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Impact of Covid-19 Pandemic on Mental Health of Health Care Workers from a Tertiary Care Teaching Hospital of Northern India: A Cross-Sectional Study

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Abstract

Objectives: To assess the prevalence of depression, anxiety and stress (DAS) and post-traumatic stress disorder (PTSD) among health care workers

Methods: The present study was conducted over a period of six months (June 2020-November 2020) during which mental health status of health care workers was assessed using semi-structured self-reporting study tool which included two standardized and validated tools (DASS-21 and IES-R). Sociodemographic profile and occupational history were also recorded. Health care workers of all categories who gave a written informed consent were recruited using non probability convenience sampling technique. Minimum sample size required for this study was calculated to be 440, using 4PQ/L2 where, power was assumed to be 80%, absolute precision of 5%, and P as 50%, after adding non-response rate of 10%. Data was compiled and analyzed using EpiInfo07 software.

Results: Out of a total of 822 participants included in the study, 12%, 13% and 16% were found to have symptoms of depression, anxiety, and stress with the odds being higher in females. The prevalence of PTSD was 18%. Those with education above intermediate and directly involved in COVID 19 related work and patient care were found to be at higher risk of depression, anxiety, stress and posttraumatic stress disorder.

Conclusions: There is a need for a psychological support system for health care workers along with appropriate administrative action to ensure shift rotation, rest and appropriate working hours. Further, in-depth knowledge of prevention and control of the disease is necessary.

Keywords: COVID-19, Stress, Anxiety, Depression, Post-traumatic stress disorder, Health care workers

Introduction

COVID-19 was first reported in December 2019 from China which spread rapidly to other countries and it was declared a public health emergency of international concern by WHO on 30/01/2020 and a pandemic on 11/03/2020.^{1,2} First case from India was

reported on 27/1/2020.³ Whereas, Punjab reported its index case on 09/01/2020.⁴

Since then, the number of cases increased putting an overwhelming load on health care workers (HCW). For control, lockdowns were imposed country-wide

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and it resulted in economic slowdown adding to psychological distress of population.⁵

The morbidity and mortality due to COVID-19 increased and HCWs are facing an uphill task in providing services. Increased risk of contracting the disease due to the work environment as well as innate desire for a positive outcome in every patient also acts as stressor in HCWs.⁶⁻⁸ Increasing stress levels decrease the immunity thereby increasing the risk of contracting the disease which also stands true for COVID-19.⁹

The disease course and outcome due to COVID-19 is associated with uncertainty and low predictability. This impacts the mental health of the patients and caregivers, but rates of poor mental health have been higher among HCWs.^{10,11} The rates are even higher among frontline workers in comparison to non-frontline HCWs which has not been explored. It is essential to understand the mental health effects of the disease in order to counter them and ensure good mental health.¹²⁻¹⁴

Available literature shows that poor coping, maladjustment and emotional disturbances have also risen due to the pandemic.^{15,16} This highlights the fact that not only physical but mental and social health also need to be taken care of.¹⁷

In view of this, the present study was carried out to assess the prevalence of depression, anxiety and stress (DAS) and post-traumatic stress disorder (PTSD) among HCWs of our institution with the aim of understanding their mental health status and needs.

Materials & Methods

This cross-sectional study was conducted over a period of six months (June 2020 to November 2020) in the Department of Community Medicine, Government Medical College, Amritsar, Punjab, India. Being a tertiary care institute, it acted as a state referral centre for seven districts (Amritsar, Gurdaspur, Jalandhar, Hoshiarpur, Pathankot, Kapurthala & Tarn Taran).

Staff members who gave a written informed consent were included in the study. Any study participant with a known history of psychiatric illness, intake of oral drugs causing mood disorders, alcohol dependence or illicit drug use was excluded from the study.

Assuming power of study to be 80% and an absolute precision of 5%, sample size was calculated using $N = (Z_{\alpha/2})^2 (P[1-P]) / d^2$, where P was taken to be 50% for attaining maximum sample size; therefore, it was planned to recruit a minimum of 440 participants after adding a non-response rate of 10% to the calculated sample size of 400. Non-probability convenience sampling technique was used to enroll the study participants.

The semi-structured, self-reporting study tool was used which consisted of three sections.

Section I: Sociodemographic details (age, gender, educational status, marital status and living with family) and occupational details (department, whether directly involved in COVID-19 related work or not).

Section II: DAS-21 scale consisted of 21 items to assess the symptoms of DAS on a likert scale (ranging from 0-3) with 7 items each allotted to one subscale (3X7=21). After adding item specific scores for each subscale, they were multiplied by 2 to get final scores. The cut offs and the degree of severity for each subscale was taken as per standards.¹⁸

Section III: IES-R scale, which is a 22 item scale used for recording PTSD, where each item is assessed on a likert scale (0 to 4); three subscales namely, intrusion (8 items), avoidance (8 items) and hyperarousal (6 items) are also assessed. Total score ranged from 0-88, where 24 was the cut-off while any individual having a score of 33-38 was considered to be suffering from PTSD, while those with scores between 24-32 had partial or some symptoms of PTSD whereas, those with scores of >39 suffered from a severe form of PTSD.¹⁹

After developing it was pilot tested for assessing its completeness, sentence formation, punctuation, instructions, linguistic quality and aptness of duration required for filling the questionnaire. This assessed face validity of the tool before it could be used in the study.

Methodology

Training sessions on COVID-19 were organized for the staff of medical college during which data collection was done. The participants were explained about the objectives of study and were asked to fill in the most appropriate responses for each item of the

scales. They were requested not to leave any question blank as that would lead to exclusion of the study participant.

Data analysis/ statistical analysis

Primary outcome for the present study was psychological problems in terms of DAS and PTSD among HCWs.

The data were compiled and analyzed using EpiInfo07 (CDC, USA) software. Mean ± standard deviation was calculated for continuous variables. For categorical variables frequency and proportions were calculated. Univariate logistic regression was used to establish association between presence of DAS and PTSD with various sociodemographic and occupational variables. Linear regression was used to assess association between predictor variables and mean scores of IES-R subscales. $p < 0.05$ on both sides was considered to be statistically significant.

Findings

A total of 822 participants were included in the study where most of them (748;91%) were aged between 31 to 60 year and their mean age± standard deviation was 49.9±9.9 years. Females (457;56%) were slightly higher than males (365;44%). Majority were diploma holders (355;43%). 13% (110/822) and 10% (85/822) had education up to graduation and post-graduation level whereas, only 2% (16) were illiterate. Most (713;87%) were married. Faculty formulated 8% (62/822) of the participants and majority were staff nurses (43%). 35% (286/822) were involved in COVID-19 related work.

Out of 822 study participants 96 (12%), 107 (13%) and 120 (16%) were found to be having symptoms of DAS. The mean score of DAS 21 was 5.3±8.2 ranging from 0-57. As far as mean subscale scores were concerned, stress had the highest mean score (mean ±SD =4.8±6.9; range=0-38), followed by depression (mean ±SD =3.1±5.9; range=0-40) and least was for anxiety (mean ±SD =2.6±4.9; range=0-38).

The grading as per the severity of DAS is shown in figure 1.

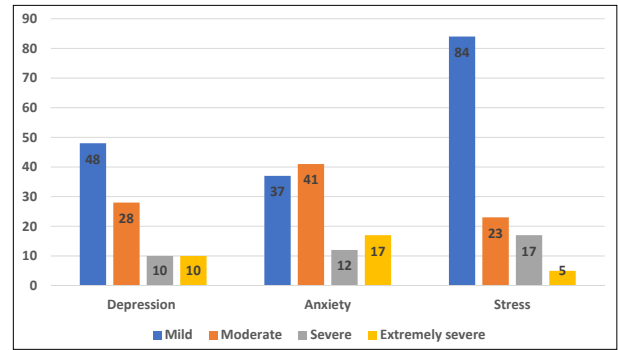


Figure 1: Distribution of study participants according to severity of Depression, Anxiety & Stress

The prevalence of PTSD was found to be 18% (146/822) among the study participants. The distribution according to the severity of PTSD is shown in figure 2.

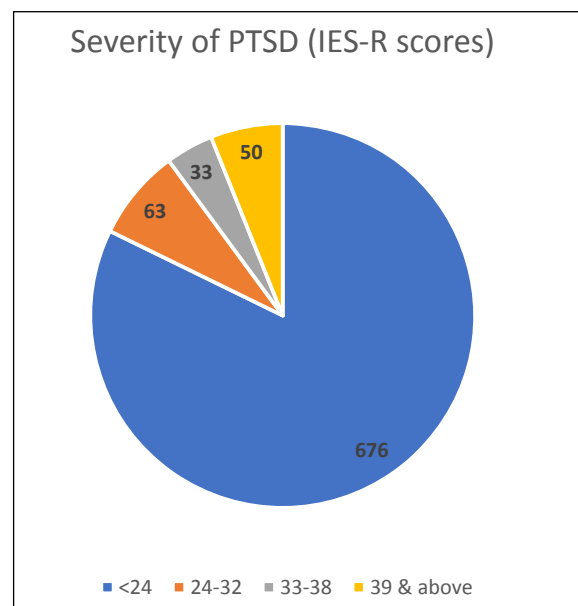


Figure 2: Distribution of study participants according to severity of PTSD (IES-R scores)

Females were at 2.5 times higher odds of suffering from depression (OR= 2.51; 95% CI =1.55-4.04) and anxiety (OR= 2.52; 95% CI =1.59-3.98) as well as 2.94 times higher odds of suffering from stress (OR= 2.94; 95% CI =1.92-4.54) (table 1). Having an education of more than intermediate (OR=4.95; 95% CI=2.88-8.52) were found to be strongly related to PTSD.

Table 1: Univariate logistic regression analysis showing association of depression, anxiety, stress and PTSD with sociodemographic profile of HCWs

Variable	Stress		Anxiety		Depression		PTSD	
	Yes (n=129)	No (n=693)	Yes (n=107)	No (n=715)	Yes (n=96)	No (n=726)	Yes (n=146)	No (n=676)
Sex								
Female	98 (21%)	358 (79%)	79 (17%)	377 (83%)	71 (16%)	386 (84%)	111 (24%)	346 (76%)
Male	31 (8%)	335 (92%)	28 (8%)	338 (92%)	25 (7%)	340 (93%)	35 (10%)	330 (90%)
OR (95% CI)	2.94 (1.92-4.54)		2.52 (1.59-3.98)		2.51 (1.55-4.04)		3.03 (2.01-4.56)	
Education								
≥ 12 th grade	105 (19%)	445 (81%)	91 (17%)	459 (83%)	80 (15%)	470 (85%)	130 (24%)	420 (76%)
< 12 th grade (reference)	24 (9%)	248 (91%)	16 (6%)	256 (94%)	16 (6%)	256 (94%)	16 (6%)	256 (94%)
OR (95% CI)	2.44 (1.52-3.90)		3.17 (1.82-5.51)		2.72 (1.56-4.76)		4.95 (2.88-8.52)	
Marital status								
Married	113 (16%)	600 (84%)	96 (13%)	617 (87%)	86 (12%)	627 (88%)	135 (19%)	578 (81%)
Unmarried/ (reference)	16 (15%)	93 (85%)	11 (10%)	98 (90%)	10 (9%)	99 (91%)	11 (10%)	98 (90%)
OR (95% CI)	0.91 (0.52-1.61)		0.72 (0.37-1.39)		0.74 (0.37-1.46)		2.08 (1.11-3.49)	
Staying with family								
Yes	121 (16%)	652 (84%)	100 (13%)	673 (87%)	90 (12%)	683 (88%)	136 (18%)	637 (82%)
No (reference)	18 (16%)	41 (84%)	17 (14%)	42 (86%)	6 (12%)	43 (88%)	10 (20%)	39 (80%)
OR (95% CI)	1.05 (0.481-2.29)		1.12 (0.49-2.56)		1.05 (0.44-2.56)		1.12 (0.58-2.46)	

Being directly involved in COVID-19 related work and working in clinical department were found to be associated with DAS. Strength of association is shown in table 2.

Table 2: Univariate logistic regression showing association of depression, anxiety, stress and PTSD with occupational profile of HCWs

Variable	Stress		Anxiety		Depression		PTSD	
	Yes (n=129)	No (n=693)	Yes (n=107)	No (n=715)	Yes (n=96)	No (n=726)	Yes (n=146)	No (n=676)
Department								
Clinical	96 (18.6%)	434 (82%)	88 (17%)	442 (83%)	62 (15%)	356 (85%)	117 (22%)	413 (78%)
Non- Clinical (reference)	33 (11%)	259 (89%)	19 (7%)	273 (93%)	34 (80%)	370 (92%)	29 (10%)	263 (90%)
OR (95% CI)	1.74 (1.14-2.65)		2.86 (1.70-4.8)		1.89 (1.22-2.95)		2.5 (1.7-3.9)	

Variable	Stress		Anxiety		Depression		PTSD	
	Yes (n=129)	No (n=693)	Yes (n=107)	No (n=715)	Yes (n=96)	No (n=726)	Yes (n=146)	No (n=676)
Involved in COVID-19 related work								
Yes	91 (32%)	195 (68%)	69 (24%)	217 (76%)	66 (23%)	220 (77%)	97 (34%)	189 (66%)
No (reference)	38 (7%)	498 (93%)	38 (7%)	498 (93%)	30 (6%)	506 (94%)	49 (9%)	487 (91%)
OR (95% CI)	6.11 (4.05-9.24)		4.17 (1.97-6.41)		4.17 (1.97-6.41)		5.1 (3.48-7.47)	

The factors found to be associated with avoidance, hyperarousal and intrusion (IES-R subscales) were age group, sex and involvement in COVID-19 related work (table 3).

