novel methods in treatment of OA knee lately. One among them is PRP therapy, which has gained popularity in the last decade worldwide mainly due to its promising results, easy availability, fewer complications and at affordable cost. The PRP exerts multiple biological actions, including modulatory effects on inflammation and angiogenesis, which may translate clinically to pain relief.[18] In isolated chondral lesions, healing has been seen as described in some studies.[19,20] Hassan et al[21] evaluated the osteoarthritic knees before and after the PRP injections and have found a significant decrease in the number of patients having increased Doppler activity after 6 PRP injections.

Our study included 80 patients with early-stage knee OA and given a single intraarticular injection of autologous platelet rich plasma and the outcomes of whom were assessed pertaining to improvement in their QOL and well-being

In our study we observed significant reduction in pain, reduction in joint stiffness and improvement in physical activities as shown by significant reduction in WOMAC score values at each successive follow-up with mean WOMAC scores of 60, 46 and 32 at 6 weeks, 3 months and 6 months respectively post PRP therapy. We observed significant mean differences in mean values with $p<0.001$. In a study conducted by Mohammed et al in 55 patients with knee OA treated with PRP showed a significant improvement in pain and function in terms of WOMAC scores from baseline.[22] In a comparative study conducted by Ramesh et al the patients showed improved range of movements with superior $p<0.001$ for VAS, WOMAC and KOOS score which was statistically significant than corticosteroid injection. [23] In a study conducted by Naresh Kumar et al in 2017 concluded that PRP showed a significant improvement in pain and functional status of knee at 1, 3 and 6 months after single intra articular PRP injection.[24]

In our study of 80 patients 26 had very poor, 23 had poor and 1 had neither poor nor good QOL before PRP injection evaluated by WHOQOL. At 6 months post PRP therapy 5 had very good, 59 had good, 15 had neither good nor poor and 1 had poor QOL which showed highly significant improvement in QOL with $p<0.001$. (Table 1) In a study conducted by Wang-Saegusa et al evaluated the effects of plasma-rich growth factor (PRGF) on function and QOL of patients with knee OA and reported that the mean changes of WOMAC and related parameters and mean changes of physical parameters of SF-36 questionnaire for QOL were meaningful.[25] In a study

conducted by Raeissadat et al concluded that intra-articular knee injection of PRP can decrease joint pain and stiffness and improve patients' QOL in short term. [26]

In our study of 80 patients 42 were females and 38 were males, with the mean age of 65 years with the most common age group being 61 to 70 years. (Table 2) In our study, we found age to be an important factor determining the clinical outcome. As OA is an age-related degenerative process, it may happen that PRP is more beneficial at incipient stages as compared with the later, when the disease has already progressed. According to studies by Felson et al showed there was a slightly higher prevalence of x-ray changes of OA in women than in men.[27] In a study conducted by Akinpelu et al indicated high prevalence of knee OA in women than in men. [28]

Table 1: Quality of Life in patients before and after injection of PRP (evaluated by WHOQOL)

Quality of Life	Baseline	After 6 Month (Post PRP Thrapy)	P value
Very Good	2	5	0.01*
Good	28	59	
Neither Poor Nor Good	1	15	
Poor	23	1	
Very Poor	26	0	

* indicates statistically significance at p≤0.05

Table 2: Gender wise Distribution of study participants

Gender	Number	Percentage (%)
Male	38	47.5
Female	42	52.5
Total	80	100

This method appears to be quite safe in view of the fact that it is an autologous preparation, and hence chances of any immunological or allergic reactions are theoretically nil. Limitation of the study was the assessment of patients beyond 6 months and long-term follow-up were out of the scope of this study. Patients with multiple co-morbidities and internal derangements of the knee with previous history of intra articular tibial plateau fractures or ligament injuries were not considered in our study.

Conclusion

OA knee was commonly observed in female patients with age more than 60 years with more sedentary lifestyle. There were no major complications or incidences of local infection in our study group. Intra-articular injection of autologous PRP is a safe, cheap, easy to prepare and use, and has a therapeutic role in early knee OA. Hence, PRP therapy can be used in management of earlystage knee OA to provide relief from symptoms and to improve QOL with negligible complication, low cost and ultimately with good results. Outcome of treatment depends on age, sex and stage of the disease and the inherent potential of the articular cartilage to regenerate.

Ethical approval was taken from the institutional ethical committee and written

Informed Consent was taken from all the participants.

Conflict of Interest: None

Source of Support: Nil

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Original Article

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Family Caregivers' Dilemma while Providing Palliative Care to Elderly Patients

Ushvinder Kaur Popli[1], Tuba Naqvi[2]

[1]Professor, [2]Research Scholar, Department of Social Work, JMI, New Delhi.

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Abstract

Elderly patients receiving palliative care are terminally ill, thereby requiring an increasing amount of caregivers' time and attention. Caregivers often face diverse issues and challenges while performing caregiving tasks. The purpose of this paper is to systematically investigate the challenges that trigger family caregivers' dilemmas while providing palliative care to their elderly patients. The sample size was 10 respondents (family caregivers) who were purposively selected by the researchers from hospital-based palliative care settings and home-based palliative care settings. The finding of this study presents the existing and emerging dilemmas confronted by the caregivers of the elderly receiving palliative care. The caregivers in both settings reported elderly patients' reluctance to perform daily exercises and medication. The caregivers in the hospital-based palliative care setting mentioned the patient's desire to go home, while the caregivers in the home setting needed extra assistance to manage the care needs of the elderly patients. The paper also highlights the implications for social workers functioning in palliative care settings. In conclusion, caregiving for an elderly patient is a very arduous and demanding task. Family caregivers grapple with many day-to-day challenges which creates dilemma in providing quality palliative care to their elderly patients. They try to fix their dilemmas by looking at the issue through a medical lens and discussing it with professional palliative care providers.

Keywords: Caregivers dilemma, Elderly Patients, Palliative Care, Caregiving Challenges

Introduction

The International Association for Hospice and Palliative Care (IAHPC) developed a consensus-based definition of palliative care that emphasizes holistic care for individuals with serious health-related suffering due to acute illnesses. It focuses on addressing the physical, emotional, social, and spiritual needs of patients and their family caregivers.(1) Palliative care involves pain management and symptom control by a multidisciplinary team which includes professionals and family caregivers.(2)

Family caregivers play a crucial role in improving the quality of life of their patients and alleviating their suffering by providing the best possible care to them. They bear the responsibility of various tasks which include physical care, emotional support, medication, coordination with healthcare professionals, and overall management of care.(3) The family caregivers manage all these aspects of patient care while also dealing with their own personal and psychological struggles.(4)

Caring for a terminally ill patient needing palliative care can be tough and presents a unique

Corresponding Author: Tuba Naqvi, Research Scholar, Department of Social Work, JMI, New Delhi.

E-mail: tubanaqvijmi@gmail.com

set of challenges. The key challenges faced by family caregivers in providing palliative care to patients lead to physical exhaustion, emotional distress, financial constraints, and balancing multiple roles and responsibilities. The family caregivers may feel overwhelmed by the complexity of care, the intensity of emotions, and the demands of their role. They may struggle to understand patients' needs, preferences, and wishes leading to decision-making dilemmas related to the overall management of care.[5]

The increasing need for intensive caregiving among the elderly population has led to a growing demand for palliative care.[6] The need for providing palliative care to elderly patients is growing as their numbers rise globally and India holds one-fifth of them. The confluence of demographic aging and the increasing prevalence of non-communicable diseases presents obstacle to the healthcare framework in India.[7] A study conducted in Delhi has demonstrated that there exists a demand for palliative care in North India at a rate of 1.5 per 1000 individuals within the population.[8]

Previous research in palliative care has shown evidence of its effectiveness on patients' health, improved quality of life, and better caregivers' experiences.[9] The Lancet Commission report also highlights the importance of integrating palliative care into mainstream healthcare systems.[10] Even though palliative care in India has been around for 30 years, there's no comprehensive nationwide policy. [11] The notable endeavors in palliative care have been majorly achieved through community-owned services.[12]

In India, where there is a rapidly growing aging population and limited palliative care services, there is a need to research and gain practical insights into the challenges and opportunities for improving the state of palliative care. There is a lack of diversity in research studies on palliative care, with an under-representation of elderly patients and their caregiver's needs. Thus focusing on these issues, the article aims to create an evidence base on provision of palliative care to the elderly patients in India and open doors for further research on the topic in larger settings.

Materials and Methods

The goal of the study was to observe and provide a comprehensive report concerning the dilemmas encountered by the family caregivers of elderly patients receiving palliative care in New Delhi. The design of the study was descriptive. The sample size was 10 respondents who were purposively selected by the researchers from hospital-based palliative care settings and home-based palliative care settings. The study was conducted by interviewing these respondents from ten different households. Each of the respondents was the primary family caregiver either self-identified or identified by the elderly patient. Using a structured interview schedule the respondents were asked closed as well as open-ended questions regarding palliative care being received by their elderly patient. The findings of the study were analyzed in the light of the theoretical and empirical literature reviewed and then systematically arranged under different themes. The respondents' anonymity and confidentiality were ensured throughout the study. The limitation associated with the article is its reliance on small primary data, limited access to secondary data, and potential undiscovered bias of the researchers.

Results and Finding

Profile of the respondents:

Based on the responses listed in Table 1, the mean age of the family caregivers was calculated to be 44.5 years ranging from 26 years to 59 years of age. The 80 percent of these caregivers were females, majorly daughters. The data illustrates that the mean age of the elderly patients' was 76.9 years of age. The 70 percent of the elderly patients were females of age 75 years or above. Six of the ten elderly patients were of age 75 years or above needing round-the-clock attention from caregivers irrespective of the palliative care setting. Only five households had an annual income of less than 3 lakhs per annum.