Table 3: Linear regression analysis showing various factors associated with avoidance, hyperarousal and intrusion.

Variable	Avoidance MEAN ± SD	Hyperarousal MEAN ± SD	Intrusion MEAN ± SD	Total MEAN ± SD
Age group				
>18-30	0.5±0.7	0.3±0.5	0.3±0.5	8.71±10.45
31-40	0.7±0.8	0.6±0.7	0.4±0.6	12.85±14.14
41-50	0.6±0.7	0.5±0.6	0.4±0.6	11.38±12.93
51-60	0.7±0.8	0.6±0.7	0.6±0.7	14.07±14.84
>60	0.4±0.6	0.2±0.6	0.2±0.5	6.05±11.54
	p=0.06	p=0.000	p=0.001	P=0.005
Sex				
Male	0.46±0.65	0.34±0.52	0.29±0.49	15.77±14.82
Female	0.87±0.8	0.69±0.74	0.59±0.68	8.15±11.18
	p=0.000	p=0.000	p=0.000	P=0.000
Marital status				
Married	0.7±0.8	0.6±0.7	0.5±0.6	12.76±14.14
Separated/widowed/divorced/single	0.6±0.7	0.4±0.6	0.3±0.5	9.93±11.49
	p=0.2	p=0.03	p=0.1	P=0.01
Involved in Covid-19 related work				
Yes	1.1±0.9	0.8±0.8	0.8±0.7	19.93±15.83
No	0.5±0.6	0.4±0.5	0.3±0.5	8.36±10.67
	p=0.000	p=0.000	p=0.000	P=0.000
Staying with family				
Yes	0.7±0.8	0.5±0.7	0.5±0.6	13.2±17.4
No	0.6±0.8	0.6±0.8	0.6±0.8	12.3±13.6
	p=0.35	p=0.84	p=0.89	P=0.60

Discussion

The current study was conducted to assess the prevalence of psychiatric morbidity among HCWs and explore the factors associated with it. The overall prevalence of depression, anxiety and stress was

found to be 12%, 13% and 16% in our study which was lower than the range of prevalence rates of depression (12.2%-50.4%), anxiety (13.0%-44.6%) and stress (29.1%-71.5%) among HCWs reported from different parts of the world.^{10,20-22} This lower prevalence could be explained by the fact that our study was not

conducted during the peak of COVID-19 outbreak and lockdown imposed was also partially removed.

Among those having symptoms related to DAS, 10%, 16% and 4% had extremely severe symptoms whereas majority had mild symptoms (48%, 35% and 65%) which were similar to the results reported by a multicentric study conducted in India and Singapore.^{23,24} PTSD was found to be 18% (146/822) as all had experienced a pandemic situation and complete lockdown for the first time in their lives.

Female gender, having intermediate & above education, working in clinical and para clinical departments were found to be associated with increased risk of having DAS and PTSD. Further being involved in COVID-19 related work (clinical care, diagnostics, data management etc) had a very strong association with having DAS symptomology. A study conducted in China, also reported that females and frontline workers were at higher risk of having DAS during COVID-19 pandemic.²⁵

Females generally take care of the family, which increases the fear of transmitting the infection to family members and if they get infected they will be unable to perform their day-to-day duties for them. These factors push them to a higher risk of having DAS and PTSD.

Those involved in COVID-19 related work were at significantly higher odds of suffering from DAS and PTSD. This can be attributed to long working hours and lack of rest. Continuous exposure increases their chances of contracting COVID-19 and they fear of taking infection home and spreading infection to their loved ones. Apprehension arising because of non-availability of PPE, proper sanitation and required equipment contributes to the negative feelings which increases levels of DAS.^{25,26}

Therefore, the administration needs to configure appropriate working hours, periodic rest phases and rotation for all the workers during the COVID-19 pandemic peak. This highlights the need of prioritising safety of HCWs and fulfilment of their basic needs. Further a provision of psychological support through colleagues, social media platforms and workshops should be organised to enhance the ability to cope with emotional challenges.^{26,27}

Having higher education was found to be associated with higher risk of psychiatric morbidity. This is because they have in-depth knowledge about

disease which further adds to the fear of morbidity and mortality associated with the disease if they contract the same.

Organisation of COVID-19 related training for enhancement of their occupational competency can go a long way in relieving the stress and increasing job confidence.

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Ethical Clearance: Ethical clearance of the current study was obtained from Institutional Ethical Committee vide letter number GMC/Principal/IEC/2020/GMCIEC02049 dated 25/6/2020

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The association between works related musculoskeletal body discomfort and ergonomic risk level among female sewing machine operators in Sri Lanka.

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Abstract

Background: Work related musculoskeletal discomfort can occur in any region of the body. It affects sewing machine operator's activities of daily living and quality of life directly or indirectly. Poor ergonomics is a major contributor to work related musculoskeletal discomfort that develops over time. It is important to find out the association between work related musculoskeletal body discomfort and ergonomic risk level among female sewing machine operators of selected garment factories in western province, Sri Lanka.

Methods: A descriptive cross-sectional study was preceded, with a study population of one hundred and thirty-seven (137) female sewing machine operators within the age of 18-50 years at selected garment factories in the western province of Sri Lanka.

Conclusion: Of the total sample, 72.99% operators presented with musculoskeletal discomfort. Qualitative and quantitative data were obtained using a pre-validated questionnaire; Cornell musculoskeletal discomfort questionnaire and Rapid Entire Body Assessment (REBA). The mean age of study population was 33.55±1.64years. The highest prevalence of discomfort was reported in neck (53.94%) and lower back (69.2%) regions. The mean ergonomic risk level was 8.42±0.16 which is 50.36% in study population. The majority of the sewing machine operators were in high ergonomic risk level in western province of Sri Lanka and the prevalence of musculoskeletal disorders was more in the lower back and neck regions where the ergonomic interventions should have implemented.

Keywords: Work related musculoskeletal body discomfort, ergonomic risk level, REBA, sewing machine operators

Introduction

There are 300-350 apparel manufactures in Sri Lanka which provide direct and indirect employment for over 300,000 and 600,000 employees respectively. It includes a considerable number of women. Dheerasinghe, reported that the garment industry has been Sri Lanka's largest gross wage earner since 1986 and accounted for more than 52% of the total export earnings of the country¹. Therefore, sewing machine operators play a major role in the economy of Sri Lanka. Therefore, it is essential to study on problems regarding to them.

A work-related musculoskeletal discomfort (WRMSD) refers to the musculoskeletal aches and distresses that result from a work-related event². There is a prevalence of 15.5% for having musculoskeletal problems in garment factory workers in Sri Lanka³. According to several studies, musculoskeletal discomfort became a major health complaint among sewing machine operators in the apparel industry in South Asian countries. Work related musculoskeletal discomfort can occur in any region of the body but the back pain was the most commonly reported disorder among those who suffered from musculoskeletal discomfort⁴.

Female sewing machine operators in garment factories usually sit for more than 6 hours continuously for a minimum of 6 days per week. Without adequate breaks they work in a non-ergonomically fitted work station. Literature has proved that most of the female sewing machine operators are suffering from health issues such as work-related musculoskeletal discomforts⁵⁻⁷.

As health care professionals, it is essential to understand the work-related musculoskeletal discomfort regarding their occupational history. Therefore, the current study was conducted to evaluate the prevalence of the work-related musculoskeletal discomfort and ergonomic risk level among sewing machine operators which is still lacking in the apparel industry of Sri Lanka. This study also revealed the association between work-related musculoskeletal discomfort and ergonomic risk level which is important to make suitable adaptations to prevent and minimize the ergonomic risk level among sewing machine operators.

Materials and Methods

The current study was designed as a descriptive, cross-sectional study. One hundred and thirty seven (137) female sewing machine operators in two large scale garment factories (Kaluthara and Colombo) were recruited using simple random sampling, according to the inclusion criteria as female sewing machine operators in the age category of 18 - 50 years, minimum of 6 working hours, minimum working period of 6 months and participants who granted written informed consent. Exclusion criteria of the study considered as participants who did not grant the written informed consent, participants who have undergone surgeries in the spine and scoliosis and diagnosed with previous illness and diseases in the musculoskeletal system and pregnant. Ethical clearance was obtained from the Ethics Review Committee, Faculty of medicine, Kotelawala Defense University, Sri Lanka.

Pre-tested Interview-administrated assessment form was used to collect data about work related musculoskeletal discomforts and demographic data. Height and weight were measured using a stadiometer 282 (Seca GmbH and Co kg, Hamburg and Germany) and a weighing scale named Tanita HD 318 digital weighing scale (Tanita Co-operation, Tokyo, Japan). Three measurements were taken at the same time and the mean was calculated. Body Mass

Index (BMI) was calculated using mean height and weight values measured.

The section 1 of the form was consisted demographic data with work related factors of the participants and section 2 was consisted with Standard Cornell musculoskeletal discomfort questionnaire (CMDQ). The CMDQ is a 54-items questionnaire which has a body chart and questions on musculoskeletal ache, pain, or discomfort occurrence in 18 body parts over the past week. It is calculated in accordance with the CMDQ scoring guidelines⁸.

Rapid ergonomic Body Assessment (REBA) was used to assess ergonomic risk level. It was included all body regions and considered the static force or load score coupling score and activity scores with postural score are to achieve the final score⁹. Data were analyzed using SPSS (Statistical Product and Service Solution) software version 26.0.

Results

A majority of the participants, 100 out of 137 (72.99%) complained that they have been experiencing musculoskeletal body discomfort in various parts of their body which indicated that there was high incidence of Work-Related Musculoskeletal Discomfort.

Ergonomic risk level distribution was presented in Figure 1 under REBA category (medium risk, high risk and very high risk). Based on REBA score, it is revealed that the workers are under high ergonomic risk for musculoskeletal discomfort. No work posture received negligible and low ergonomic risk. The results shown that only 40.88% (n=56) workers were in medium risk where action level 2 i.e. further investigation and change are needed, and 50.3% (n=69) workers were in high ergonomic risk where action level 3 i.e. immediate interventions are needed. The finding shown that 8.8% (n=12) are in very high risk category.

Distribution of prevalence of total discomfort score of the study population presented in the Table 1. The Hundred of the subjects experienced discomfort in at least one body region in the 12 months prior to questionnaire completion (72.99%). The work related musculoskeletal discomforts of those participants were evaluated according to the total discomfort score of CMDQ. It was concluded that participants felt discomfort mostly in the neck (53.94%), lower back (42.18%) and the right shoulder (2.79%) while

it was less pronounced in the left shoulder (0.28%), upper back (0.%) and left thigh (1.62%).

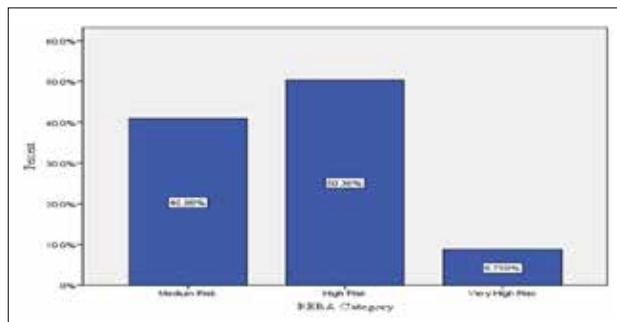


Figure 1: Ergonomic Risk Level Distribution among Participants

The difference between Works related musculoskeletal body discomfort employees with Ergonomic risk level was presented in the Table 2. An independent sample t-test was performed to compare the mean of ergonomic risk level among the group with WRMSD (N=100) and group without WRMSD (N=37). There is no significant difference between mean ergonomic risk level of participants with WRMSD and mean ergonomic risk level of participants without WRMSD ($p>0.05$).

The distribution between prevalence of work-related musculoskeletal body discomfort according to body region and ergonomic risk level among participants was evaluated in Table 3. Majority of the participants who experienced neck pain in very high-risk category ($n=14$) while there were 8 participants in high risk and 3 participants in medium risk category. There were equal number of the participants who experienced lower back pain in very high risk and high-risk category ($n=10$) while there were 3 participants in medium risk category. Majority of the participant who experienced right shoulder joint discomfort were in very high risk category ($n=5$).