Table 1: Demographic data of elderly patients and their family caregivers

Household ID	Elderly			Caregiver		Relation of Caregiver with Elderly	Income less than 3 lakhs
	Age	Gender	Is Frail	Age	Gender		
1	88	Female	Yes	29	Female	Granddaughter-in-law	No
2	80	Male	Yes	48	Female	Daughter	No
3	86	Female	Yes	26	Male	Grand Son	Yes
4	79	Female	No	42	Female	Daughter	No
5	81	Female	Yes	45	Female	Daughter	Yes
6	80	Female	Yes	47	Female	Daughter-in-Law	No
7	75	Female	Yes	56	Female	Daughter	No
8	73	Female	No	38	Male	Son	Yes
9	66	Male	No	59	Female	Spouse	Yes
10	61	Male	No	55	Female	Spouse	Yes
Average	**76.9**			**44.5**			

Dilemma in Hospital-Based Palliative Setting:

One of the primary dilemmas caregivers face is balancing between the elderly patient's wishes and their health necessities.[5] The elderly patients may have a particular choice while the caregivers might have a different one. These situations give rise to certain dilemmas hampering the decisions crucial to the elderly patient's care. The following set of dilemmas was reported by the caregivers of elderly patients receiving palliative care in hospital-based settings:

1. **Daytime Napping:** Several studies have suggested that sleeping attributes change as people age. These changes in the sleeping pattern are influenced by various factors.[13] According to the data from the present study, four out of the five elderly patients receiving hospital-based palliative care were found to sleep during the day and stay awake at night. They normally fail to take their day medicines as they are asleep. The daytime napping also made it hard for the caregivers to adjust their rest schedules. The caregivers saw a lack of night-time sleep as unhealthy, which could affect a person's overall health. Previous studies have also suggested that sleep deprivation among elders during hospitalization is often and may lead to worse health outcomes.[14] Hence, the caregivers couldn't decide if they should allow the patient to sleep during the day or disrupt their daytime naps thus creating the caregivers' dilemma concerning the sleeping pattern of the elderly patients.
2. **Longing for Home:** Hospitalization is a phase of acute social isolation and loneliness.[15] Almost all the five caregivers agreed that their elderly patients felt lonely and missed their homes in hospital-based palliative care settings. The patients asked the caregivers how much longer their hospital stays would be and when could they go home. The caregivers asked questions to themselves if they should let the elderly patient return home or keep them in the hospital for continued care. Hence, the caregivers struggled with the dilemma of whose decision to follow- the professional's advice to be at the hospital or the elderly patients' wishes to be treated at home.
3. **Financial struggles:** Healthcare expenditure plays a significant role in shaping decisions regarding medical care.[16] Three out of the five caregivers of hospitalized elderly patients shared that they struggled with the

financial cost of caregiving. Those caregivers who were expensing around Rs.3000/- daily and had an annual income of less than 3 lakhs per annum were uncertain to continue hospital-based palliative care. The caregivers were caught in a dilemma of whether to spend any more money at the hospital or switch to home-based palliative care to balance finances.

Dilemma in Home-Based Palliative Setting:

The caregivers of elderly patients who receive palliative care at home are faced with a multitude of challenges. Previous studies have indicated that elder caregiving challenges are majorly associated with the physical, social, and psychological demands of caregiving duties.[17] These challenges produced dilemmas for the caregivers which are outlined below:

1. **Physical challenges of caregiving:** Taking care of someone can be physically tough. It often depends on the health and needs of both the person being cared for and thecaregiver. [18] The caregivers reported that they helped the elderly patients with activities of daily living such as bathing, and toileting, and help with getting up, making them sit, or changing clothes. Three out of the five caregivers stated that they needed help from other family members with tasks such as lifting and transferring. These three respondents were the female caregivers of elderly patients aged over 70 years. They required another person to assist them unlike in a hospital where nurses and ward boys are available to help. Therefore, the caregivers faced a dilemma regarding shifting the elderly to a hospital-based setting or continuing the care at home.
2. **Struggling with guilt and doubt:** Studies suggest that caregiving causes psychological strain and leads to emotional distress for the caregivers.[19] Thus the caregivers can have a hard time deciding the best care approach for their elderly patients. Two of the five caregivers considered that the quality of palliative care service is compromised by being home-based. Professionals care providers, typically visit elderly patients every two weeks, so most of the caregiving is entrusted to the family caregivers. Patients getting home-based palliative care usually receive less professional assistance and more informal help from family caregivers.[20] The caregivers experienced guilt about not doing enough for the elderly patient. The caregivers weren't sure if they could give good palliative care at home or shift the elderly patient to a hospital setting to avail more of professional care services. This was a hard choice for them thus creating dilemma and emotional distress regarding the care decision.

Dilemma in both the Settings

Caregiving for elderly patients in hospitals as well as home-based palliative care can both be challenging. The below-mentioned challenges common to both settings created dilemmas for the caregivers:

1. **Reluctance to perform daily exercises and towards medication:** The caregivers reported their struggle with the elderly patients to make them follow medical advice. Six of the ten elderly patients who were mostly female and above 70 years of age often resisted taking medication and doing exercises prescribed by their professional caregivers. The elderly patients resisted arguing they already had enough medicines or lacked the strength for physical activities. This made it hard for caregivers to know how to best take care of them. A similar study also highlighted the issue of medication non-adherence among older adults.[21] This resistance left the caregivers unsure whether to push them to keep up with their health routines or to give in to the patient's wishes, hence creating a dilemma for the caregivers.
2. **Forgetfulness:** As people get older, they often start to forget things.[22] The study reports that six of the ten elderly patients above the age of 75 years kept forgetting things. They often couldn't remember when they took their medicine, exercised, or ate a meal. The elderly patients would ask the caregivers to repeat activities that were already performed. This caused an increased sense of responsibility, irritability, and stress for the caregivers. This made it hard for the caregivers to handle the caregiving duties with ease. Thus creating a dilemma whether the caregivers should continue the elderly patients' care or assign professional caregivers for their patient.

Addressing Dilemmas

Addressing these dilemmas requires support and collaboration among healthcare professionals, patients, and their caregivers. The caregivers consulted with professionals like doctors, nurses, psychologists, and social workers for advice on handling these dilemmas. These professionals helped the family caregivers to navigate through important decisions to improve the overall well-being of the elderly patients along with respecting their wishes.

Implications for Social Workers

Social workers in palliative teams play a vital role in providing high-quality care. They provide psychosocial and emotional support as team members. They can bridge the gap between caregivers and professional care providers by encouraging communication and shared decision-making. They should equip themselves with the knowledge, skills, and resources to impart adequate training and education to the family caregivers. The social workers can also help generate awareness among the masses signifying the importance of palliative care for the elderly, and involve in advocacy and other macro-level practices.

Conclusion

The present study sheds light on the dilemmas faced by the family caregivers of elderly patients receiving palliative care in home and hospital-based settings. The study observed that the three major challenges faced by family caregivers were elderly patients' reluctance to perform exercises and take medication, longing for home when hospitalized, and loss of nocturnal sleep. Caregivers who were economically sound and caring for patients with fewer health complications experienced fewer significant dilemmas than those caring for elderly patients above 75 years of age and with co-morbid conditions. The research findings imply that the dilemmas faced by caregivers in providing palliative care to elderly patients are complex and multifaceted. To make informed decisions regarding the patient's care, it is vital to consider the patient's wishes and health requirements.

In conclusion, providing care for the elderly can be a daunting and exhausting task, which can deplete the emotional and physical resources of the caregivers. This, in turn, creates challenges for caregivers leading to dilemmas and difficulties in deciding on care provision. Further research is needed to explore this topic in larger and more diverse populations to inform the development of evidence-based practices.

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Ethical Clearance: The study was conducted in ethical and responsible manner which includes obtaining informed consent from participants, maintaining anonymity and confidentiality.

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Original Research Article

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Study on Pattern of Self-Management Practices in Patients of Diabetes in Rural Population in Aligarh

Uzma Eram[1], Ambika Saraswat[2], Salman shah[3], Anees Ahmad[4]

[1]Associate Professor in the Department of Community Medicine, J N Medical College, AMU, Aligarh, [2]MD in Community Medicine, JN Medical College, AMU, Aligarh, [3]Assistant Professor in the Department of Community Medicine JN Medical College, AMU, Aligarh, [4]Professor in the Department of Community Medicine, JN Medical College,AMU,Aligarh.

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Abstract

Self care involves all decisions which individuals, families,take for their own health particularly their own physical and mental well being. Staying fit, exercising, avoiding hazardous behavior etc. will all compound to self care.The aim of this study is to find the pattern of self care management practices in patients of Diabetes. A cross sectional study was done in registered villages of Rural Health Training Centre and 316 population was covered. All patients of the selected non communicable diseases above 18 years of age were selected who gave their consent. Self care practice assessment was done by including: Diabetes specific section including SDSCA measure - Summary of Diabetes Self- Care Activities Questionnaire. The findings showed that the prevalence of self-care practices in patients of diabetes was not very high. Slightly more than 50% diabetics were following good levels of self-care practices. Individual levels of self-care practices like medication, physical activity/ exercise, adequate diet, risky behaviours of tobacco intake and alcohol consumption, monitoring blood pressure/ blood sugar/ symptoms of COPD, weight management etc. showed varied prevalence. Mostly the patients with any non-communicable disease were found adherent to their medications. In patients of diabetes; age group, presently attending any health facility for disease management and receiving health care provider's advice for lifestyle modifications were associated significantly with self-care practices.

Key words: self carepractices, diabetes, management

Introduction

Self care involves all decisions which individuals take for their own health particularly their own physical and mental well being. Staying fit, exercising, avoiding hazardous behavioretc. will all compound to self care[(1)]. Self care can be performed in illness as well as the good health of an individual. Non communicable diseases include cardiovascular diseases, renal, nervous and mental diseases, musculoskeletal conditions, chronic non specific respiratory diseases (COPD), blindness, permanent results of accidents, diabetes, senility, various other metabolic, degenerative diseases and chronic results of communicable diseases[(2)]. Out of all the above, four **non communicable diseases (NCDs)** make the largest contribution. Some of these are, namely, cardiovascular diseases, cancer, diabetes and chronic respiratory diseases[(1)]. Non communicable diseases kill 41 million people each year, equivalent to 71% of all deaths globally as stated under the key facts by the World Health Organisation[(3)]. **Self-care** is not a new concept. About 50-60% of all care persons do for

Corresponding Author: Ambika Saraswat, MD in Community Medicine, JN Medical College, AMU, Aligarh

E-mail: manusn9422@gmail.com

themselves is actually self care as said by the Director General of WHO. Although it should not be used as a replacement to the basic component of essential health care.The aim of this study is to find the **pattern of self management practices in patients of Diabetes**.

Materials and Methods

A cross sectional study was conducted in Rural field practice areas of Department of Community Medicine, Jawaharlal Nehru Medical College, AMU, Aligarh. It included all the cases of *diabetes, hypertension and chronic respiratory diseases i*n the study area. The study period was one year (December 2020-December 2021).

Sample Size

The sample size was determined by the formula,

$n = Z^2_{1-\alpha/2}PQ/L^2$

Where, n = Sample Size

$Z_{1-\alpha/2:}$ Statistic corresponding to level of significance. (1.96 for 95% CI)

P = Prevalence of health problems taken (26%)

Q = (1-P)

L = Absolute error (15%)

The final sample after rounding off came out to be 486 chronic disease patients.

Inclusion Criteria: All patients of the selected non communicable diseases above 18 years of age. All the patients who were residing in the rural areas of the field practice areas of the Department of Community Medicine, J.N.M.C, A.M.U, Aligarh. All those patients who gave their consent for the study.

Exclusion Criteria: The patients who did not give consent. Terminally ill patients and those who were bedridden.

Written informed consent was taken before starting the interview.

Operational Definition of Diabetic Patient:

Any patient who was a resident of the field practice areas of RHTC, Department of Community Medicine who was above 18 years of age and was already diagnosed to be a patient of diabetes mellitus (Type I or type II) either at RHTC or at any other health facility. The patients who at their time of diagnosis had fasting plasma glucose of >= 126 mg/dl or postprandial blood glucose 2h-PG 200mg/dl at the time of diagnosis were enrolled[4]. Self care practice assessment was done by including: **Diabetes specific section including SDSCA measure - Summary of Diabetes Self- Care Activities Questionnaire[5].**

The data collected was tabulated and analyzed using the IBM SPSS 20.0. Appropriate statistical tests were applied based on the type of variables. Ethical approval was taken for conducting the study from the Institutional Ethics Committee (Regd.) J.N. Medical College, AMU, Aligarh. (D.No. 176/FM/IEC, 3-11-2020).The designated period was one year but during the study duration, the government had to impose a lockdown from April 2021 to July 2021.So only **316** population was covered.

Results

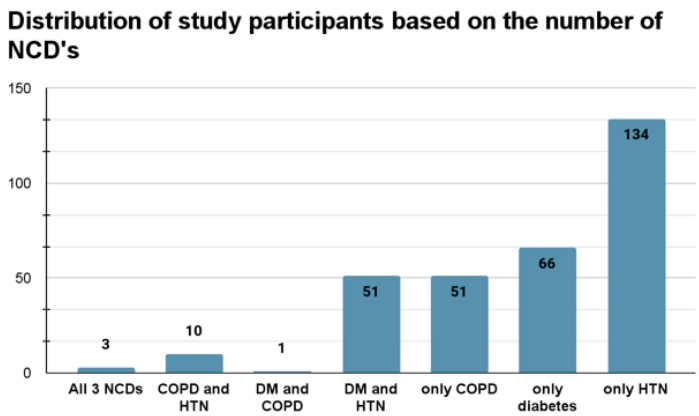

Figure 1: Distribution of the study participants based on the number of NCDs

According to the disease condition per se, 121 out of 316 participants (38.3%) had diabetes mellitus in this study (Fig 1).

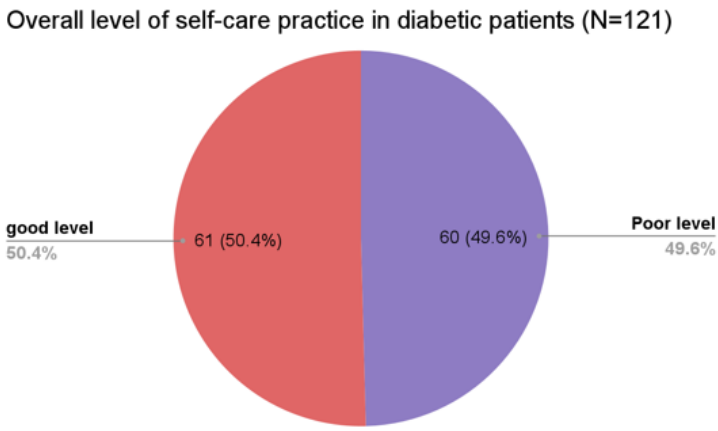

Figure 2

Prevalence of overall level of self-care practice

It was found **(Fig 2)** that **50.4**% diabetic patients were performing a **good level** of self-care practices in this study.

Table 1: Pattern of self-care management seen in diabetic patients (N=121)

Self-care management		
Have any complication [1]	Yes	56 (46.3)
	No	63 (52.1)
	Don't know	2 (1.7)
Any hospital admission related to diabetes and its complications[1]	Yes	21(17.4)
	No	100 (82.7)
Presently attending any health facility?[1]	Yes	109 (90.1)
	Not going for a treatment or monitoring	12 (9.9)
Specific diet self-care practice	(mean days/wk)	3.14± 1.19
On how many of the last 7 days did you eat five or more servings of fruits and vegetables?	(mean±SD) (mean days per week)	3.58± 1.69
On how many of the last 7 days did you eat high fat foods such as red meat or full fat dairy products?	(mean±SD) (mean days per week)	2.77±1.69
On how many of the last 7 days did you space carbohydrates evenly throughout the day?	(mean±SD) (mean days per week)	1.41± 1.32
Physical activity self-care practice	(mean±SD)	3.56± 4.28
Medication Usage self-care practice		5.47± 2.42
Foot care self-care practice	(mean days per week)	3.02± 0.84

Note: 1. N(%). The other values are depicted as mean ±standard deviation (S.D)

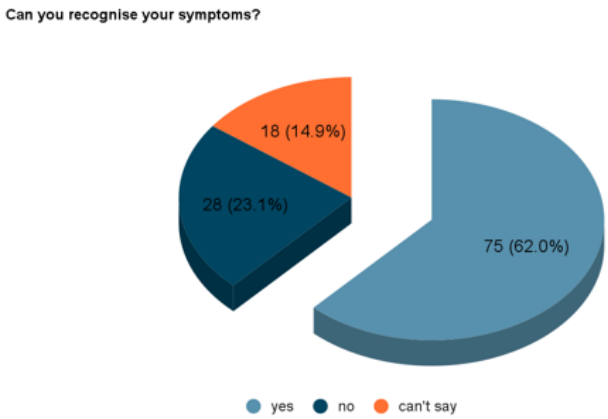

Fig 3: The above pie chart depicts the frequency distribution with respect to the ability of a diabetic patient to recognise his/her symptoms. (self-care management component)

In the pie chart shown above we find that a major part of the diabetic study population (62.0%) was able to recognise his/ her symptoms like fatigue, weakness, recurrent infections etc., followed by 23% of them unable to do so. Around 14.9% of study patients were unsure about this awareness level towards the disease.

Table 2: Association of overall level of self-care in diabetics with health system related variables. N=121

Health system related variable N=121		**Poor level overall self-care practice 60(49.6)**	**Good level overall self-care practice 61(50.4)**	**Total N=121 N(%)**	**X^2, df, p value**
Going to the same place every time for consultation	Yes	47(47.5)	52(52.5)	99 (81.8)	0.972, 1, 0.32
	No	13(59.1)	9(40.9)	22 (18.2)	
Did anyone ever brief you about the lifestyle modifications?	Yes	51(48.10	55(51.9)	106 (87.6)	0.743, 1, 0.38
	No	9(60.0)	6(40.0)	15 (12.4)	
Any health insurance taken	Yes	1(16.7)	5(83.3)	6(5)	p= 0.207 (Fisher's Exact test)
	No	59(51.3)	56(48.7)	115(95)	
Approximate monthly expenditure on routine medicines	Upto rupees 200	21(45.7)	25(54.3)	46(38)	
	More than 200 rupees	29(47.5)	32(52.5)	61(50.4)	
	No expenditure	5(83.3)	1(16.7)	6(5.0)	
	Not remember	4(57.1)	3(42.9)	7(5.8)	
	No medicines taken	1(100)	0(0)	1(0.8)	

Table 3: Association of individual self-care practices in diabetics with the health system variables. N= 121

On how many of the last 7 days did you eat five or more servings of fruits and vegetables?					
Health system variable		**Poor level of self-care practice (<4d/wk) N=55(45.5%)**	**Good level of self-care facility (>=4d/wk) N=66(54.5%)**	**Total N= 121 N(%)**	**X^2, df, p value**
Presently attending any health facility	Yes	51(46.4)	59(53.6)	110(90.9)	5.028,1, **0.025**
	Not going for monitoring and treatment	9(81.8)	2(18.2)	11(9.1)	
Briefed about LSM	Yes	48(45.3)	58(54.7)	106(87.6)	6.336, 1, **0.012**)
	No	12(80)	3(20)	15(12.4)	
On how many of the last 7 days did you eat high fat foods such as red meat or full fat dairy products?					
		Poor level (>=3d/wk)	**Good level (<3d/wk)**		
Briefed about LSM	Yes	54(50.9)	52(49.1)	106(87.6)	4.475, 1, **0.034**)
	No	12(80)	3(20)	15(12.4)	
Medication usage					
		Poor level of self-care(<7d/wk)	**Good level of self-care(7 d/wk)**		
Briefed about LSM	Yes	14(3.2)	92(86.8)	106(87.6)	**(p=0.018),** Fisher's exact test
	No	6(40)	9(60)	15(12.4)	

Discussion

Table 1 shows that more than 50% participants (52.1%) were not having any complication of diabetes like recurrent infections, foot ulcer, any documented blurring of vision, urinary tract infections or numbness and tingling sensation in hands and feet. A majority of them (82.7%) never got admitted in the hospital for any complication of diabetes Only a few (9.9%) of them were not going anywhere for treatment whereas most of them (90.1%) were presently attending a health facility. Specific diet subscale can be considered as a part of self-care management. It comprises 3 questions tabulated above. On asking about the last week's diet specific questions like "on how many of the last 7 days did you eat five or more servings of fruits and vegetables, eat high fat foods such as red meat or full fat dairy products and spaced carbohydrates evenly throughout the day?" We found that the mean days of this level of self-care per week was different for all; 3.58± 1.69 days, 2.77±1.69 days, 1.41± 1.32 days per week respectively.