Table 1: Distribution of prevalence of total discomfort score of the study population

Body region	Frequency	Discomfort	Interference	Discomfort score	Percentage (%)
Neck	44	39	37	62771	53.94
Shoulder-right	15	16	14	3248	2.79
Shoulder-left	6	8	7	336	0.28
Upper back	7	6	6	234	0.20

Body region	Frequency	Discomfort	Interference	Discomfort score	Percentage (%)
Upper arm-right	0	0	0	4	0.00
Upper arm-left	2	2	2	6	0.00
Lower back	43	35	33	49088	42.18
Forearm-right	0	2	3	6	0.00
Forearm-left	0	0	0	0	0.00
Wrist-right	3	6	5	90	0.07
Wrist-left	3	3	3	27	0.02
Hip/buttock	8	7	7	392	0.34
Thigh-right	2	2	2	6	0.00
Thigh-left	5	4	4	80	0.06
Lower leg-right	5	3	2	30	0.02
Lower leg-left	0	0	0	0	0.00
Foot-right	2	1	2	3	0.02
Foot-left	3	3	4	36	0.03

Table 2: The difference between Works related musculoskeletal body discomfort employees with Ergonomic risk level

Variable	Participants with WRMSD group N=100 Mean \pm SD	Participants without WRMSD group N=37 Mean \pm SD	P value
Ergonomic risk level	8.56 \pm 1.91	8.05 \pm 2.08	0.183

$P < 0.05$, group with WRMSD VS group without WRMSD, Independent sample T test

A one way ANOVA test was conducted to identify the association between the body regions discomfort complained by the participants and the ergonomic risk level (Table 5). Results showed that there was no statistically significance difference between the ergonomic risk level and work related musculoskeletal body discomfort ($P \geq 0.05$).

Discussion

The current study results have shown that 72.9% of the employees have experienced the Work-Related Musculoskeletal Discomfort (WRMSD) in the past twelve months. Similar to present study, De Silva *et al.*, also explained that the prevalence was 15.5% for having musculoskeletal problems in garment factory workers in Sri Lanka in 2013¹⁰. Moreover Jahan *et al.*, in 2015 stated that the prevalence of Work-Related

Musculoskeletal Discomfort among the Bangladeshi workers was about 60.7% ¹¹. Many research studies revealed that sewing machine operators were more prone to have work related musculoskeletal discomforts^{10,11}. The prolonged exposure to ergonomic risk factors such as force, repetition, static load, awkward posture, contact stress and short recovery time leads to Work-Related Musculoskeletal Discomfort¹². The Work-Related Musculoskeletal Discomfort incurred vast human, social and economic losses.

Table 3: Distribution of Ergonomic Risk Level and Work-Related Musculoskeletal Discomfort According to Region among study population

Region	REBA Categories		
	Medium Risk	High Risk	Very High Risk
Neck	3	8	14
Shoulder-Right	0	4	5
Shoulder-Left	0	2	4
Upper Back	1	4	0
Upper Arm-Right	0	2	0
Upper Arm-Left	1	1	0
Lower Back	3	10	10
Forearm-Right	0	2	0
Wrist-Right	0	2	2
Wrist-Left	1	2	1
Hip/Buttock	1	3	1
Thigh-Right	0	1	1
Thigh-Left	0	3	0
Lower Leg-Right	0	1	0
Lower Leg-Left	0	0	1
Foot-Right	1	0	1
Foot-Left	0	1	3

Table 4: The association between the body regions discomfort complained by the participants (n=137) and the ergonomic risk level.

	Mean Square	F	Sig.
Between Groups	2.18	0.937	0.531
Within Groups	2.33		
Total			

The results of current study indicated that female sewing machine operators felt most work-related discomfort in the neck (53.94%), lower back (42.18%) and right shoulder (2.79%). Similar to present study, Jahan *et al.*, in 2015 has stated that the workers had musculoskeletal pain in neck - 36.7%, lower back - 22.2% and shoulder - 18.9%¹¹. Several past studies have shown that the female sewing machine operators had most work-related discomfort in the neck and the lower back regions similar to the present study ^{9, 12-14}. Differences between studies over the years of industry work and demographic differences may cause a variance in the prevalence of studies.

Ilson, evaluated that neck region has high risk of developing issues and discomfort than other regions in the body ¹⁵. Further he stated that operating a sewing machine as an occupational risk for neck disorders. Several studies revealed that neck has the highest prevalence of musculoskeletal discomfort among sewing machine operators and the major complaint is neck pain ^{12, 16-18}. The sewing machine operators have to work long hours in same in corrected static postures with bent neck to achieve their production targets. And also poor ergonomically designed work environment, lack of intervals and lack of knowledge regarding good ergonomic practices are main reasons for the neck discomforts among sewing machine operators. According to Kannappan, in 2022 females have higher prevalence of having neck discomforts than males¹⁹. The job involves monotonous, highly repetitive tasks performed in a sitting working posture with upper back curved and head bent over the sewing machine lead for occurring musculoskeletal complaints in neck.

Lifting heavy objects at work' was identified as a cause of lower back MSD was particularly high. And also the poorly designed chairs, non-work activities, and physical problems such as past injuries, as causes of lower back problems. Garment workers may experience a decline in back and hip pain if they are provided height-adjustable task chairs that can swivel ¹¹. It is also noted that improperly designed equipment cause the aches and symptoms around the neck, nape and waist, and to the problems with the muscle and skeleton systems ²⁰. A Recent study showed that the physical burdens lead to problems at the left shoulder, the neck, the back and in the lower extremities of sewing machine operators¹⁹. These problems either arise from or become more pronounced when lifting the weights, bending the head and body forward,

and by the less recovery periods while working for extended periods in a seated position.

In present study interpreted the mean of ergonomic risk level was 8.42 ± 0.16 . The group of subjects exposed to high level of risk required immediate intervention to reduce the exposure among the sewing machine operators. Similar to present study, several studies concluded that there was high risk level of musculoskeletal symptoms and it was significantly high among female garment manufacturing industry¹⁰⁻¹². In contrast, a study done by using 37 female sewing machine operators interpreted that most of employees had medium level risk in ergonomic postures in readymade garment industry⁹.

The findings of the current study have disclosed that there was no a significant difference between work related musculoskeletal body discomfort with ergonomic risk level. In contrast to current study, another study has recently interpreted a significant association between prevalence of Work-Related Musculoskeletal Discomfort and ergonomic risk factors among sewing machine operators in the Sri Lankan textile industry²¹. There were limited literature done related to association of ergonomic risk level and the prevalence of work related musculoskeletal discomfort among sewing machine operators. However, one study conducted with pre-cast construction workers²² showed similar findings and another study with nursings professionals²³ showed contrast findings compared to the present study.

Several factors that can create an impact on work related musculoskeletal diseases rather than ergonomic risk level¹¹. According to his findings, WRMD were also associated with the measure of command over a person's own capacities (as colleagues, supervisors, job conflicts and working timetable) may prompt work environment stress.

Conclusion

The present study concluded the sewing machine operators suffer the neck region discomfort to be greater in compared to other body regions. This study also found that the majority of sewing machine operators in western province were in high ergonomic risk level (50.36%) though, it has no impact on work related musculoskeletal discomfort. It is recommended to carry out future studies with larger samples to represent the whole sewing machine operators in Sri Lanka elite level to ensure the suitable

ergonomic interventions in the workstations.

Conflicts of Interest

The author(s) declare that they have no competing interests.

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Concern over Career is the Primary Reason for Poor Mental Health among Students

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Abstract

COVID-19 is the cause of a lot of concern around the world. Apart from the obvious physical distress it has contributed significantly to elevation of mental health issues. Students who mostly have not been vaccinated are doing online classes with severe restriction on their social lives. Survey was done with students from school, college and university to determine their mental health status. Their mental health was evaluated with the DASS-21 questionnaire that was distributed and collected online. The students were found to have become vulnerable to stress, anxiety and depression. Their mental health status was found to be poor with university students being most affected. Upon Correlation studies with relevant questions on online education and consequent change in their mode of studies and interaction with family and friends, it was found that university students' concern over their career led to their poor mental health

Keywords: Anxiety, COVID-19, Depression, Mental Health, Stress, Student.

Introduction

Students represent the future generation of the society. The health of a society is reflected in the happiness of a student. Hence it is important to know the mental health status of the students and what elevates or depresses them ¹.

Premise: The world have been combating SARS-COV since the last 2 years. As the disease spread Indian Government was forced to impose complete nationwide lockdown from 24th March, 2020, initially for 21 days, which was extended multiple times till 30th of May to a total of 68 days. The lockdown was successful as the cases in India came down and India started phase wise lifting of lockdown from June, 2020. India went through 7 phases of lifting of lockdown or unlock 1.0 to 7.0 and different establishments were taken out from the ambit of lockdown as is shown

in table 1. However, educational institutions were not taken out of it. The decision to open education institutes were left to the respective states. Though some states decided to open schools and colleges but unfortunately had to shut down again due to infection amongst teachers and students ². Their experience deterred other states from opening their educational institutes. Many states closed down school at the rise of COVID cases during the second wave³. As vaccination of school going age group started since January, 2022, hence, opening of educational institutions where large number of students and teachers get together was not a viable option until recently. Therefore the students were at home since the beginning of the lockdown on 24th of March, 2020. Most of the educational institutions were taking online classes for the students.

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This unprecedented situation in a students' life led to many changes in their life. The mental health of students was assessed and was found to be affected adversely. The students underwent a gamut of emotions collectively during this pandemic that hardly any student of any generation has faced before. By asking the right questions it is possible to ascertain what affected the students' mental health most during the pandemic. This data can be used later for the betterment of the students.

Literature Survey: Studies have been done in different countries in the world to see the effect of the pandemic and consequent lockdown on the mental health of the students. From a high school students perspective in USA it is seen that adolescent students were specially prone to anxiety as they were missing the social support of the school⁴. Studies were done in Poland, where it was deduced that early intervention is needed to prevent the psychological breakdown of students⁵. A survey done on students of Delhi showed that students were undergoing stress and anxiety due to the disease and its consequent loss in social life^{6,7}. The mental health issues were prevalent and even more apparent among LGBT, transgender groups.⁸ Similar study was also done in students of India, Bangladesh and Pakistan and was shown that students suffered from anxiety and stress because of fear of contracting the disease^{9,10}.

Students were facing all the problems that their families were facing due to unemployment or death or ill health due to COVID. The families of COVID warriors were especially prone to this¹¹. Moreover the students, were now privy to all the problems of the families without the mode to escape from it in schools or sharing with friends which is putting a strain on the relationships within the family¹². The students were also worried about their job prospects, their lack of expertise in real classroom situation, lack of experience that many used to get from intern positions. Students taking their lives for not being able to do classes is doing the rounds of social media¹³. The students of the government schools, who were mostly from poor families were the worst affected¹⁴. All of these were leading to mental health problems in students. Continuous studies of mental health at different stages of the lockdown and comparison of mental health studies done before and after the lockdown has been done to see the effect of this unprecedented phenomenon on our lives. One such study done in Switzerland showed that mental health

did worsen during lockdown¹⁵. However, there is not enough study on mental health of students due to pandemic and consequent lockdown in India. This article takes a look at how the continuous lockdown and online classes have affected the mental health of the students across the stages of our education after 18 months from the start of the lockdown. Our education system has three distinct stages. At the onset there is Montessori schools, who were also taking online classes. However those students being too small were kept out of the survey. Beyond that we have the school students ranging from nursery to class 12 (students from class 9 onwards were included in the survey). Usually, a student then progresses to college and finally to university for postgraduation. Many students also opt for vocational courses. The responsibility, worries, anxiety faced by each stage of the students are different. Their reaction to pandemic, lockdown also depends on their socio economic status. Many students from poor families and rural areas were not able to afford a phone and sometimes they also do not have easily accessible internet connection. The students who were able to do the classes properly have also been restricted to their houses. Active life of playing, interaction with friends and teachers has been diminished. This has taken a toll on the mental health of the students.

At present vaccination of the general populace is being carried out all over the world to contain the disease. WHO has approved of the Pfizer/BioNTech vaccine for use in children from 12 to 18 years of age, which is being used in many countries in the world¹⁶. Below 12 years no conclusive trials have been done. In India vaccines are now available for children between 12 to 18 years. Covaxine is used to vaccinate children between 15 to 18 years of age¹⁷ and for children between 12 to 15 years the vaccine used is Corbevax manufactured by Biological E¹⁸.

Justification for the study: Even though the COVID restrictions are now over and most of the education institutes have opened, the study is still relevant as it tried to find out what affects the young minds of the students the most. During the pandemic and lockdown the students underwent a range of experiences and emotions that they may never have experienced otherwise. They have experienced a lifetime in this 2 years, hence this lockdown however unfortunate has opened up a possibility of studying the young minds and exploring what affects them most. The article takes a look at the mental health of

the students and also asks some pertinent questions causing these mental health issues. COVID-19 has been a great equaliser for students of all backgrounds. The students all faced similar situations and issues, hence the study done at 18 months after the lockdown (when the students have experienced this new life for some period) has the potential to eliminate the background inequalities and determine what are the most pertinent concerns for a student.

Table 1: Phases of lockdown during Covid-19 in India

Phase of Unlock	Date	Activities allowed (for educational institutions)
1	30.5.2020	Closed
2	29.6.2020	Closed
3	29.7.2020	Closed
4	29.8.2020	50% teaching and non-teaching and non-teaching staff permitted to come to institutes outside containment zones. Students may come for guidance voluntarily and upon parent's consent.
5	30.9.2020	Schools may reopen in a graded manner after 15 th October upon permission of the state government or Union territories. Attendance is voluntary and subject to parental consent.
6	30.9.2020	State government allowed to take decision on reopening of educational institutes.

Source: www.mha.gov.in

Methodology:

Study Design and participants

The present study is cross-sectional and based on an online survey with quantitative approach. The survey was conducted in the online mode, keeping in mind the COVID-protocols. Information was gathered regarding the mental health status of students of schools, colleges and universities. Google forms were

circulated for data collection, with invitation for participation through social media platforms, from 10th to 20th June, during the Covid-19 second wave lockdown in India. The survey was conducted in English language, and informed consent was obtained prior to the starting of survey and were informed about the purpose of the study. The total number of participants in this study is 395.

Measures

Individual characteristics: The sample characteristics of the participants included age, gender, residence type, education level, type of education institution, stream of education, and average monthly family income of the participants.

Effect of Online mode of Education: These questions included- Do you miss interacting with your friends?; Do you miss interacting with your teachers?; Do you feel that it is going to have an effect on your career?; Do you think you are learning as much as before?; and, Do you like that examinations are getting cancelled/delayed?.

Mental health assessment: Mental health of the participants was assessed using the Depression, Anxiety and Stress Scale with 21-items (DASS-21) (Figure 1). These are measured on a 4-point Likert scale that ranges from 0 (did not apply to me at all) to 3 (apply to me very much). Further, the mental health scores can be classified as : Depression - Normal (0-9), Mild (10-13), Moderate (14-20), Severe (21-27), Extremely Severe (28+); Anxiety- Normal (0-7), Mild (8-9), Moderate (10-14), Severe (15-19), Extremely Severe (20+); and, Stress- Normal (0-14), Mild (15-18), Moderate (19-25), Severe (26-33), Extremely Severe (34+).

Data analysis

Descriptive statistics were employed for assessing the data, followed by bivariate analysis and data visualization. Cronbach's alpha was used for testing the reliability of the DASS-21 scale. Scores for depression, anxiety and stress were computed and also a composite mental health index has been constructed to assess the overall mental health status of students. A generalized linear model regression, with logit link function belonging to binomial family, and the model is adjusted for the covariates that

includes the sample characteristics as well as the other questions considered in the study. Consider Y_i as the observed binary outcome, that is, mental health indicators (making them dichotomous), for the i^{th} individual and x_i 's are the covariates, the equation is given by

$$\log \left[\frac{\pi_i}{1 - \pi_i} \right] = x_i^T \beta = \alpha + \beta_i x_i$$

where α is the intercept β_i 's are regression coefficients. All the analysis have been done in STATA 14.2.

Results

The sample demography is given in table 2.

Table 2: Descriptive statistics of the sample characteristics (N=395)

Sample characteristics		N(%)
Age	6-47 (Mean-20.52±3.59)	
Gender	Male	110(27.85)
	Female	285(72.15)
Residence type	Urban	327(82.78)
	Rural	68(17.22)
Average monthly family income	less than Rs.20,000/-	89(22.53)
	Rs. 20,001/- to 80,000/-	174(44.05)
	Rs.80,001/- to Rs. 1.50,000/-	80(20.25)
	more than Rs. 1,50,000/-	52(13.16)
Education level	School	47(11.9)
	College	250(63.29)
	University	98(24.81)
Type of Education institution	Private	185(46.84)
	Government	210(53.16)
Stream of education	Science	228(57.72)
	Humanities	73(18.48)
	Commerce	62(15.7)
	Others	32(8.1)
Total	N	395

Mental health assessment

The Cronbach's alpha (α) of depression, anxiety, stress and composite mental health scores were found to be 0.93, 0.86, 0.87 and 0.94, respectively, thus indicating a good internal consistency of the DASS-21 scale

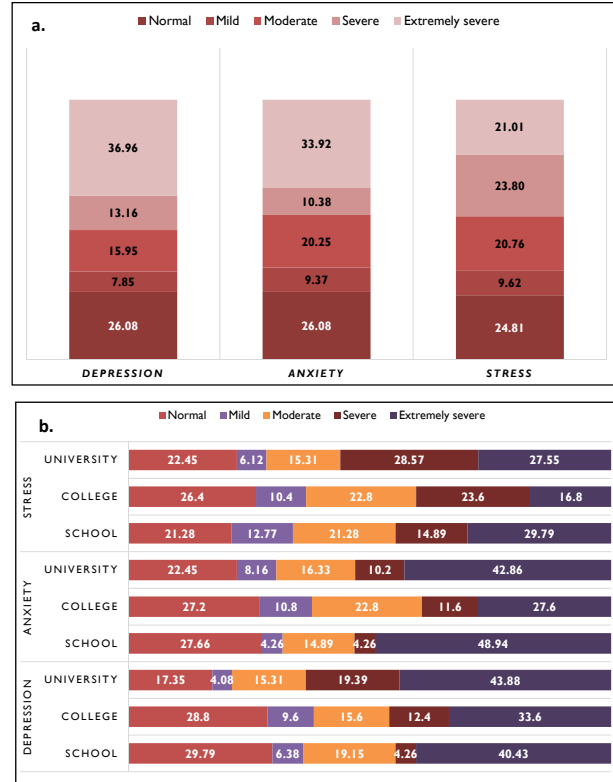


Figure 1: Mental health status of a. all students; and b. students across school, college and university

Overall, the sampled students are mostly depressed, anxious and stressed (**Figure 1a**). More students had normal level of depression and anxiety than stress. Higher percentage of students were extremely severely depressed than stressed. The majority of university students are observed to be extremely depressed (40.43%) and anxious (43%), whereas maximum school students are extremely stressed (29.79%). The maximum college students are found to be mostly having a normal mental health status (**Figure 1b**).

Some pertinent questions were asked around the system of online education to the students to determine the source of their poor mental health.

As observed from **Figure 2**, that majority of the students be it school, college or university, miss interacting with their friends and teachers (>80%). The college students missed interaction with teachers

and friends maximally followed by university students and school students. Almost more than 80% of the students from school, college and university are feeling that their careers are going to be affected. The university students felt most strongly about the deficiency in learning in an online mode (82%), followed by college (73%) and school students (60%). The college and university students were more bothered about examinations getting cancelled or delayed.

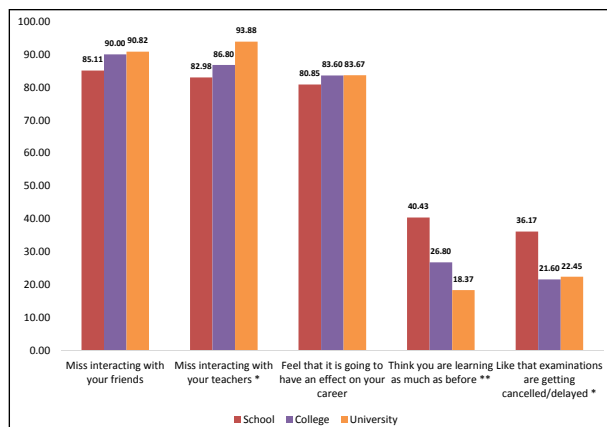


Figure 2: Effect of the online mode of education through relevant questions

Regression Analysis

The regression model was run that showed all the indicators of DASS-21 questionnaire can capture the anxiety, depression and stress measure significantly well ($p < 0.01$). Unit increase in age caused a significant increase in depression (OR: 1.958; $p < 0.01$), stress (OR: 1.947; $p < 0.01$), anxiety (OR: 1.021; $p < 0.01$) and overall mental health score (OR: 1.830; $p < 0.05$). Females were found to be more likely to have poor mental health than males (Depression- OR: 1.170; $p < 0.05$; Anxiety- OR: 1.239; $p < 0.10$; Stress- OR: 1.152; $p < 0.05$; Composite Mental Health Score- OR: 2.5; $p < 0.10$). With increasing average monthly family income the mental health status improved, thus indicating economic vulnerability is related to poor mental health (Composite Mental Health Score- OR: 1.011; $p < 0.10$). In comparison to school students, the college and university students were significantly more likely to suffer from depression, anxiety, and stress. Students who felt that their careers are going to be affected were more likely to have poor mental health (Depression- OR: 2.609; $p < 0.01$; Anxiety- OR: 2.418; $p < 0.05$; Stress- OR: 1.876; $p < 0.10$; Composite Mental Health Score- OR: 2.142; $p < 0.05$).

Discussion

The overall mental health plot (figure 1a) shows that only 25% have normal mental health and 75% suffers from stress, anxiety and depression. It is the logical reflection of the current time, as stress, depression and anxiety all are related to reactions to any reason that causes imbalance to our physical and mental well being¹⁹. It was interesting to note that extreme stress was less than extreme depression and anxiety. It was reported in China that depression and anxiety increased during COVID pandemic²⁰. The college students appear to be least affected by the lockdown situation of the pandemic. It was also observed that students of university suffered more depression and anxiety, though stress level of all students were the same. Anxiety happens due to worrying over future and depression comes from past experiences²¹. As university students have appreciable past experiences as well as concern for the near future hence anxiety and depression is more for them. Similar conclusions were also drawn from a survey conducted with the University students in Spain²². The school students due to their age and security of parents and family and less responsibility are at a better mental state in this uncertain times.

For further investigation we correlated the answers of the questions to their state of mental health. It was seen that the strongest correlation is found for the question that talks about their career. Hence for university students as there are at the threshold of their career, they are suffering maximum anxiety and depression. 90% of university students also answered positively when they were asked whether it is going to affect their career (figure 2). It is interesting to note that 90% of them also said they miss interacting with their friends and teachers. However the poor correlation of it with mental state shows that it is not influencing their mental health. The 90% of university students also stated that they are not learning adequately, however that is also not affecting the mental health state. It can be concluded that for the students the impact that COVID will have on their career bothers them maximally leading to high level of depression and anxiety. Career development has a profound effect on mental health and counselling is suggested²³. A study on medical students of China and India also revealed that the pandemic is influencing their career choice and mental health in a negative way^{24,25}. It was seen that with age the mental health deteriorates. Previous studies suggest

that the correlation of age with mental health is not very straight forward and many other factors need to be considered²⁶. Also it was seen that the female respondents have poorer mental health than their male counter parts. The gender difference in mental health has been observed before and documented in the pre pandemic era²⁷, and it has also been studied and supported by study done in Austria and India^{28,29}. Therefore it is important that mental health problems in students are addressed adequately and educational institutions can take a positive role in it. The students need the support of their peer group of other students as well as their teachers. Some schools also has academic and psychological counsellor who can help. However though education institutes have opened there is still considerable opposition about sending children to school at present. A before and after study in Italy showed that mental health of students was worse after the lockdown than before. However they also observed that after the lockdown was over students got back to their previous mental health status³⁰. Therefore it is important for students to experience pre-lockdown status as much as possible albeit with proper precautions.

Conclusions

The first measure to curb COVID was imposition of a lockdown all over the world. The educational institutions deal with one of the most vulnerable population of the society, the children, the future generation Online mode of classes had kept the education of the students functional however there was considerable lack of normalcy in their life which leads to mental health issues. The online survey conducted on 395 students across school, college and university to assess their mental health showed some interesting results. Their mental health was assessed by the DASS-21 questionnaire. It was seen that students are suffering from stress, anxiety and depression. University students possess very poor mental health. The mental health also deteriorated with age. Female students showed poorer state of mental health than male students. The concern for their career was found to be responsible for the poor mental health of the students. It is suggested that support and counselling is needed for the students of all ages even after educational institutions have opened up.

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Conflict of Interest

The authors declare no conflict of interest.

Ethical concerns

The study is an independent research and therefore informed consent clearance was considered. An informed consent was obtained prior to the starting of survey and the participants were informed about the purpose of the study.

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Critical Analysis of Case Based Learning as a Teaching Learning Method in Medical Education.

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Abstract

Various teaching-learning methods are used in imparting medical education. Case Based Learning (CBL) is one of the teaching-learning methods in which clinical cases are used for teaching. It was first used by Dr James Smith, pathologist, in 1912 in Edinburg, wherein the students correlated the clinical records of patients with the post mortem findings. The use of CBL in teaching medical students was extensively searched in PubMed search engine. Full text articles related to CBL studies conducted in medical colleges were included. 6 relevant articles were selected and a critical analysis was done. Most of the studies compare CBL with didactic lecture and found to be more effective. These studies are limited to one college and sample size is small. CBL correlates the theory with practice. The students learn many skills like critical thinking, higher order thinking, self-directed learning and working in a team. Thus, the learner will become a successful Indian Medical Graduate (IMG).

Keywords: Case based learning, Medical education

Introduction

Recently the National Medical Commission (NMC) had entirely revamped the medical curriculum in India. The age old traditional medical education is replaced by Competency Based Medical Education (CBME)¹. This endeavor is to bring the Indian Medical Graduate (IMG) at par with global standards. Competency is defined as the observable activity of the health professional with a judicious and consistent mix of knowledge, skills, attitudes and communication². Competency forms the basis of CBME. These competencies are subdivided into learning objectives which are matched with teaching learning methods and assessment.

In traditional medical curriculum, teaching was given more importance but nowadays this has been shifted to learning i.e., it has become learner centric. Learning is defined as the change in behavior of an individual. One of the roles assigned to IMG is Lifelong Learner. Teaching facilitates learning and it is not merely for dissipating knowledge but to imbibe skills, communication, attitudes, values among the learner. Here comes the role of teaching-learning methods.

Case Based Learning (CBL) is one of the teaching learning methods and it refers to use of clinical cases to help teaching³. The first reference of CBL is by Dr

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James Smith Professor of Pathology at university of Edinburgh in 1912. The students correlated the clinical history of patient along with signs and symptoms with the post mortem findings and this was verified from patient's clinical records. According to Thistlewaite et.al, the goal of CBL is to make use of authentic clinical cases in order to prepare students for clinical practice and CBL links theory to practice as the knowledge learned is applied to the cases by making use of inquiry-based learning as a method⁴. The students come to know what is being practiced clinically or real-world situation. The method of delivery can be live presentation by a computer or web based.