As these self-care components are not distinct compartments so same self-care practices can account for more than one component. So physical activity, medication usage and foot care are also considered as a part of self-care management.

The patients were focussing on their overall specific diet for 3.14(±1.19), eating specifically more than 5 servings of fruits and vegetables for 3.58(±1.69), high fat foods etc. on 2.77(±1.69) and spacing carbohydrates on only 1.41(±1.32) mean days per week. 62% were able to recognise their symptoms. Most of them were presently attending a health facility (90.1%), 46.3% had complications where only 17.4% had hospital admissions.

On the contrary, a study[6] reported that 83.3% diabetics did not have any complications. The diabetic diet was followed for 5.47±2.33 days/ week. The lack of awareness about the low glycemic index foods, decreased knowledge imparted by the healthcare providers and the caregivers might have

led to decreased levels of diet self care performance in the present study population.

Table 2 shows that any briefing about lifestyle modifications by the health care provider, having a health insurance, going to the same health facility or doctor every time and approximate expenditure on medications, none of these health system variables were found to be associated with the overall level of self-care practices.

Table 3 explains that out of all those diabetic patients going to (90.9%) a healthcare facility presently, 53.6% were eating five or more servings of fruits and vegetables for more than four days in a week. On the other hand, 81.8% of those who were not going to any health facility presently had a poor level (eating more than five servings of fruits and vegetables for <4 days /week) of self-care for diabetes. **(p=0.025)**

86.8% of the patients who were briefed about lifestyle modifications in the past were using medicines on seven days of the week (good level of self-care) **(p=0.02)**. Those who were briefed about lifestyle modifications, 54.7% of patients were eating five or more servings of fruits and vegetables for more than four days in a week. **(p= 0.012)**

Only 20% of the patients with no prior lifestyle modification advice received, were having high fat foods or dairy products on <3 days per week that is they had a good level of self-care. **(p=0.018)**

A study [6] found that diabetic self management can be predicted by healthcare provider patient communications.This finding is supporting our association between diet self care practices and briefing received for lifestyle modifications by the patients.

Active monitoring of symptoms is very necessary, as the only one can start monitoring and further act in order to manage them, accordingly[7].

A study [8] reported that internal consistency for all the measures separately was found to be acceptable (mean=0.47) except that of specific diet. Specific diet was found to be unreliable consistently (r=0.07-0.23). They concluded that SDSCA is a useful measure to be used in practice as well as researches related to the diabetic self management.

Conclusion

Self care knowledge should be given to the people suffering from NCDs by health workers. The healthcare providers across all tiers of the health system must be trained routinely for adequate evidence based lifestyle modification advice. At the level of the family; caregivers, spouses, children of the patients, all have a very important role in the adherence to self-care behaviours. Hence, caregivers should also be educated routinely. In Uttar Pradesh, particularly in Aligarh the state should be strengthening the health systems and the health workforce should be trained for routine monitoring and management of non-communicable diseases.

Conflict of interest: None

Source of funding: Self

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Original Research Article

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A Comparative Study of Intraocular Pressure Measurements by Goldmann Applanation Tonometer and Schiotztonometer and the Study of Schiotz Tonometer a Screening Tool in North Karnataka Population

Uzma Saara Munaff[1], Pranesh Kulkarni[2]

[1]Post graduate student, [2]Professor and Head, Department of Ophthalmology, Faculty of Medical Sciences, Khaja Banda Nawaz University, Kalaburgi, Karnataka.

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Abstract

Background: Glaucoma is a multifactorial disease with common end point characteristics affecting the optic nerve. It is defined as an optic neuropathy characterised by specific structural findings in the optic disc (increased Vertical Cup Disc Ratio (VCDR) or VCDR asymmetry >97.5 percentile) and particular functional deficits in automated visual field testing. It consists of three components: the optic nerve head, the visualfield, and intraocular pressure. Detecting the intraocular pressure is essential in not only initiating treatment, but also in monitoring the response to treatment.

Method: 210 purposively selected patients were subjected to three methods of tonometry – Goldmannapplanation tonometry, Schiotz indentation tonometry (with the 5.5g, 7.5g and 10 g weights). Three recordings were obtained with each method and the arithmetic mean taken as the intraocular pressure. The data was statistically analyzed using the intra-class correlation coefficient. Sensitivity and specificity were also calculated for the Schiotz tonometer.

Results: The Schiotz tonometer showed fair agreement with the Gold mannapplanationtonometer. The Schiotz tonometer scored low as an effective screening tool.

Conclusion: The current study shows that the Schiotz tonometer compares favourably with the Goldmannapplanation tonometer showing fair agreement with it. It showed good specificity and was reliable in detection of positives, excluding false positives.

Keywords: Goldmannapplanation tonometer, Schiotz indentation tonometer; screening tool, Intra Ocular pressure (IOP)

Introduction

Glucoma is the leading cause of irreversible blindness worldwide and world health organisation ranks. It is the second most cause of blindness after cataract [(1)]. Approximately 40 million population aged above 40 years either has glucoma or at the risk of developing glaucoma disease [(2)]. Intra ocular pressure (IOP) is one of the most critical risk factors and the only modifiable in glaucoma severe major clinical

Corresponding Author: Pranesh Kulkarni, Professor and Head, Department of Ophthalmology, Faculty of Medical Sciences, Khaja Banda Nawaz University, Kalaburgi, Karnataka.

Cell No: +91 9916922478

E-mail: saarauzma@gmail.com

trials have show that, little increase in IOP may lead to damage in visual field and progression in glaucoma. Therefore accuracy and precision in measuring intra ocular pressure are important requirements to predict and monitor disease progression [3] [4]. Ophthalmic surgeon to detect glaucoma hence latest technique are required to measure IOP by screening visual fields hence attempt is made to evaluate and compare the Goldmannapplanation tonometer and schiootzapplanation tonometer. So that it will be easy for earlier diagnose and prevent the further complications of irreversible blindness.

Material and Method

210 (Two hundred ten) patients regularly visited to ophthalmic department of Khaja Banda Nawaz university Faculty of medical sciences Kalaburgi-585102, Karnataka were studied.

Inclusive Criteria: Patients above 40 years of age and given their consent for study were selected for study.

Exclusion Criteria: Patients already on anti-glaucoma treatment scarred or hazy cornea, patients undergone previous corneal surgery including refractive surgery, micropthalmos, Blepharospary, manifest Nystagmus, Keratoconus, patients having corneal infections.

Method: The detailed ocular examination included visual acuity with or without pin hole which will be taken with the help of snellens chart for literates and C chart for illiterate patients. Redinoscopy and auto-refractometry will be used to find refractive error. The conjunctiva, sclera cornea, iris pupil anterior chamber lens, posterior chamber and posterior segment were examined.

Each patient was then subjected to two methods of tonometry Goldmann Applanation tonometry and schiotz Indentation tonometry under topical anaesthesia with proparacaine eye drops (0.5%). First the readings were measured using the Goldmannapplanation tonometer followed by sechiotzindentation tonometer. Three consecutive readings were taken for each eye by each method and average calculated will be taken as the intraocular pressure. The prescribed procedure of Goldmann tonometry and schiotzindentation Tonometry were carried in every patients and obtained results were noted and compared.

The duration of study Marc-2021 to August-2022

Statistical analysis: Various parameters of intraocular pressure were carried out in both schiotz indentation tonometer and Goldmannapplanation tonometer were compared with t test, correlative co-efficient methods, and significant results were noted. The statistical analysis was carried out in SPSS software. The ratio of male and female was 2:1.

Observation and Results

Table-1: Distribution of age group in the present study

113 (53.7%) were aged between 40-50 years old, 56 (26.7%) were aged between 51-60 years, 31 (14.8%) were between 61-70 years, 8 (3.8%) were aged 71-80, 2 (1%) were aged >80 years

Table-2: Correlation of GAT and schiotz Tonametre

GATV/s ST 5.5gm r=0.321 and p<0.001

GATV/s ST 7.5gm r=0.321 and p<0.001

GATV/s ST 10gm r=0.425 and p<0.001

All the correlated value were highly significant (p<0.001).

Table-3: Comparison of specificity and sensitivity in GAT and ST

GTT had 52% specificity, 95.3% sensitivity and 80.1% PPV, 89.2% NPV and ST had 54% specificity 97.2% sensitivity, 82.3 PPV and 90.8% NPV (schiotz tonometers shown high specificity sensitivity PPV, NPV as compared to GAT.

Table 1: Age wise distribution of patients

Age groups in years	Number of patients	Percentage (%)
40-50	113	53.7
51-60	56	267
61-70	31	14.8
71-80	8	3.8
>80	2	1
Total	210	100
Mean ±SD	52.92 ± 10.04	--

Table 2: Correlation of GAT and schiotz tonometer

Correlation	Correlation coefficient	p value
GAT v/s ST 5.5 g	r=0.321	P<0.001
GAT v/s ST 7.5 g	r=0.360	P<0.001
GAT v/s ST 10 g	r=0.425	P<0.001

Table 3: Comparison of sensitivity and Specificity of GAT and schiotz tonometer

Tonometer	Specificity	Sensitivity	PPV	NPV
GAT	52%	95.3%	80.1%	89.2%
Schiotz	54%	97.2%	82.3%	90.8%

Schiotz tonometer showed high specificity and positive predictive value (PPV) as compare to GAT

Discussion

In the present comparative study of IOP measurement by GAT v/s ST as a screening tool in north Karnataka population. Out of 210 patients 113 (53.7%) were aged between 40-50 years, 56 (26.7$) were aged between 51-60 years, 31 (14.8%) were aged between 61-70, 8 (3.8%) were aged between 71-80, 2 (1%) were above 80 years (Table-1). In the correlation study of GAT and schiotz tonometer GAT v/s ST 5.5 gm r=0.321 p<0.001, GAT v/s ST 7.5 gm r=0.360 p<0.001, GAT v/s ST 100 gm r=0.425 p<0.001, All the values have significant p value (Table-2). In comparative study of specificity and sensitivity of GAT and ST specificity in GAT was 52%, 54% in ST sensitivity 95.3% in GAT, 97.2% in St PPV was 80.1% in GAT, 82.3% in ST NPV was 89.2% in GAT, 90.8% pin ST (Table-3). These findings are more or less in agreement with previous studies[5][6][7].