Objectives

To critically review the literature related to case-based learning and analyze it.

Material And Methods

A literature search with PubMed database was conducted. The use of CBL in medical education was searched. Keywords used were CBL and medical education. The full text articles related to CBL study in medical colleges were included while the studies conducted in dental, other allied subjects were excluded.

Critical Analysis

Gupta conducted a CBL study in neurophysiology among 100 first year MBBS students. 2 CBL sessions were conducted. Didactic lecture followed by a pretest (5 MCQ) was given to the students. These students were divided into 9 groups. A clinical case was allotted by facilitator which was followed by group discussion, presentation, open discussion and posttest. Student's perception about the CBL was assessed by a questionnaire. Similar 2nd CBL session was conducted after 15 days. It was found that post test scores significantly increased on both CBL and student's perception was positive. The present study included only 89 students. The topics in neurophysiology is not mentioned. It is not clear the significance of conducting didactic lecture session when the study does not compare CBL session and didactic lecture. The pretest score was conducted after didactic lecture and compared with posttest score after CBL. The pretest SCORE might be influenced by learning in didactic lecture⁵.

A cross-sectional study was conducted by Sangam et al. in 200, 1st MBBS students of a private medical college in A.P. The students were exposed to CBL and didactic lecture on a topic in Gross Anatomy i.e., Axilla and Front of Thigh. Later, crossover was done. Students were divided into 5 groups of 20 each. Pre and posttest on MCQs were conducted. Improvement in test score was observed. This study is conducted in a small sample size limited to 1st MBBS students of a private medical college and 2 topics of Gross anatomy. In fact, the topics on which CBL can be conducted be identified and a large sample size will be required to validate the advantage of CBL⁶.

Patrick et.al compared CBL and didactic lecture in Pharmacology and evaluate students and faculty perception of CBL in 140, 2nd MBBS students. Pre-session and post-session test of 15 MCQs was conducted. The CBL was conducted for Tuberculosis. The long-term outcome is not assessed and the sample size is small. A large study is required to validate the advantages of CBL. Many topics in Pharmacology can be clinically correlated e.g., Hypertension, angina, anemia, malaria, etc. Even the topic of Tuberculosis can be horizontally integrated with Pathology and Microbiology and students can learn the disease condition in a holistic manner⁷.

Gartmeier et al. screened 19 CBL videotapes of Internal medicine and Surgery to analyze teacher's question and student's responses. It was found that medical teachers asked closed questions reasoning type. This study was conducted among medical students in Munich Germany. The study is limited to questions and responses asked in CBL in Medicine and Surgery. It highlights the importance of questions i.e.; open and reasoning questions gives student freedom to reflect and clinical thinking will be stimulated⁸.

The study of Singhal is limited to CBL in Microbiology conducted among 100, 2nd professional MBBS students. 4 clinical cases on Staphylococcus, Streptococcus, Enterococcus, Hepatitis A virus were allotted one week before. The groups were crossover after 2 CBL session. Post test was conducted after the session and repeat after 6 weeks. Feedback questionnaire was sought from students as well as faculty. There was improvement in scores significantly. The study is limited to bacteriology topic conducted in small sample size among 50 students in one group. The better post test score after 6 weeks emphasizes the retention of the concepts learned in CBL⁹.

Vora MK conducted a CBL study in Pharmacology topics (Iron deficiency anemia & Plasmodium falciparum malaria in pregnancy) among 68 MBBS fifth semester students divided in 2 groups, CBL and didactic lecture. The Post test score (15 MCQs) for CBL group was more than didactic lecture group. The CBL group expressed positive perception about learning by CBL. The CBL session was conducted in 2 sessions and each session was allotted 2-hour time and didactic lecture was taught for 1 hour. The better posttest score might be due to extensive time allotted for CBL and students might have understood the concept better reflecting in the enhanced score. Didactic lecture has its own importance in teaching general pharmacology. This study is conducted in a very small sample size. There are only 34 students in one group. The question arises that the findings in the study might be due to chance factor¹⁰.

Outcome of Critical Analysis

The CBL is one of the teaching-learning method. The uniqueness about CBL is that the students can apply the knowledge learned to the real-life cases. Ultimately the student is expected the same once he completes the course. But the students are initially trained by means of CBL. This helps to better correlate the things learned in theory with the clinical aspect which was otherwise not possible. This does not demean the importance of didactic lecture. Didactic lecture has its own importance. But certain topics in a subject can be taught by means of CBL. This will be in tune with vision 2015 document of Medical Council of India which stressed the need of IMG to become more competent and better skilled. The cognitive skills will be enhanced if CBL methodology is used. The analytical thinking, critical thinking or higher order thinking will be developed which will bring a change in behavior pattern. This is nothing but learning. The problem-solving skills will be developed as the students discuss the clinical case. CBL is learner centric and promotes active and self-directed learning. Students learn how to make the best use of resources. This is because of the fact that when a clinical case is allotted to the students, they will make best use of resources like books, library, internet together the information pertaining to the clinical case. Since CBL is a group activity, the student learns leadership quality, communication skill, working in a team. This in turn will be helpful to incite professionalism in the students. One of the roles attributed to IMG is lifelong learner. CBL can lead the pathway towards achieving this role.

Proposed Implementation Plan/Translatory Component

As per the NMC guidelines, various modules like AETCOM module, SDL module and Pandemic module is included in the curriculum. The CBL can be implemented in the SDL module and it can be horizontally integrated. Being a Pharmacologist, I will try to introduce CBL in the subject of Pharmacology. Considering the entire syllabus of Pharmacology for 2nd MBBS students, the topics which can be taught on the basis of clinical cases and which are also common in Pathology and Microbiology, will be identified. These can be Drug treatment of Tuberculosis, Malaria, Leprosy, HIV etc. The 2nd MBBS students will be allotted clinical cases of respective disease and they will learn the microbiological feature, pathological finding and drug treatment of these cases. Thus, the students can learn the disease condition in a holistic manner by means of CBL.

Further, a study can be conducted to compare the CBL for individual subject and CBL that is taught in an integrative manner. Pretest and Post test scores of both modalities will be compared by conducting MCQ based test. Additionally, feedback regarding CBL will be sought from the students and faculty. Prior conducting the study, a workshop will be organized by the medical education department in the college regarding the conduct of CBL. It will be Faculty development program so that CBL can be better implemented.

Conclusion

Thus, many studies of CBL are conducted in different subjects but the sample size is small. CBL is a unique form of teaching learning modality that links theory with practice. The students can learn and remember the concept efficiently. CBL also helps to develop many skills amongst the students which can make them a better Indian Medical Graduate.

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Authors Contribution:

AK and JW contributed to study's conception and design. AK developed the search strategy, extracted data and drafted the manuscript. JK revised the manuscript critically and gave final approval of the version to be published. The authors read and approved the final manuscript. The authors declare that they have read and approved the final manuscript.

Use of Social Networking Site and prevalence of Depression among Medical Students in Vikarabad, Telengana

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Abstract

Background: Humans are social creatures that require the company of others in order to thrive in life. As a result, although being socially connected with other people might help to reduce stress, anxiety, and melancholy, a lack of social connection can put one's mental health at danger.

Objective: To study and establish correlation between the use of Social Networking sites and depression among medical students in a single center study.

Methods: A cross-sectional research was done among 200 medical college undergraduate students. A systematic questionnaire was used to obtain data about medical students' individual characteristics and use of social media sites. The Zung Self-Rating Depression Scale were used to assess anxiety and depression. The prevalence was calculated as a percentage, and the association was assessed using the Mann-Whitney U-test.

Results: Association between frequency of use of SNS and Depression is more in students who use 1-3 times in a day 20% and in the students who used atleast 1hr it is 19.23% ,in students who use 4-7 times is 15.38% whereas in students who use 8-23 times it is 17.54%. The students who were awake early morning and used SNSs often was more 25% than those who were awake sometimes (15%) and never (18%) similarly the students who spent late nights in using SNSs was more among who were often awake late night (25%) than those who were awake late night Sometimes (14.6%) and never (19%).

Conclusion: The current study found that SNS use was nearly ubiquitous among study participants, with the majority of them being heavy SNS users. A large percentage of medical students show a strong preference for SNSs. Intense usage of social media sites, especially use at unusual hours, was shown to be strongly (although not statistically significant) linked to depression. Despite the fact that the problem is still relatively new, it is significant enough to warrant attention. To solve the complicated relationship between social media use and mental health concerns, further study is needed.

Keywords: Addiction, Depression, Social Networking Sites , Zung Self-Rating Depression Scale

Introduction

Social networking sites (SNS) are a collection of web-based apps that allow users to create and share user-generated content. The last decade has seen a significant shift in the area of communication, thanks to the rapid growth of social networking, which has had a big impact on how people engage with one another, and is sometimes the only means of contact.^[1] According to a 2015 study, teenagers are heavy users

of social media sites, with 71 % of them accessing several sites, with Facebook being the most popular (41 %).^[2] With over one billion active Facebook users, it's easy to see how significant these sites are in our everyday lives.^[3]

SNS is a double-edged sword. They're utilised to help students achieve academic success. Excessive usage of online social networking sites, on the other hand, can lead to addiction and dependency, as well

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as sleep disturbances and depression.^[4] A correlation between online social networking and mental health has been highlighted in recent studies. Because social networking sites are becoming increasingly popular among today's youth, any postulated mental illnesses linked to them might constitute a severe public health hazard, possibly resulting in a global cyber-epidemic. The most worrying aspect is that most users are already addicted to social media and are unaware of its detrimental effects.^[5]

According to a recent meta-analysis, 75% of medical students use social media on a daily basis, including compulsive/compensatory use, and India is no exception.^[6] It is generally known that medical students experience much higher levels of stress, which has an impact on their academics, physical wellbeing, and psychological wellbeing. As a result, medical students are not impervious to depression and anxiety.

In India, evidence on the extent of SNS usage and its relationship to medical students' mental health is limited. The current study was undertaken to analyze the pattern of SNS usage, the prevalence of depression, and their association among undergraduate medical students in a Medical College in Vikarabad, Telengana, based on the data available.

Material and Methods

Study design, setting and duration:

A cross-sectional study was conducted among the undergraduate medical students who were enrolled in college during 2016 and 2019 academic years in a Medical College in Vikarabad, Telengana enrolling 150 students per year between June and August 2020.

Sample size and technique:

The available literature showed that the proportion of medical students using SNS ranged from 67% to 75%.^[6] Considering the proportion of students using one or more accounts of SNSs as 67%, observing the confidence level of 95%, the relative precision of 10%, the final sample size was 189 which was rounded off to 200. The number of enrolled students was same in each batch (year-group), 100 students from each batch were selected through simple random sampling as per Attendance Register of the College. As per the diagnosis of psychiatric diseases and/or psychotropic drugs may alter the use of social networking sites, students with clinically diagnosed psychiatric illness

and/or Students using medication for any psychiatric illness were excluded from the study.

Study tools:

1. Structured Questionnaire for assessment of the use of SNSs.
2. Zung Self-Rating Depression Scale.

The section of a questionnaire for assessing the use of SNS and its effect on daily life was pretested in a similar population and validated with the help of psychiatrists, public health specialists, and sociologists. For assessing the use of SNSs, the participants were asked whether they have any account in any of the SNS and instant messaging application. If yes, they were asked to state how many times in a day, on average, they visited the site (s) in the last 7 days. They were also asked to state the average duration they spent on each visit in the last 7 days. They were also asked whether they wake up early or went to bed late to spend time in SNSs. Their perceived ability to spend a day without SNSs was also enquired. Effect of spending time in SNS on their self-confidence and their satisfaction with use were assessed. Zung self-rating depression scale was used for assessing depression.

Method of data collection:

The study was approved by the Institutional Ethics Committee of the Medical College. After taking informed consent, the structured questionnaire in English was given to the selected students to gather information regarding their sociodemographic characteristics such as age and gender. The pattern of use of SNS and its effect on their daily lives was assessed along with screening of depression.

Statistical analysis: SPSS 22 software was used for statistical analysis and the data was presented in the form of tables and graphs.

Observation and Results

Characteristics of study subjects

The final analysis was performed with a filled-in questionnaire of 200 medical students enrolled in Mahavir Institute of Medical Sciences, Vikarabad, Telengana. More than half of the students aged 21–23 years while the mean age (\pm standard deviation) of the sample was 21.6 (\pm 1.8) years. Female students (54.7) outnumbered the male students (45.3)

Use of Social Networking Sites

100% of the students used Social Networking Site. More than half of the students used less than three Social networking sites (54.7) and two fifths used more than three Social networking sites (45.3). "WhatsApp" is the most commonly used SNS (95.9%) followed by "Facebook" (89.4%) and "Instagram" (30.5%). Communication with the friends and families was the most common (59.0%) reason for using SNSs which was followed by entertainment (43.1%) ,education and professional activities (31.4%).