Glaucoma is a multi-factorial disease with common end point to affect optic nerve. It is defined as optic Neuropathy characterised by specific structures findings in the optic disc (Increased vertical cup Disc ratio (VCDR) or VCDR asymmetry >97.5 percentile) and particular functional deficit in automated visual field testing[8].

Normal ocular pressure is essential to maintain the shape of the eye and visual function with prolonged elevation in IOP resulting in irreversible damage to the rational ganglion cells and post ganglionic nerve fibres[9]. Detecting IOP is not only initiating treatment, but also in monitoring response to treatment.

Despite of being gold standard there is some intra and inter reader variability with Goldmannapplanation tonometer (GAT) however GAT is not appropriate for the use of patients who are confined to beds in operating rooms or by general practitioner who provide primary care [10]. Schiotz indentation tonometer (ST) provides only a range of pressures within which the actual IOP lay [11]. ST is about 1.2 mm Hg lower than the mean GAT pressures, indicating that the ST can read lower than GAT confirming the IOP specificity and sensitivity [12]. Hence readings of ST are more reliable in detection of positive findings ST can be used in primary health centres to roughly monitor the IOP in established cases of glaucoma and patients with provisional diagnosis of abnormal IOP must be subjected GAT along with visual acuity and examination of optic nerve involvement but since introduction of the dynamic contour tonometer Monometry, being a direct method would have been superior to GAT.

Summary and Conclusion

The current study shows that the Schiotz tonometer compares favourably with the Goldmannapplanation tonometer showing fair agreement with it. It showed goodspecificity and was reliable in detection of positives, excluding false positives. Thus it comes across as a fair screening tool. It may be used in primary health centers toroughly monitor the intraocular pressure in established cases of glaucoma and patients with provisional diagnosis of abnormal IOP must be subjected to Goldmannapplanation tonometer, along with visual feels and examination of optic nerve head for conformation and follow-up.

Limitation of study: Owing to tertiary location of research centre and small number of patients and lack of latest technologies, we have limited findings and results.

This research paper was approved by Ethical committee of KBN university faculty medical sciences Kalaburgi.

Conflict of Interest: No

Funding: Self

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Original Research Article

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A Study of Association of Serological Markers and Platelet count in Dengue Patients in GHMC limits, Hyderabad, Telangana

Zu Afshan Sultana[1], K Sujatha[2], Fakeha Firdous[3], Mohammed Saad Hussain[4]

[1].Assistant Professor, Department of Pathology, [2]Assistant Professor, Department of Microbiology, [3]Assistant Professor Department of Pathology, Osmania Medical College, Hyderabad, TS., [4]Final year MBBS Student, Ayaan Institute of Medical Sciences, Hyderabad, TS.

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Abstract

Introduction: Acute viral infections like Dengue which can result in Dengue Hemorrhagic fever (DHF) & Dengue Shock Syndrome (DSS) are potentially lethal. The measurement of released NS1 protein, IgM & IgG is a novel technique for identifying acute dengue infection. Platelet count is the only Non-dengue parameter that can support the diagnosis of DHF& DSS.[1]

AIM: This study was done to evaluate the association of Platelet count and Dengue parameters singly positive and when combined positive.

Materials and Methods: This was a Cross- Sectional prospective study conducted at Departments of Microbiology & Pathology at Telangana Diagnostics, Hyderabad which is a NABL accredited Central Laboratory run by Government of Telangana from Febraury 2022 to January 2023.All clinically suspected cases of Dengue reported in Outpatient departments of Primary Health Centers (PHCs), Community Health Centers (CHCs), Area Hospitals & District Hospital, Under GHMC limits Hyderabad were included in the study from February 2022 to January 2023

Results: Out of 1100 samples received from clinically suspected cases of Dengue, 516 (46.9%) samples were positive for Dengue, and out which 109 (21.12%) cases showed platelet count below 1.5 lakhs/cumm. Dengue cases with positive NS1 and IgM were consistently associated with Thrombocytopenia in comparison with other serological parameters. The Chi-Square test and statistical software Epi info and MS Excel was used to find out the statistical significance.

Conclusion: Detection of dengue specific serological parameters along with platelet count in diagnosis of Dengue helps in early diagnosis and prevent complications like Dengue Hemorrhagic fever & Dengue shock syndrome there by reducing mortality and morbidity.

Key words: Dengue Elisa, NS1, IgM, IgG, platelet count, Thrombocytopenia, Dengue Hemorrhagic fever & Dengue shock syndrome.

Introduction

Acute viral infections like dengue, which can result in dengue hemorrhagic fever (DHF) and dengue shock syndrome, are potentially lethal (DSS). It is brought on by four different dengue virus (DV) serotypes, namely DEN-1, DEN-2, DEN-3, and DEN-

Corresponding Author: Zu Afshan Sultana, Assistant Professor Department of Pathology, Osmania medical college, Hyderabad, TS.

E-mail: zuafshan.sultana@yahoo.com

4, which are members of the genus Flavivirus and family Flaviviridae[1]. The dengue virus is responsible for its transmission through the bite of infected mosquitoes. A 100 million people every year could be affected by it. The measurement of released NS1 protein, IgM, and IgG is a novel technique for identifying acute dengue infection.[2]

The most common clinical symptoms are fever, headache, pain behind the eyes, arthralgia/ bone pain, nausea, and bleeding manifestations. Ascites, thrombocytopenia, high hematocrit levels, hepatomegaly, splenomegaly, and pleural effusion were some of the other clinical findings. Tachycardia, bradycardia, hypotension, and other heart conditions were also present. Platelet count is the sole non-dengue biomarker that can be used to identify dengue shock syndrome (DSS) and dengue hemorrhagic fever (DHF).[3] Currently, reverse transcription-polymerase chain reaction (RT-PCR)-based viral isolation, detection of the viral genomic sequence, and dengue virus detection are the three main techniques utilised by the majority of laboratories to diagnose dengue virus infection.[4]

IgM-capture enzyme-linked immunosorbent assay (MAC-ELISA) and/or the fast dengue immunochromatographic test (ICT) are two methods for detecting virus-specific IgM antibodies [5].

AIM

This study was done to evaluate the association of platelet count and dengue parameters

Material and Methods

This prospective study was conducted at Department of Microbiology and Pathology at Telangana Diagnostics Central Laboratory, Hyderabad TS, which is a NABL accredited central laboratory run by Government of Telangana, for a period of one year from February 2022 to January 2023. Serum samples were collected from suspected dengue fever patients after taking their consent, from Primary Health Centers ,Community Health centers, Area hospitals and District hospital, Hyderabad along The Name, age, gender, address etc. were recorded.

The Elisa tests were done for all samples using commercially available Dengue Elisa kits (standard-E) in accordance with the manufacturers (SD Biosenso R-Health care Pvt -LTD India) instructions. The three parameters of NS1 antigen, IgM, and IgG antibodies were run in the ELISA Machine. Positive Control and Negative Controls were also run simultaneously.

Calibration standard of clinical samples were run in the Elisa Machine(ERBA-MAC) For each parameter, samples value that exceed the Reference cut off value were considered as positive. Platelet count were recorded in dengue parameter positive cases form Automated 5 part Hematology Analyser and confirmed by Peripheral smear examination.

Results

A total of 1100 samples were collected from suspected Dengue fever patients out of which 516 cases tested positive for one or more Dengue specific parameters .Out of 516 samples 246 (47.67%) were females and 270 (57.32%) were males. The Male to Female ratio was 1.09:1 almost equal.(Table.1).

Maximum number of positive parameters were found in age group 12-40 years (319,61.8%).Only 15 samples (2.9%) tested positive in >60 years of age group (Table:2). More Positive parameter was IgG, and second most was Ns1(Table.3) .Dengue Serological Markers Interpretation Chart(Table 4) .The association of Thrombocytopenia (<1.5 lakh /cumm) with positive Dengue parameters was analysed. In a total of 516 cases Thrombocytopenia was seen in 109 cases(21.12%)(Table.5)

Table 1: Gender Wise Distribution

Gender	Total No	Percentage
MALE	270	57.33%
FEMALE	246	47.67%

Table 2: Age Wise Distribution

Age in yrs	Total No	Percentage
0-12	122	23.6%
12-40	319	61.8%
40-60	60	11.6%
>60	15	2.9%

Table 3: Dengue Parameters

S. No	Parameters	Total No	Percentage
1	NS1	81	15.69%
2	IgM	54	10.46%
3	IgG	151	29.26%
4	NS1+IgM	53	10.27%
5	NS1+IgG	3	0.59%
6	IgM+IgG	73	14.14%
7	NS1+IgM+IgG	21	4.06%

Table 4: Dengue Serological Markers Interpretation Table [11]

S No	Parameter	Positive	Interpretation
1	NS1	+	Early Infection
2	NS1+IgM	+	Acute phase infection
3	IgM	+	Mid Phase of Active Infection(Early Recovery)
4	IgM +IgG	+	Late Phase of Active Infection
5	IgG	+	Past Infection/Patient recovered
6	NS1+IgM+IgG	+	Secondary Infection /Current Active Infection

Table 5: Dengue Parameters association with Thrombocytopenia

SNO	Parameter	No of positive samples	No of Samples with Platelet count <1.5 Lakh/ cumm	Percentage
1	NS1	81	10	12.34%
2	IgM	54	10	18.51%
3	IgG	151	03	1.9%
4	NS1+IgM	53	40	75.47%
5	NS1+IgG	03	41	33.3%
6	IgM+IgG	73	36	49.3%
7	NS1+IgM+IgG	21	07	33.3%

Discussion

We found that out of 81 cases which were positive for NS1 alone Thrombocytopenia was observed in 10 cases (12.34%). Where as when NS1 and IgM antibodies were considered, low platelet count was seen in 40(75.47%) out of 53cases.When antibodies alone were considered, thrombocytopenia was seen in 36 out of 73 cases constituting percentage of 49.3%. A significant percentage of cases showed reduced platelet count in Acute Phase (75.47%) and Late Phase of Active infection(49.3%).Most of the cases positive for IgG (Past infection/Recovery Phase) were observed to have Normal platelet count.

Conclusion

1. This study was done for the first time covering a large population in the GHMC Limits of Telangana.
2. Detection of specific serological parameters along with platelet count in diagnosis of dengue helps in early diagnosis and prevent the complications like DHF and DSS ,thereby reducing mortality and morbidity of dengue.

3. Testing for Dengue serological parameters is costly and time consuming whereas estimation of platelet count is less costly and is a one time test.
4. Any Patient with Clinical signs and symptoms of Dengue can be treated immediately without delay by knowing the platelet count till the serological results are obtained.

Consent: Informed consent taken from the patients.

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Knowledge, Attitude and Practices of Menstrual Health among Adolescent School Girls in Kurnool District, Andhra Pradesh

B.Renuka[1], P.Sudha Kumari[2], S.Pushpa Latha[3]

[1]Associate Professor, [2]Professor and HOD, [3]Assistant Professor, Department of Community Medicine, Kurnool Medical College, Kurnool, Andhra Pradesh, India.

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Abstract

Background: The event of menarche associated with taboos and myths in our traditional society has a negative implication for women's health, particularly their menstrual hygiene. Women having better knowledge regarding menstrual hygiene are less vulnerable to reproductive tract infections.

Objectives: 1) To study the Socio-demographic profile of adolescent school girls.

2) To study the Knowledge, Attitude and Practices of menstrual hygiene among adolescent school girls.

Materials and Methods: A descriptive, cross-sectional study was conducted among 122 adolescent girls of two secondary schools situated in the rural field practice area of Kurnool Medical college, Kurnool with the help of a pre-designed and pre-tested questionnaire. Data were analyzed statistically by simple proportions.

Results: Out of 122 respondents, 48 (39.3%) girls were aware about menstruation prior to attainment of menarche. Mother and family members were the first informant regarding menstruation in case of 93 (76.2%) girls. 101 (82.8%) girls believed it as a physiological process. Regarding practices, 119 (97.6%) girls used sanitary pads during menstruation.

Conclusions: Menstrual hygiene, a very important risk factor for reproductive tract infections, is a vital aspect of health education for adolescent girls. Trained health personnel, motivated school teachers and knowledgeable parents can play a very important role in transmitting the vital message of correct menstrual hygiene to the adolescent girl of today.

Keywords: Adolescent girl, menstrual hygiene, reproductive tract infections, sanitary pad

Introduction

Adolescence in girls has been recognized as a special period which signifies the transition from girlhood to womanhood. Menarche is one of the most important developmental milestones during adolescence[1]. The bodily changes associated with puberty affect a girl's psychological and social development and the girl's life experiences influence the physical changes that are occurring

Corresponding Author: B. Renuka, Associate Professor, Department of Community Medicine, Kurnool Medical College, Kurnool, Andhra Pradesh, India.

E-mail: biyyala.renuka@gmail.com

Mobile: 9494736832

as well[2]. Although menstruation is a natural process, it is linked with several misconceptions and practices which sometimes results into adverse health outcome.[2] In Indian society, menstruation is still regarded as unclean and dirty leading to isolation of the menstruating girls and restriction imposed on them. These practices have reinforced negative attitude towards menstruation in girls. Women are prohibited from religious activities, attending marriage or touching male members during menstruation. Today millions of women are suffering from reproductive tract infections and its complications.[3]Hygiene-related practices of women during menstruation are of considerable importance, as it has a health impact in terms of increased vulnerability to reproductive tract infections (RTI). Today millions of women are sufferers of RTI and its complications and often the infection is transmitted to the offspring of the pregnant mother. Women having better knowledge regarding menstrual hygiene and safe practices are less vulnerable to RTI and its consequences. Therefore, increased knowledge about menstruation right from childhood may escalate safe practices and may help in mitigating the suffering of millions of women[4].With the above background, this study was undertaken with the following objectives:

1. To study the Socio-demographic profile of adolescent school girls.
2. To study the Knowledge, Attitude and Practices of menstrual hygiene among adolescent school girls.

Material and Methods

A cross-sectional descriptive study was carried out among adolescent girls studying in school in rural field practice area of Kurnool Medical college, Kurnool, for duration of 3 months January to March 2023.

Inclusion criteria: Adolescent girls who are willing to participate in the study.

Exclusion criteria: Adolescent girls who have not attained menarche.

Considering 77.6% prevalence of menstrual hygiene among adolescent school girls in India according to NFHS-5, applying a non-response rate of 10% the sample size was calculated to be 121 using the formula n = $(Z\alpha 2pq)/d^2$ where n = estimated sample size

$Z\alpha$ =1.96; p=77.6%; d=relative precision 10% of p; q=(1- p) =22.4%

The sample size of 121 has been rounded off to 122. A pilot study was undertaken prior to actual study to check for feasibility of questionnaire .The Study was approved by the institutional ethics committee of the college. schools were considered as units of sampling. Of these 4 high schools in rural area, two schools were selected by simple random technique. 122 Adolescent girls from two schools had participated in the study. The school authorities were contacted and explained about the study. The girls were explained about the purpose of the study and were assured confidentiality. A predesigned, pretested questionnaire was used for collection of the data which included questions related to their socio-demographic profile, about menstruation, source of information and hygiene practiced during menstruation. A personal one to one interview was conducted.

Statistical analysis: Data collected is compiled in MS excel sheet; subsequently it was analyzed using SPSS version 26. Microsoft word and Excel have been used to generate graphs and tables. The descriptive statistics comprising of frequency, percentage and standard deviation for continuous variables like age was used.

Results

Table 1: Sociodemographic profile of the study participants.

Variables		No. (%)
Age (Years)	12 to 14	69 (56.6%)
	15 to 17	53 (43.4%)
Age at menarche	<12	54 (44.3%)
	13	45 (36.9%)
	14	17 (13.9%)
	>/=15	6 (4.9%)
Religion	Hindu	63 (51.7%)
	Muslim	7 (5.7%)
	Christian	52 (42.6%)
Type of family	Nuclear	99 (81.1%)
	Joint	23 (18.9%)

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Socio-economic status	Lower class	62 (50.8%)
	Lower middle	56 (45.9%)
	Middle class	4 (3.3%)
Mother's literacy	Illiterate	72 (59%)
	Literate	50 (41%)
Father's literacy	Illiterate	52 (42.6%)
	Literate	70 (57.4%)
Mother's occupation	Unemployed	89 (73%)
	Employed	33 (27%)
Father's occupation	Unemployed	69 (56.6%)
	Employed	53 (43.4%)

In our study, majority 56.6% of the adolescent girls belonged to 12-14 years. The mean age at menarche was 12.8±0.9 years. 51.7% of adolescent girls belongs to Hindu religion. Majority 81.1% of the adolescent girls belonged to nuclear family. Majority 50.8% of the adolescent girls belonged to lower socio economic status followed by lower middle class, 45.9%. 59% of adolescent girl's mothers were illiterate and 73% of adolescent girl's mothers were unemployed .57.4% of adolescent girl's fathers were literate and 56.6% of adolescent girl's fathers were unemployed (Table 1).

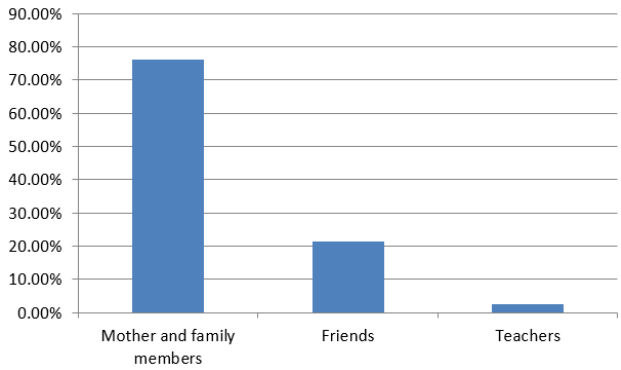

Figure 1: Source of information about menstruation before menarche

In our study, majority 76.2% of adolescent girls had the information regarding menstruation from their mothers and family members before attaining menarche, whereas 21.3% of adolescent girls had the information regarding menstruation from friends and 2.5% girls from teachers.(Figure 1).

Table 2: Knowledge of study participants about menstruation

Knowledge about	No. (%)
Menarche	
Yes	48 (39.3%)
No	74 (60.7%)
Menstruation	
Natural or physiological	101 (82.8%)
Don't know	21 (17.2%)
Source of Bleeding	
Don't know	115 (94.3%)
Bladder	3 (2.4%)
Vagina	4 (3.3%)

In present study. It was observed that 39.3% were aware about menstruation before attaining menarche. 82.8% of the total study subjects knew that menstruation was a normal physiological process. None of the adolescent girls were aware that the source of menstrual bleeding was from uterus. 3.3% girls said it was from vagina, 2.4% girls said it was from bladder. Whereas majority, 94.3%of adolescent girls said don't know. (Table 2).

Table 3: Attitude of study participants towards menstruation

Attitude	No.(%)
Indifferent	61 (50%)
Discomfort	49 (40.2%)
Scared	12 (9.8%)

In present study Majority (50%) of the girls felt indifferent on first menstruation while 40.2% reported discomfort, 9.8% felt scared.(Table 3).