Table 1 : Distribution of study participants according to Use of Social Networking Sites

Variables	Categories	n (%)
Frequency of use per day	Atleast hourly	26(17.3%)
	8 -23 times in a day	57 (38.0%)
	4-7 times in a day	52 (34.6%)
Duration of use per day	1-3 times in a day	15 (10.0%)
	Always open	13 (8.7%)
	4-23 hrs	33 (22.0%)
Used early morning	2-4 hrs	71 (47.3%)
	< 2hrs	33 (22.0%)
	Often	4 (2.7%)
Used late night	Sometimes	40(26.6%)
	Never	106(70.7%)
	Often	24 (16.0%)
Stated ability to spend a day without accessing SNSs	Sometimes	89 (59.3%)
	Unable	24 (16.0%)
	Never	37 (24.6%)
Used early morning	Not sure	17 (11.3%)
	Sometimes	54 (36.0%)
	Certainly	55 (36.6%)

Less than one third (17.3%)of the students, had accessed SNSs at least once in an hour, while most of them (38.0%) accessed at least 8 - 23 times in a day. Around one-tenth students (10.0%) accessed SNSs 1-3 times in a day, rest were an occasional user. Around 47.3% of the students accessed SNSs for at least 2 - 4 hours in a day and 8.7% students remained active on SNSs through out the day. One-fifth of the students(26.6%) in this were sometimes waking up early and less than half of students (16.0%) often went to bed late night to spend time on SNSs and another 59.3% were active for sometime during night.

One-fourth (11.3%) students were either not sure or expressed their inability to spend a day without SNSs. Around 36.6% reported that they could spend a day without SNSs at particular times. Only 63.3% felt satisfied with the use of SNSs and another 36.3% were not satisfied.

Table 2 : Association between Use of SNS and Depression

Variable	Category	n	With depression	p
Depression severity	Normal	124		
	Mild depression	26		
No of SNS use				0.1640
	<3	82	11 (13.4%)	
	>3	68	15 (22.05%)	
Duration of SNS use (hrs)				0.9669
	<2 hrs	33	5 (15.15%)	
	2-4 hrs	71	13(18.30%)	
	4-23 hrs	33	5 (15.15%)	
Frequency of SNS use	Always active	13	2 (15.38%)	
				0.9639
	Atleast 1 hr	26	5 (19.23%)	
	1-3 times in a day	15	3 (20%)	
Used early morning	4-7 times in a day	52	8 (15.38%)	
	8-23 times in a day	57	10 (17.54%)	
				0.8429
Used late nights	Never	106	19 (18%)	
	Often	4	1 (25%)	
	Sometimes	40	6 (15%)	
Able to spend a day without accessing SNS				0.4697
	Never	37	7 (19%)	
	Often	24	6 (25%)	
Used late nights	Sometimes	89	13 (14.6%)	
				0.8774
Able to spend a day without accessing SNS				
	Not sure	17	3 (17.64%)	

Variable	Category	n	With depression	p
	Certainly	55	9 (16.66%)	
	Sometimes	54	11 (20%)	
	Unable	24	3 (12.5%)	

Prevalence Of Depression

As per Zung Self Rating Depression scale 17.3% students had Mild Depression.

Association between Use of Social Networking Site and Depression

Association between use of social networking site and depression was more in the students who accessed more than three SNS 22.05%, than who accessed less than three SNS 13.41%. Similarly, students who accessed SNS for 2 - 4hrs scored more on Zungs Self Rating depression scale 18.3%, students who were always active scored 15.38% and students who were less than 2hrs active scored 15.15%.

Association between frequency of use of SNS and Depression is more in students who use 1-3 times in a day 20% and in the students who used atleast 1hr it is 19.23% ,in students who use 4-7 times is 15.38% whereas in students who use 8-23 times it is 17.54%. The students who were awake early morning and used SNSs often was more 25% than those who were awake sometimes (15%) and never (18%) similarly the students who spent late nights in using SNSs was more among who were often awake late night (25%) than those who were awake late night Sometimes (14.6%) and never (19%).

The Zung self-rating depression scale score was greater among students who used more than three SNSs than among students who used less than three SNSs, although the difference was not statistically significant ($p = 0.1640$). Similarly, students who used SNSs for 2-4 hours scored better than those who used them for 2 hours, 4 hours, or 23 hours, although the difference was not statistically significant ($p=0.9669$). Similarly, students who used 1-3 times per day scored better than those who used at least an hour, 4-7 times per day, although the difference was not statistically significant ($p=0.9639$). Students who spent time in SNS early in the morning or late at night were more likely to have a higher Zung self-rating depression scale score, although the difference was not statistically significant. (Early morning $p=0.8429$),(Late night $p= 0.4697$).

Students who were sure that they could spend a day without SNS were likely to score less on Zung self rating depression scale,the difference was not statistically significant ($p=0.8774$).

Discussion

While social media's communication capabilities have positively impacted the lives of young adults all over the world, it also has the potential to negatively impact young people's development and wellness. The debate is on whether social media and instant messaging apps are the reasons that cause mental illnesses, or if increased case detection and societal concern are the variables that contribute to an increase in the number of cases of mental disorders among adolescents and teenagers.

Use of social networking sites:

Face-to-screen interaction is considerably more than face-to-face interaction, attributable to the growing popularity of social networking sites. Which can contribute to despair, loneliness, and anxiety when individuals around you are performing better jobs, or it can assist depressed people who are socially isolated connect, take suggestions, and join online support groups.

In the current study, the use of SNS was ubiquitous among undergraduate medical students, with more than two-fifths of them utilizing three or more SNSs. WhatsApp was the most popular platform, followed by Facebook, with >90.0 % of study participants using both, corroborating previous research in India. Although the percentages of respondents who use Facebook and WhatsApp were greater than in prior studies,^[7] rates similar to those identified in our survey have been recorded among adolescents. In India^[8], US,^[9] medical students in Australia,^[10] and UK.^[11]

In terms of SNS use, the medical students in this research were heavy users, with almost one-third of the students using SNSs at least once per hour and nearly 60.0 percent using SNSs at least once every day. This points to substantial and regular usage among the participants, which is consistent with Goel et al. and Hall et al.'s research.^[12]

The usage of social networking sites and the probability of depression:

Affective disorders like depression have been shown to have a bidirectional relationship with the

individual's social environment, which influences the development and persistence of disease. The social qualities of people with mental illnesses have a direct impact on their sense of well-being. According to current mental health theories, contentment is not synonymous with mental disease; a full model of mental health necessitates not just the absence of psychopathology, but also an emphasis on positive indicators of functioning such as subjective well-being.^[13] Depression has a high rate of comorbidity, which can affect the size and structure of a person's social network. Individuals with depression have a poor social network, and poor social networks, on the other hand, are typically a risk factor for depression because they limit access to "buffering" social support and increase feelings of isolation.

Even though the number of SNSs utilised had no effect on depression in the current study, depression scores were shown to be greater in students who used SNS more often and for a longer period of time. This outcome is consistent with a substantial number of previous studies.^[14] Neira et al. also observed a correlation between social network use and depression in their study.^[15] Kross et al. observed that increased usage of social media exposed young people to negative affect and decreased their feeling of well-being. Participants who reported being depressed were also more likely to utilise social media to convey their feelings.^[16] Face-to-face communication is less common among young people with emotional problems; thus, they prefer to connect with virtual pals.^[17]

Frequent social comparison, perceived negative interaction, addictive/problematic usage, and rumination were the most notable social media risk factors for depression.^[18] In addition, students who reported using SNSs at odd hours, such as staying up late at night or waking up early, or both, were more likely to have higher depression scale scores than those who did not. Students who said they could go a day without accessing any social media sites were less likely to be depressed than those who said it was difficult. These showed a social media addiction and might be the first signs of problematic SNS use. Students' circadian rhythms may be disrupted as a result of working at strange hours, making them prone to mood problems. In conclusion, the current study finds a statistically insignificant link between high social media usage and depression among medical students given Vikarabad, Telengana, in the current socio-cultural environment.

Strength and Limitations

This study aimed to gather empirical evidence on the correlation between SNS use and depression among medical students in an Indian socio-cultural environment, where data on the topic is limited. Instead of a full clinical interview, which can lead to an overestimation of the workload, the screener tool was employed to evaluate depression in this study. This cross-sectional study may be prone to reverse-causality bias because SNS usage and depression were examined at the same time.

Conclusion

The current study found that SNS use was practically ubiquitous among study participants, with the majority of them being active SNS users. A large percentage of medical students show a strong preference for SNSs. Intense usage of social media sites, especially use at unusual hours, was shown to be strongly (although not statistically significant) linked to depression. Despite the fact that the problem is still relatively new, it is significant enough to warrant attention. To solve the complex relationship between social media use and mental health complications, further research is needed.

Ethical Clearance: The ethical clearance was obtained from Mahavir Institute of Medical Sciences Institutional ethics committee prior to the commencement of the study.

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Awareness about Tobacco use among Auto- Rickshaw Drivers in Belagavi, North Karnataka

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Abstract

Background: Auto – rickshaws are most commonly used mode of transportation in cities where metros or application-based cab aggregators (ABCA) are either non-existent / not available. Auto rickshaw drivers (ARD's) are under constant physical and mental pressure due to various factors most importantly illiteracy, poverty, lack of awareness about hazards of addictions which lead to various habits majority being tobacco use. Studies have found that overall prevalence of tobacco use among ARD's is very high compared to general population.

Objectives: To know level of awareness about tobacco use among ARD's in Belagavi, North Karnataka.

Methods: It was a cross sectional study conducted among 600 regular ARD's of Belagavi City Corporation between January to December 2016. Estimated sample size was 600. Two ARD's who were last in queue were selected from 300 major auto rickshaw stands. Questionnaire was adopted from Global Adult Tobacco Survey (GATS) questionnaire. Data was collected by personal interview after getting informed consent. Data compilation and analysis was done using SPSS software. Study was approved by Institutional Ethics Committee of J. N. Medical College, KAHER, Belagavi.

Results: Most (88.66%) of the participants knew that tobacco in any form caused serious illness. Cancers (72.66%) were the most commonly known illnesses. Most of the participants supported law prohibiting smoking in indoor work places (99%) and favored increase of taxes on tobacco products (94.5%).

Conclusion: Although the awareness regarding hazards of tobacco has increased in recent days, actual practice remains a challenge.

Keywords: Auto-rickshaw drivers, Tobacco, Awareness, Karnataka

Introduction

The three-wheeled motorized vehicles, popularly known as auto rickshaws, are a backbone to urban mobility. Auto – rickshaws are still the most commonly used mode of transportation in Tier II & III cities where metros or application-based cab aggregators (ABCA) are either non-existent or not available. Auto rickshaw drivers work for over 10-12 hours per day and form an important part of the urban informal

sector in India. They are generally self-employed and lack employment benefits such as health insurance and social security. Income insecurity is a significant concern for the drivers – they earn on a daily basis leading to no fixed income. Health expenses are a big challenge for most of them. They suffer from serious respiratory health threats due to constant exposures to vehicular pollution. They are also prone to road accidents given poor road infrastructure and badly

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maintained vehicles. On the road for most of their day, they suffer due to the poor quality and availability of hygienic water and sanitation facilities in the country, leading to further health issues.

Auto rickshaw drivers are under constant physical and mental pressure due to irregular shifts, continuous variation in fuel prices, long waiting hours, illiteracy, poverty, lack of knowledge about hazards of tobacco and other socioeconomic factors which lead to various habits majority being tobacco use. [1-4]

Tobacco use imposes a huge burden of disease in India and is a major global public health problem. The tobacco epidemic is one of the biggest public health threats the world has ever faced, killing more than 8 million people a year. More than 7 million of those deaths are the results of direct tobacco use while around 1.2 million are the result of non-smokers being exposed to second-hand smoke. [5]

In the Indian context, tobacco use implies a varied range of chewing and smoking forms of tobacco available at different price points, reflecting the varying socio-economic and demographic patterns of consumption. [6]

Cigarette smoking in any form harms nearly every organ of the body, causes many diseases, and reduces the health in general. [7-8] It causes diminished overall health, increased absenteeism from work, and increased health care utilization and cost. [7] There are many diseases that are caused, increased or exacerbated by use of tobacco. [9]

Author intends to find the level of awareness about tobacco use among auto rickshaw drivers in Belagavi, a northern district of Karnataka.

Materials and Methods

Study design

This was a descriptive, cross-sectional study conducted on registered auto rickshaw drivers plying in Belagavi city, in the period of January to December 2016. Sample size was calculated to be 597 & rounded off to 600 based on the estimated prevalence of 84% [10] and absolute error of 3%. The inclusion criteria were as follows:

- a. Registered, regular auto - rickshaw drivers aged above 18 years.

- b. Permanent residents of Belagavi city from the past one year.

Auto rickshaw drivers driving on part time basis were excluded.

Sampling procedure

As per the information from the Regional transport office, the city had around 300 major auto rickshaw stands and among each stand two auto rickshaw drivers who were last in the queue were selected purposively for the study. This was to have ample amount of time for the participant to be interviewed for the study, which could not have been done if someone else from the queue were selected as they had to discontinue the study if their auto rickshaw was hired meanwhile.

Study tools

Questionnaire was adopted from the Global Adult Tobacco Survey (GATS) questionnaire [11] and customized as per the requirements of the study.