Table 4: Distribution of study participants according to practices during menstruation

Practices	No.(%)
Food taboos	
Present	48 (39.3%)
Absent	74 (60.7%)
Absorbant used during menstruation	
Sanitary pads	119 (97.6%)
Reused old cloth	2 (1.6%)
Both	1 (0.8%)
Changing absorbant per day	
3-4 times per day	61 (50%)

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2-3 times per day	55 (45%)
1-2 times per day	6 (5%)
Practice of changing pads during school hours	
Yes	103 (84.4%)
No	19 (15.6%)
Method of disposal	
Throwing in dustbin	65 (53.3%)
Flushing in toilet	2 (1.6%)
Burning	55 (45.1%)
Daily bath during menstruation	
Yes	122 (100%)
Cleaning of external genitalia during menstruation	
Satisfactory (>2 times per day)	116 (95%)
Not satisfactory (</=2 times per day)	6 (5%)
Method used to clean external genitalia	
Soap and water	69 (56.6%)
Only water	53 (43.4%)

In our study, only 39.3% of adolescent girls had food taboos. Majority 97.6% of adolescent girls used sanitary pads as absorbent during menstruation, 50% of adolescent girls have habit of changing the absorbent 3-4 times a day, 45% of adolescent girls changes 2-3times a day, 84.4% of adolescent girls had practices of changing the absorbents during school hours, 53.3% of adolescent girls have a habit of throwing into dustbin followed by 45.1% of adolescent girls had habit of burning the absorbents. 100% of adolescent girls had a habit of taking daily bath during menstruation, 95% adolescent girls clean their external genitalia satisfactorily, 56.6% of adolescent girls uses soap and water as material for cleaning their external genitalia. 43.4% of adolescent girls uses only water for cleaning their external genitalia. (Table 4).

Table 5: Distribution of study subjects with respect to their restriction practiced during menstruation

Nature of Restriction	No.(%)
Going to temple	46 (37.7%)
Strenuous work	45 (36.9%)
Touching family members	12 (9.8%)
Talking with boys	1 (0.8%)
No restrictions	18 (14.8%)

In present study among 37.7% adolescent girls there is restriction for going to temple, 36.9% for strenuous work followed by 9.8% for touching family members whereas 14.8% had no restrictions.

Discussion

In the present study, the mean age at menarche among girls was 12.8±0.9 years. In a similar study by Thakre et al[5] observed that the mean age at menarche among rural girls was 12.86 ± 0.9 years.

In our study 51.7% of adolescent girls belongs to Hindu religion whereas in a study by Kailasraj et [a2] 100.0% of rural girls belongs to Hindu religion. In our study 81.1% of the adolescent girls belonged to nuclear family similarly in Kailasraj et al[2] study 76.8% rural girls belong to nuclear family. In our study 27% of adolescent girl's mothers were employed whereas in a study by Kailasraj et al[2] 49.5% of rural girl's mothers were employed.

In our study among 76.2% of girls, the main source of information was mother and family members regarding menstruation before attaining menarche, whereas 21.3% of rural girls the main source of information was friends and 2.5% girls from teachers. Similarly, a study conducted by Tiwari H et al [6]concluded that 60.7% of the girls were informed by their mother and 15.8% by their elder sister. 13.6% and 6% of the girls received information from their friends and teachers respectively. The findings were consistent with those of other studies like Jogdand et al[7], Kamaljit et al[8], Shanbhag D et al[9], Verma et al[10], Deo et al[11], where mother was the main source of information regarding menstruation before attaining menarche. Salve et al[12] study have observed that the main source of knowledge regarding menstruation was teachers (47%) and mothers and friends (21%) among rural girls.

In present study 39.3% of rural school girls had the knowledge regarding menstruation before menarche. Patel et al[13] observed that 47.57% of the rural girls were aware about menstruation before attaining menarche.

In the present study, it is observed that 82.8% of rural girls were aware that menstruation is a normal physiological process, where as 17.2% were unaware.

In a similar way, a study conducted by Shanbhag D et al[9] has shown similar results as 72.2% of rural girls know that it is a normal physiological process while 17% believed in a myth that menstruation occurs due to curse of God.

The present study found that 94.3% of rural girls were not aware of the source of the menstrual bleeding whereas 3.3% of rural girls said it was from vagina. Similar study done by Nagar et al.[14]observed that 76.23% girls were not aware of the source of the menstrual bleeding; only 2.58% were aware that the source of the bleeding was the uterus

In the present study, it is observed that nearly half of the girls (50%) have an indifferent attitude regarding menstruation while 40.2% of the girls experienced discomfort. Only 9.8% were scared and none were disgusted, which is remarkable. In contrast to this, Deo DS et al[11] confirmed in a study that 44.6% of the girls were scared and 33.9% of the girls had indifferent attitude. The remaining girls expressed discomfort and disgust in equal proportions (4.5%).

In present study it was observed that 39.3% of rural girls had food taboos. Shanbhang et al[9] in their study stated that rural girls had food taboos like 21.6% avoided sweets, 3.9% spicy food, 9.1% curd and milk products.

In the present study it was observed that 97.6% rural girls used sanitary napkins, 1.6% girls used reused old cloth. In contrast, a study conducted by Dasgupta A et al[4], it was concluded that only a shocking proportion of 11.25% of the girls were using Sanitary pads and 6.25% of the girls were using new cloth pieces. Majority of the girls constituting 42.5% were using old cloth pieces while the remaining 40% of the girls were using all of the above mentioned absorbant materials. Whereas Dube et al[15] observed, 65% of the rural girls use home-made disposable pads during menstruation, which were made up of old torn out clothes. Patle et al[16] observed that 43.4% of rural girls were using sanitary pads. The use of old piece of cloth was higher among rural group 56.6%.

The present study observed that 50% of the rural girls change absorbents 3-4 times per day, 45% change absorbents 2-3 times a day. Shanbhang et al[9] observed that 39.8% change absorbents twice a day, 29.5% 3 times a day and 21.7% once a day. Nair et al[17] observed 74.8% adolescent girls were changing pads 2-3 time a day and 17.3% more than 3 time a day.

In the present study it was observed that 84.4% of rural girls change the pad in the school hours during menstruation. Nagar et al[14], in their study they observed that only a small proportion, 11.37% of girls change the pads at school hours.

The present study observed that 53.3% of rural girls dispose the used absorbent by throwing into dustbin, 45.1% by burning, 1.6% of the girls by flushing it in toilet. On the other hand, Thakre SB et al[5] conducted a study which confirmed that 60.96% of the girls burn the absorbant whilst only 12.33% of the girls throw it in the dustbin, 22.6% of the girls disposed the absorbant by flushing in the toilet.

In the present study it was observed that 100% of the rural girls had daily bath, similar study by Yasmin et al[18] observed that 85.7% of urban girls said that they take daily bath during menstruation.

In our study, 95% rural girls clean their external genitalia satisfactorily. Whereas in Kailasrajet al[2] study 65.8% rural girls clean their external genitalia satisfactorily.

In our study it was observed that of the 56.6%rural girls wash their external genitalia with soap and water, 43.4% were using only water for washing the external genitalia. Kamalijit et al[8] have concluded that 56.1% rural girls were using soap and water, 46.4% were using only water for washing the external genitalia.

The present study found that among adolescent girls there is restriction like 37.7% for not going for temple, 36.9% for strenuous work , 9.8% for touching family members and 14.8% did not practice any restriction. A study done by Nagar et al[14] found, among rural girls 73.29% did not attend any religious functions, 28.77% did not do house hold work, 7.53% not allowed to go to school and 23.29% did not practices any restriction.

Conclusion

Many girls attain menarche as early as 12 years hence, formal as well as informal means of communication such as mothers, sisters and friends, need to be emphasized for the delivery of such information. A vital role is played by the mothers to deliver appropriate information on reproductive health to her girl about menstruation before she attains menarche. Teachers who are in fact second mothers should be involved in imparting

reproductive health education, including menstrual hygiene to their students. They have to be given requisite skills by organizing workshops as well as programmes wherein they could interact with gynecologists. Such sessions should involve the mothers too so that they can handle the needs of their ward. Reproductive tract biology should be included in the curriculum from Class VI onwards so that the girls are able to recognize the changes in their body and prepare themselves for the next phase of life, i.e., puberty without fear and disgust. Immense effort is needed to curb myths about menstruation among the adolescent school going girls. There are a numerous reproductive health implications pertaining to menstruation and its management which in turn significantly alters the quality of life positively or negatively. These invariably necessitates an urgent addressal by all the stakeholders-family, school community, civil society, and service providers to enable proper hygiene practices and to ingrain correct menstrual perceptions and to abolish myths regarding the process of menstruation amongst this segment of the population.

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Original Article

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Association between Coronary Artery Disease and Body Mass Index

J. B. Ashraf Ali M.D.[1], R. Mohan M.D.[2], T. Dinesh M.D.[3]

[1,3]Assistant Professor of Physiology, Government Thiruvarur Medical College, Thiruvarur, Tamilnadu, India, [2]Assistant Professor of Physiology, Coimbatore Medical College, Coimbatore, Tamilnadu, India.

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Abstract

Background: Coronary artery disease (CAD) is a prevalent cardiovascular condition. Body mass index (BMI), a measure of body fat based on height and weight, has been studied as a potential risk factor for CAD.

Aim and Objective: The Aim of this study was to evaluate the association between BMI and CAD in male patients undergoing Coronary Angiography and in matched controls.

Materials and Methods: This study was done at the Department of Physiology, Thanjavur Medical College Tamil Nadu. Participants (n = 80) were recruited from the population in and around Thanjavur. The Institute Ethical Committee approval was obtained for this study. Subjects who met inclusion and exclusion criteria were included in this study as control group: Group A (n = 40) and study group: Group B (n = 40). Informed, written consent was taken from both groups. BMI was measured for the 80 participants. Angiogram report was obtained from the cardiologist.

Results: The mean BMI of 25.5165 ±2.22366 for Group A and the mean BMI of 26.5113 ±2.25700 for Group B. The P value is 0.051(>0.05) which is not significant.

Conclusion: It has been concluded that the association between the Body Mass Index and Coronary Artery Stenosis in male patients undergoing coronary angiography is statistically not significant compared to the control group.