Methodology

Investigator made visits to all the 300 major auto rickshaw stands within the limits of Belagavi City Corporation and participants were identified according to the sampling procedure. These participants were explained about the purpose of the study and after the written informed consent, they were interviewed in the auto rickshaw stands or any convenient place nearby using pre-designed and pre-tested questionnaire adopted from GATS. [11].

The participants were given free chance to discontinue from the study at any given point of time for any privacy, confidential or work related issues. Care was taken to make sure that the participants did not have any hindrance in their work.

Data analysis

The data was analyzed through descriptive statistics and Chi-square test using the SPSS software. A value of $P < 0.05$ was considered statistically significant.

Results

All the participants were male with age ranging between 18 to 70 years and an average age of 39.71 ± 11.07 years. Mean years in the present occupation was 15.80 ± 10.11 years and participants worked over a mean length of 9.43 ± 1.82 hours per day.

Majority of them (89.83%) were married, 371 (61.83%) stayed in nuclear families and 346 (57.67%) resided in pucca house.

Among the participants, 373 (62.17%) were using tobacco in one or the other form. Cigarettes (87.05%) were the most commonly smoked form while gutkha (54.93%) was the commonest smokeless form. Majority of the users had initiated their habit before 20 years of age (46.38%). Mean age at initiation was 23.22 ± 8 years for smoke form and 23.36 ± 7.99 years for smokeless form. Mean duration of use was 15.31 ± 10.29 years. More than half of the participants (54.96%) used tobacco within an hour of waking up. Almost three fourths of those using tobacco never did it in front of their children (74.8%).

[Table 1] Most of the users (54.69%) were advised to quit by a health care professional in the last one year. Among the users, 227 (60.86%) had attempted to quit usage in the last one year and more than half of them (54.63%) could sustain it for few months before resuming usage. Self-motivation (90.75%) was the strongest driving force to quit. Majority of the users planned to quit within next one month (28.69%).

[Table 2] Most of the participants (88.66%) knew that tobacco in any form caused serious illnesses. Cancers (72.66%) were the most commonly known illnesses caused by tobacco.

[Table 3] Most of the participants supported the law prohibiting smoking in indoor work places (99%) and favored increase of taxes on tobacco products (94.5%).

Table 1. Details of tobacco quit by participants

Characteristics		n (%)
Advised to quit by Health care professional in last one year	Yes	204 (54.69)
	No	169 (45.31)
Attempts to quit tobacco in last 1 year	Yes	227 (60.86)
	No	146 (39.14)
Duration of previous quit attempt	Months	124 (54.63)
	Weeks	17 (7.49)
	Days	68 (29.95)
	Less than 1 day	15 (6.61)
	Don't know	3 (1.32)
Methods adopted to quit tobacco**	Counselling	13 (5.73)
	Nicotine replacement therapy	5 (2.2)
	Switching to other forms	6 (2.64)
	Own will / self-motivation	206 (90.75)
	Badesoap	8 (3.52)
	Religious reasons	2 (0.88)
	Chewing gum	8 (3.52)
Description of thinking about quitting tobacco	Quit within next month	107 (28.69)
	Thinking within next 12 months	82 (21.98)
	Quit someday, but not next 12 months	88 (23.59)
	Not interested in quitting	39 (10.46)
	Don't know	57 (15.28)

**Multiple users had adopted more than one methods to quit

Table 2. Knowledge & Practices of ARD's related to tobacco

Characteristics		n		Percentage
		Tobacco users (%)	Non users (%)	Total (%)
Does use of tobacco in any form casues serious illness	Yes	324 (86.86)	208 (91.63)	532 (88.66)
	No	34 (09.12)	06 (02.64)	40 (06.67)
	Don't know	15 (04.02)	13 (05.73)	28 (04.67)

Characteristics	n	Percentage	
Illnesses known to be caused by use of tobacco*	Cancers	436	72.66
	Heart disease	56	9.33
	Impotence	15	2.5
	Premature aging	6	1
	Respiratory disease	160	26.66
	Gastritis/ acidity	39	6.5
	Weakness	37	6.16
	Blindness	3	0.5
	Headache	10	1.66
	Hypertension	4	0.67
	Diabetes mellitus	4	0.67
	Tuberculosis	2	0.33
	Renal diseases	8	1.33
	Others	87	14.5
	Don't know	97	16.16
Usual place of tobacco use**	Home	141	37.8
	Tea stall	170	45.57
	Auto stand	288	77.21
	While driving	63	16.89
	Others	37	9.91
Motivation for tobacco use#	Parents	12	3.21
	Other family members	19	5.09
	Friends	265	71.04
	Fellow auto rickshaw drivers	148	39.67
	Film stars	28	7.5
	Self / curiosity	28	7.5
	Others	12	3.21

* Multiple participants reported more than one illness

** Multiple tobacco users used tobacco products at more than one place

Multiple users were motivated by more than one group for use of tobacco

Table 3. Attitude of ARD's regarding tobacco and its regulations

Characteristics Tobacco users (%)		n		Percentage
		Non users (%)	Total (%)	
Opinion on law prohibiting smoking in indoor work places and public places	Support	373 (100)	221 (97.36)	594 (99.0)
	Not sure	0	06 (02.64)	06 (01.00)
Opinion about increasing taxes on tobacco products	Favour	349 (93.57)	218 (96.04)	567 (94.50)
	Oppose	24 (06.43)	03 (1.32)	27 (04.50)
	Not sure	0	06 (2.64)	06 (01.00)
Opinion on law prohibiting advertisements of tobacco products	Favour	334 (89.54)	191 (84.14)	525 (87.50)
	Oppose	39 (10.46)	18 (07.93)	57 (09.50)
	Not sure	0	18 (07.93)	18 (03.00)
Are you aware about harmful effects of second hand smoke	Yes	310 (83.11)	216 (95.16)	526 (87.67)
	No	63 (16.89)	05 (02.20)	68 (11.33)
	Not sure	0	06 (2.64)	06 (01.00)
Warning labels led to thinking about quitting	Yes	339		90.89
	No	34		9.11
In the last one month have you asked your children or anyone less than 18 years to buy tobacco products?	Yes	38		10.19
	No	335		89.81

Discussion

Auto rickshaw drivers spend a considerable amount of time in an environment full of pollutant gases, noise, continuous stress, accelerations and decelerations, lateral swaying from side to side and whole-body up and down vibrations when the vehicle is in motion. Further poor lifestyle practices like irregularity of meals, no proper rest rooms, awful quality of sanitary toilets, bad posture while driving and stressful occupational conditions during their working hours augment their health problems. Such working parameters may be associated with various health problems. [2, 4, 12-13]

The present study was done to find the level of awareness about use of tobacco among auto rickshaw drivers. Among the 600 study participants, all were male which was consistent with other studies conducted among similar sub groups. [10, 14] Most of the participants in this study had high school education (54.50%). The educational level of participants was higher when compared with other similar studies. [10] This increase in education level may be attributed to better literacy level among south India as compared to the north.

Mean years in present occupation was 15.80 ± 10.11 years whereas it was 17.70 ± 7.62 years in the study done in Nagpur. [14] Mean length of working hours per day was 9.43 ± 1.82 hours while it was 11.52 ± 2.29 hours in the study done in Nagpur. [14]

Prevalence of tobacco use in the present study in any form was found to be 62.17%. The study among auto rickshaw drivers in Gwalior showed prevalence to be 84.26% [10], 64.44% among auto rickshaw drivers in Bareilly, Uttar Pradesh [15] and 69% among auto rickshaw drivers in South Delhi. [16] The difference in prevalence with Gwalior study can be attributed to the fact that the educational levels of the participants in the present study was high compared to the Gwalior study and both the studies have shown negative association between educational level and tobacco use. All of these studies reveal a comparatively high prevalence among auto rickshaw drivers with respect to the prevalence in Indian adults aged 15 years and above which was just 28.6% according to GATS 16-17. [17] It was also noted that the prevalence in present study was very high compared to the adults among general population in Belgaum city where prevalence of ever use was 29.41%. [18]

This comparatively higher prevalence among auto rickshaw drivers can be attributed to various occupational factors coupled with low levels of education, poverty, lack of knowledge about hazards, other socioeconomic factors and many unknown factors.

Smokeless form was the predominant form of tobacco use. Similar findings have been observed in multiple studies done among similar subgroups and consistent with the GATS survey done among adult Indian male. [10, 17, 19-20] This is also particularly true in auto rickshaw drivers as their hands are preoccupied in driving and hence smoking while driving would be cumbersome whereas chewing can be continued even while driving.

Majority (54.69%) of the users were advised to quit tobacco by any health care provider in last one year. There is still a lot of potential to counsel each & every user every time they encounter a health care professional, which will have a deeper impact in reducing the use.

Around 61% of the study participants had tried to quit the use in last one year. In the study done in Nepal, 75.8% of long route bus drivers had tried quitting [21] whereas in the Gwalior study, only 28.47% tried to quit. [10] This difference in quit attempts can be attributed to the difference in various socioeconomic factors, educational level, knowledge regarding hazards and the personality traits of the users as all of these play an important role to quit. Majority of those who attempted a quit could hardly sustain it for few months before resuming the use. This can be attributed to various religious events (like Ramadan, Diwali), strong peer pressure, addiction and physical dependence along with ignorance. Self-motivation was found to be the most common approach (90.75%) by the participants to even attempt quitting. This can be augmented by providing education and raising the level of knowledge, providing emotional and mental support to those willing to quit. A study conducted in Canada concluded that many smokers may be unaware of effective cessation methods and most underestimate their benefit. Further, this lack of knowledge may represent a significant barrier to treatment adoption. [22]

In the present study, around 89% of the participants knew that use of tobacco caused one or the other serious illness. Similar findings were seen in Gwalior study (89%). [10] Knowledge has increased in recent

days owing to mass negative advertisements, scary images and videos of serious health hazards which are continuously displayed in cinema halls, social media, television advertisements and etc.

In this study, around 72% of the participants knew that tobacco in any form caused one or the other cancers and this was around 87% in study done in Belgaum. [18] In general, knowledge regarding cancers has increased owing to mass media advertisements

In the present study, almost all the participants (99.0%) supported the law which prohibits smoking in indoor work places and public places. Whereas only 68% of the participants in the Gwalior study were aware about existence of such law. [10] Despite high level of knowledge about the law, actual implementation is a bigger question.

Limitations and Recommendations

Apart from recall bias, those auto rickshaw drivers plying exclusively during night might have been missed from the study. Based on the study, we recommend that work place tobacco cessation model should be established for this group and tobacco cessation activities should be targeted at younger auto rickshaw drivers to address the early initiators to prevent future addictions & health hazards. There is a dire need for strict implementation of the tobacco control legislations.

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Students' Perspectives on Simplified Breakout Room Approach during Video Proctored Online Assessment in COVID 19 Lock down

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Abstract:

Background: The lockdown in COVID 19 pandemic mandated the normal academic schedule in virtual mode including e-assessments. Since the summative assessments are a mix of both selected response approach and constructed response approach, a new method of e assessment under video surveillance by break out room approach has been tried in this study and the student's response with regard to the different aspects of this technology will be evaluated.

Methods: The students were asked to appear for the exams under video surveillance by zoom video conference. The instructions and the check lists were rolled out accordingly for both the students and teachers. The students appeared for the examination under video surveillance such that one invigilator monitors 10 students along with a guardian secondary invigilator present by their side. A questionnaire based survey regarding the conduct of examination was conducted amongst the students. The data was analysed by descriptive statistics. P value < 0.05 is taken as statistically significant. All statistical analysis was performed by using the statistical software package SPSS version 21.

Results: Analysis of student's feedback revealed that 90% are agreed that proctored clarified their queries. Majority of the students (96%) are happy with overall experience with break out room approach in video proctored online assessment.

Conclusion: The conduct of online assessment by break out room approach is a new methodology tried in this period of pandemic lockdown and will be evaluated for its acceptance by the students so that it can facilitate the upgradation of e-assessment methodologies.

Key words: Assessment, Breakout room, COVID-19, Video Proctored.

Introduction:

COVID 19 pandemic has disrupted the conventional academic activities and has ushered in a new era of creative environment of online education.¹ This

mandates a change in the academic assessments which still remains a challenge.² Ours being an institute of national importance in the field of tertiary health care also faced the brunt during COVID

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19 pandemic when the virtual platforms of online teaching came to the rescue. We started with home based academic assessments by selected response approach right from the declaration of 1st lockdown phase in our country and tried to maintain the routine assessment schedule with the help of virtual platform. But the necessity of subjective assessments was felt soon as the summative assessments are a right mix of both selected response and constructed response assessments. Also, the constructed response system is more popular in the evaluation of all sections of cognitive domain.³

Online exams can be proctored either in person in a controlled exam centre or by using artificial intelligence.⁴ But it usually requires a learning management system along with a technical back up for support which is a costly affair in a developing country like ours.⁵ The in person proctoring for a large group of students seems difficult and students are apprehensive of the support for their queries during the conduct of exams.⁶ The chances of cheating by using internet driven sources in such home based online assessments requires elimination to maintain the academic integrity.⁷ As there is a growing concern among teachers about online assessment and the impact of its results for accountability, monitoring their views on students perspective will be an important task.⁸

Here we present our experience of navigating a new terrain of conducting a home based online academic subjective assessment of medical students in a tertiary care medical institute under video proctoring by using break out room approach and the students perspectives with regard to the same which has not been described in the literature before. The technique involves the hand written subjective assessments to eliminate internet driven malpractices and controlled invigilation by primary and secondary (in-person) invigilators for better monitoring and elimination of their apprehensions and queries with regard to conduct of exams.