Key Words: Body Mass Index; Coronary Artery Disease; Coronary Artery Stenosis

Introduction

Coronary Artery Disease has become the primary cause of death in the world.[1,2,3] Researchers claim that by 2030, death from Coronary Artery Disease will be more globally[2]. World Health Organisation had estimated that 17 million persons perished of Cardio Vascular Disease in 2004 and there will be nearly 20 million Cardio Vascular Deaths worldwide every year and 24 million deaths by 2030. Each year, there are about 5.8million new Coronary Artery Disease cases and nearly 40 million persons with established Coronary Artery Disease are living today.[3]

Due to the numerous health implications associated with obesity, it is currently estimated to be the second leading cause of preventable death.[4] Obesity is associated with increased risk of hypertension (HTN), diabetes mellitus type 2 (DM), the metabolic syndrome (MetS), and dyslipidemia, all risk factors for coronary artery disease (CAD).[5,6]

Corresponding Author: R. Mohan M.D., Assistant Professor of Physiology, Coimbatore Medical College, Coimbatore, Tamilnadu, India.

E-mail: sharmesh10@gmail.com

Obese individuals that are relatively insulin sensitive, labelled metabolically healthy obese (MHO), who have a more favourable cardiovascular (CV) profile compared to insulin-resistant obese (IRO) individuals.[7-11]. A number of inflammatory responses are found to occur with obesity including increased clotting factors such as fibrinogen, von Willebrand factor, and factors VII and VIII; and increasing plasminogen activator inhibitor type-I that are associated with decreased fibrinolysis, all which may lead to increasing CAD.[12,13,14] Elevated levels of tumor necrosis factor alpha in obesity have also been implicated in the development of insulin resistance.[15]

In obesity, elevated leptin levels have been associated with negative outcomes in Coronary Artery Disease (CAD) and are linked to in-stent restenosis[16]. Additionally, other potential mechanisms contributing to the increased risk of CAD in individuals with diabetes mellitus (DM) include reduced insulin-mediated vasodilation, heightened insulin-mediated renal sodium reabsorption, stimulation of the sympathetic nervous system by insulin, and increased vasoconstriction due to elevated circulating free fatty acids.[12,13] Obesity not only increases the risk of hypertension (HTN) and diabetes mellitus (DM) but also raises the risk of dyslipidemia, all potentially increasing the risk for CAD.[17,18, 19, 20]

Materials and Methods

This study was conducted at the Department of Physiology, Thanjavur Medical College, Thanjavur. The study included participants from the general community in and around Thanjavur. Ethical committee approval was obtained prior to conducting the study. It was a case-control study conducted between October 2015 and May 2016. The patient group consisted of 40 male patients who were admitted for diagnostic Coronary Angiography due to symptoms indicative of Coronary Artery Disease. Additionally, a control group of 40 individuals of the same age group and sex was included. The degree of Coronary Artery Stenosis in the patient group was greater than 50%. The results of the angiogram were reported by a Cardiologist.

Inclusion criteria:

- Patients who were indicated for Diagnostic Coronary Angiography.
- Degree of Coronary Artery Stenosis > 50%
- CRP(<5mg/l)

Exclusion criteria:

- Hypogonadism
- Hypopituitarism
- Taking drugs that might affect sex hormone level
- High CRP(>5mg/l)
- Previous Cardiovascular Event
- Coronary or Periphery Atherosclerosis.
- Degree of Coronary Artery Stenosis < 50%.

The presence of Coronary Artery Stenosis was established by Coronary Angiography. The angiography was performed in the catheterization laboratory under local anesthesia by a skilled Interventional Cardiologist and the outcome were reported by an Expert Cardiologist. Significant coronary stenosis and thus CAD was defined as a 50% or more narrowing of the lumen diameter in at least one major coronary artery.

Body Mass Index was calculated from the measured height and weight by using Quetelet's Index. BMI is measured by dividing weight in kilogram by height in meter square.[21]

The procedure was explained to all the people who participated in this study. Informed written consent was taken from both the controls and subjects.

Statistical Analysis

The continuous variables are expressed as mean ± standard deviation (SD) and compared using Student's t-test or Mann–Whitney U-test between Group A and Group B. Categorical variables were described through frequency and percentage and were compared amongst the above-mentioned groups.

P-value was derived from data analysis using statistical package SPSS version.16 and statistical analysis was performed by Student's "t"-test. If P ≥

0.05, it is not statistically significant. If P < 0.05, it is considered as statistically significant.

Results

The continuous variables are expressed as mean ± standard deviation (SD) and compared using student's t test between CAD and non-CAD groups. Categorical variables were described through frequency and percentage and were compared among the above mentioned groups.

P value < 0.05 was considered to be statistically significant.

Eighty male subjects(n=80) were participated in this case control study, which were divided into two groups, A (n=40) and B (n=40). Group A includes forty control subjects and Group B includes forty CAD subjects who were referred for diagnostic Coronary Angiography.

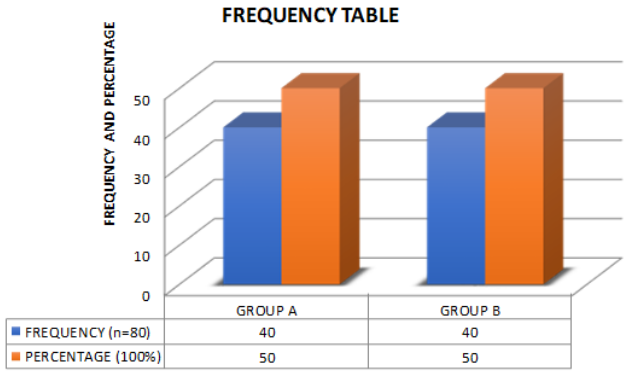

Figure 1

Figure 1 shows the Frequency and percentage of the subjects in this study. Group A has the frequency of n=40 and percentage of 50%. Group B has the frequency of n=40 and percentage of 50%.

Descriptive Statistics:

Mean Value For Both The Groups

Table 1

PARAMETERS	All group (n=80)			
	Minimum	Maximum	Mean	Standard Deviation
BMI	19.33	30.96	26.0139	2.28173

Table 1 shows Mean and the Standard Deviation for BMI for both the groups. BMI shows the mean value of 26.0139 ± 2.28173 for both the groups.

T-Test for Group A and Group B:

Table 2

Group	Mean	S.D	T	DF	P Value
BMI					
A (n=40)	25.5165	2.22366	-1.986	78	.051>0.05 Not Significant
B (n=40)	26.5113	2.25700			

Table 2 shows t test for the parameter BMI for Group A and Group B. The mean BMI of 25.5165 ±2.22366 for Group A and the mean BMI of 26.5113 ±2.25700 for Group B. The T = -1.986 with 78 degrees of freedom. The P value is 0.051(>0.05) which is not significant.

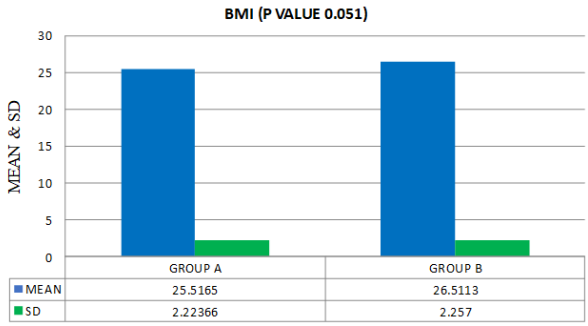

Figure 2

Figure 2 shows Mean and the Standard Deviation for BMI for Group A and Group B. The mean BMI of 25.5165 ±2.22366 for Group A and the mean BMI of 26.5113 ±2.25700 for Group B. The P value is 0.051(>0.05) which is not significant.

Discussion

Coronary Artery Disease is the leading cause of mortality and morbidity worldwide. Men tend to develop Coronary Artery Disease at an earlier age compared to women. [2].

The study compared the Body Mass Index (BMI) results between patients with Coronary Artery Disease and healthy individuals of the same age and sex.

Our study reveals that BMI of Coronary Artery Disease patients are higher than the Healthy Individuals, but statistically insignificant.

Our study aligns with previous research that suggests there is no significant association between obesity and Coronary Artery Disease:

- Our study findings are consistent with the research conducted by A. Alkamel et al [22] In their study, they compared the Body Mass Index (BMI) of normal coronary subjects (25.82 ± 3.86) with CAD patients (26.30 ± 3.60) and found that the difference was not statistically significant (p-value = 0.3)
- Our study findings are consistent with the research conducted by GMC Rosano et al[23]. In their study, they compared the BMI of CAD patients (26.2) with normal subjects (25.3) and found that the difference was not statistically significant.
- Our study findings align with the research conducted by Malkin et al[24]. In their study, they matched the BMI of individuals with normal coronaries (27.7) with those with Coronary Disease (28.0) and concluded that the difference was not statistically significant (p-value = 0.36).

Our study contradicts previous research suggesting that obesity increases the risk of Coronary Artery Disease:

Our study results contradict the findings of the Hypogonadism in Males study[25]. According to that study, which compared hypogonadal men (mean BMI of 31.5) with normal men (mean BMI of 28.5), the odds ratio for having hypogonadism was significantly higher in obese men. The study did not find a statistically significant relationship between total testosterone levels and BMI.

Limitations

In our study, obesity was measured solely using BMI, and we acknowledge that additional measurements such as waist-to-hip ratio and estimated visceral adipose tissue were not included. These additional measurements can provide more specific information about fat distribution and visceral adiposity, which may be relevant factors in assessing the relationship between obesity and health outcomes.

Conclusion

In this study involving 40 subjects and 40 patients, no significant association was found between body mass index (BMI) and coronary artery disease (CAD). These findings challenge the widely accepted notion of obesity as a major risk factor for CAD and highlight the complexity of the relationship between BMI and cardiovascular health.

While previous research has often reported a positive correlation between high BMI and CAD, the results of this study suggest that BMI may not be a reliable predictor of CAD risk in this specific sample. However, it is important to acknowledge the limitations of the study, including the small sample size, which may have limited the ability to detect a significant association.

Future research with larger sample sizes and diverse populations is warranted to further explore the relationship between BMI and CAD. It is also essential to consider other potential confounding factors such as genetics, lifestyle factors, and comorbidities that may influence the BMI-CAD relationship.

Understanding the underlying mechanisms and identifying reliable predictors of CAD risk are crucial for developing targeted interventions and effective management strategies. Further research in this area will help refine risk assessment models and contribute to improved CAD prevention and treatment approaches.

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Conflicts of Interest: None declared.

Ethical Clearance: Taken from Institutional Ethical Committee, Thanjavur Medical College, Thanjavur.

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