Subjects & Methods:

Study type:

An online hand written subjective academic assessment of 2nd semester students was planned using break out room approach. The module was explained to the students in detail and their queries were attended to. A mock test was conducted 2

days before the examination to allay their fears and the following checklist was provided to keep them prepared for the examination:

- Do I have a laptop with front camera or smart phone with front and back cameras?
- Do I have a smart phone with updated Firefox/safari/chrome browsers?
- Do I have/upgraded to 1.5 GB data/day plan with at least 1 Mbps upload & download speeds?
- Did I install the Google Classroom and ZOOM Video Conference apps on my mobile/laptop?
- Did I keep registration number as name in ZOOM app/software?
- Do I have login credentials and am able to login to all the above-mentioned Apps?
- Did I identify an appropriate, well-lit, noise-free place in the house with my writing table and chair for typing answers comfortably?
- Did I understand the question paper model and exam duration for each subject/paper?
- Have I kept sufficient number of A4/A3/Legal sized papers to write for section B and C along with other stationary requirements?
- Proctoring requirement: Students must understand that being visible for invigilation (proctoring) throughout the duration of the exam is a mandatory. Students who do NOT follow this rule will be marked under malpractice. By appearing for the exams, a student declares that (s) he understands these guidelines and has clarity clearly that their proctoring session will be video recorded and will be used only to identify malpractices if any during the exam.

The invigilators were supposed to have the following materials ready for Invigilation:

- Laptop
- Earpiece with the mike
- Print out of Document for the Methodology of examination
- Print out of the list of Contact numbers of students and guardians
- Print out of Invigilator report document

Procedure of examination:

Students were asked to login to google classroom and zoom video conference (Zoom incorporation, California, USA) 20 minutes before the commencement of examination. They were asked to be seated at least 2 feet away from the camera (webcam or mobile) in such a way that the surroundings are clear and the proctor has a clear view of the entire set up with the application in unmuted form. Break out rooms were created by the administrator in zoom video conference such that 1 proctor (faculty as primary invigilator) invigilates 10 students. 5 breakout rooms were created for a total of 50 students in the ratio of 1: 10. The Proctors were given the permission to record the session for the entire period. The question paper was shared by google classroom in a coordinated manner. The onsite invigilation was done by the guardian of the student (secondary invigilator) who was intimated earlier and approval was taken. The student answers the question paper in the given time period by constructed response under primary and secondary invigilation (controlled invigilation). After the examination is over, 20 minutes are allotted for the scanning and upload of the pdf format of answer script in the google classroom under video proctoring. The proctors download the answer scripts of the respective students; verify the quality of the scanned answer sheets and once satisfied asks the student to leave the VC. The coordinator of the respective department will arrange the answer scripts as verified by the invigilators via online mode and submit it to the respective head of the department for further proceedings.

Qualitative analysis:

A questionnaire based survey regarding the conduct of examination was conducted amongst the students. Participation in the study was voluntary and complete anonymity was ensured. The questionnaire evaluated the conduct of examination, the difficulties encountered and student's satisfaction in this new approach of online assessment test. The questionnaire was validated by 3 experts in medical education on a sample population, prepared in google form and was mailed to the participants to be submitted within a period of 2 days. The respondents were asked to provide the response on an ordinal scale or to select the options provided along with open comments.

Statistical analysis: The items were evaluated on an ordinal scale and considered to be non-parametric in nature. The validity of the items was tested by spearman's correlation analysis. Cronbach's α coefficient was used to identify the reliability status of the items. The data was analysed by descriptive statistics. P value < 0.05 is taken as statistically significant. All statistical analysis was performed by using the statistical software package SPSS version 21.

Results:

The reliability of the questionnaire was assessed by cronbach's coefficient α as 0.56. Students' perspectives on the conduct of exams by break out room approach are shown in fig 1. 66% of the students (n= 50) are of the opinion that the practice session of break out room approach was good. More than 90% (n=50) of the students agreed that the proctor was available on time and clarified their queries during the examination. Barring 1 student, 84% (n=50) of the students termed the technology used in the approach as user friendly.

As depicted in figure 2, 96% (n=50) of the students are happy with their experience of attending examination by break out room approach.

Figure3 highlights the preferred mode of summative examination by students on the basis of their present experience. Only 18% (n=50) of the students are ready to give their examination in physical presence in the institute in offline mode in this scenario of COVID 19 pandemic. Of 82% of the students who prefer online examination, 72% (n=50) would like to attend their examination by using home based break out room approach. 4% of the students preferred to attend the examination from their home by online mode without video proctoring.

Most of the students (86%, n=50) liked the home based online examination under video proctoring by using break out room approach (Fig 4). Poor internet connectivity is the major factor for dislike of this mode of examination by 10% of the students. Of the students who did not like this mode of conduct of examination, poor internet connectivity is the most important factor. The availability of invigilator for clarification of doubts or queries during the conduct of examination is the most admired reason (70%, n=50) to like the break out room approach for the conduct of examination in this COVID era.

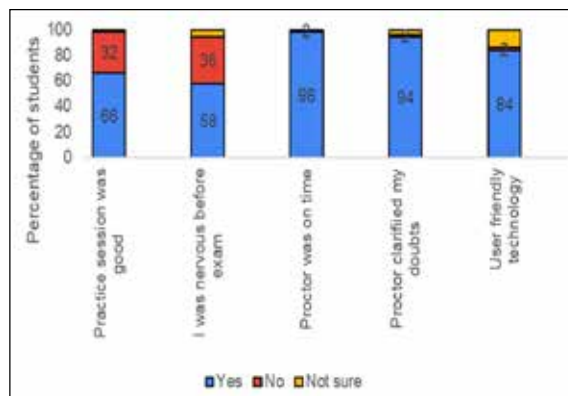


Figure 1: Conduct of exams by break out approach: Students’ perspectives

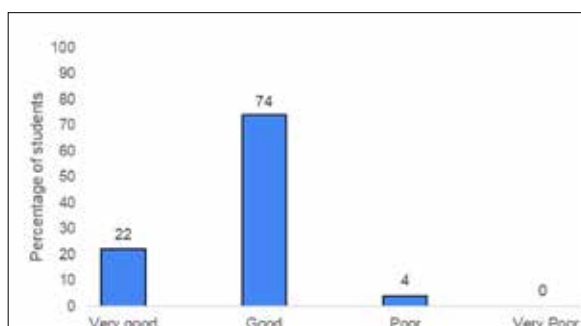


Figure 2: Students’ experience of attending exams by break out room approach

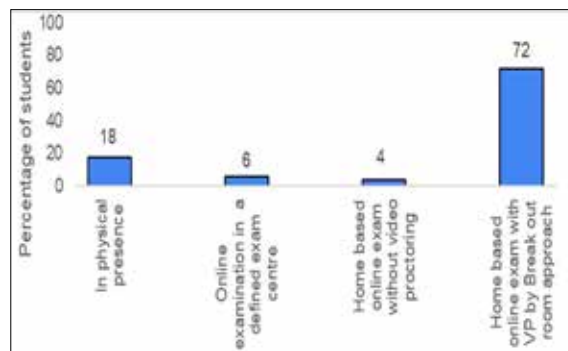


Figure 3: Mode of summative exam as preferred by students on the basis of present experience.

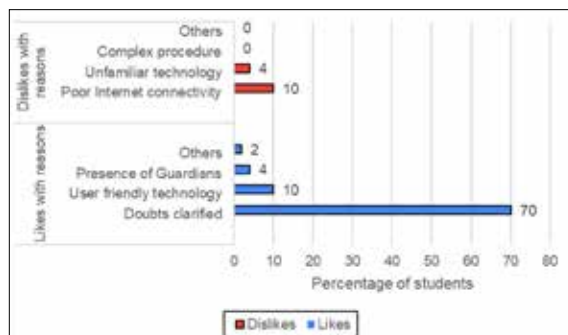


Figure 4: Strengths and weaknesses of conduct of exams by breakout room approach: Students’ Perspectives.

Discussion

Outcomes of innovation: As the world moves into different phases of lockdowns, the online academics and assessment is here to stay. The idea of evolving a better assessment platform in the virtual platform is to be as near to assessment in physical presence or even better.⁹ The innovative idea of subjective online assessment by break out room approach is a step towards this direction. Due to the involvement of multiple factors in this regard, the review of students regarding various facets of this approach is necessary to establish its credibility. Systematic feedback is a basic condition for the operation and development of any complex system.¹⁰

In spite of the fact that 66% of the students (n=50) appreciated the practice session for the breakout room approach, an equal amount of students (58%) were still nervous for the examination (Fig 1). It might be due to the incumbent fear of performance in the examination which is quite common even in the exams in physical presence. The technology finds a wider acceptance amongst students as 94% (n=50) have termed it user friendly. The clarification of doubts in the conduct of examination was successfully attended to due to the availability of both primary and secondary invigilators (proctor) customised for students. Validity and reliability of online assessment should be established to ensure students’ achievement of the learning objectives.¹¹ Breakout room approach with small group of students in each has the ability to solve any technical obstacle met during the online assessment.

96% of the students (n=50) liked the conduct of the examination by break out room approach with 22% terming it as very good. The opinion becomes significant on the ground that the students have been attending regular unproctored, online MCQ assessments and have seen and experienced the regular modes of online assessment. Alsadoon H (2017), revealed that procedures implemented during the online including briefing on examination procedure by peers minimise the chance of cheating and unauthorized collaboration.¹²

With the experiences garnered about the various modes of assessments, 82% have opined to conduct the summative examinations in online mode in the present scenario of COVID 19 pandemic (Fig 3). Most of them (72%, n=50) have exerted their trust on the break out room approach as compared to other modes

of online assessment. Availability of customised proctor for a small group of students to clarify their doubts (70%, n=50) and user friendly technology (10%, n=50) seems to be the most important factors for the students to prefer this approach (Fig 4). 14% of the students (n=50) have not liked the breakout room approach, internet issues being the most important slayer. Since the students are spread pan India, digital divide can be the reason for performance divide.⁷ Simplified breakout room approach for conduction of online home based video proctored assessments provides students and teacher's easy-to-use, valid, and reliable assessment system. It may significantly contribute to solving certain crucial problems of online assessment today. With the focus and thrust on digital India programmes, the divide is bound to reduce leading to wider acceptance of this mode of online assessment.

The conduct of online assessment by break out room approach is a new methodology tried in this period of pandemic lockdown and has been accepted well by the students because of its characteristic inclusive and customised approach.

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Conflicts of interest: There are no conflicts of interest

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Ethical Clearance: The study was approved by the Institutional Ethical Committee AIIMS/MG/2021/IEC-20.

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Study on the Conversion of Laparoscopic Cholecystectomy Owing to per Operative Complications

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Abstract

Background: Laparoscopic surgery has advanced to the point that it is being performed even for malignant conditions in the current healthcare era. Conversion to open technique is a major morbidity of laparoscopy as it loses its supremacy over open technique once the conversion takes place.

Objectives: To study the Conversion of Laparoscopic Cholecystectomy owing to per operative complications.

Methods: There were a total of 100 patients that matched the criteria for inclusion. A comprehensive medical history was obtained, as well as a detailed medical examination was done. Blood tests were performed as part of the admissions process. All of the patients underwent a liver function test. Ultrasonography of the abdomen and upper GI endoscopy were done on all patients. Patients with suspected pancreatic/common bile duct pathology underwent CECT abdomen. Patients with increased alkaline phosphatase and dilated CBD/associated CBD pathology underwent MRCP. In all cases, consent was obtained for conversion if necessary.

Results: Out of 100 cases, 13 cases were converted to open cholecystectomy. In majority of the cases, dense adhesion was the reason for conversion of laparoscopic cholecystectomy to open cholecystectomy in 38.46%. Arterial injury and difficult anatomy around Calot's was the reason for conversion in 23% of the cases each. Hepato biliary injury and technical difficulty was the reason for conversion in 7.69% of the cases each.

Conclusion: Recognizing when a patient is at higher risk for conversion can help with preoperative counselling and resource allocation in the operating room, can improve safety by limiting the time it takes to convert to an open cholecystectomy, and can identify patients who would benefit from a planned open approach.

Keywords: Laparoscopic cholecystectomy, Open cholecystectomy, Gallstones, Hepato biliary injury

Introduction

Laparoscopic surgery has advanced to the point that it is being performed even for malignant conditions in the current healthcare era. Minimal access surgery, which evolved from minimally invasive surgery, has given us hope that practically all procedures can now be performed using laparoscopy.¹

Every year, almost 10 lakh cholecystectomies are conducted, with 96 % of them being performed laparoscopically.² The most frequent laparoscopic surgery performed in today's medical age is laparoscopic cholecystectomy. Because of advantages such as smaller incisions, early healing, reduced post-operative discomfort and hospital stay, and improved cosmesis, laparoscopic cholecystectomy is superior

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to traditional open cholecystectomy. Laparoscopic cholecystectomy, on the other hand, has its own set of drawbacks and complications.³

Conversion to open method is a key complication of laparoscopy, as it loses its hegemony over open technique after conversion.⁴ As laparoscopic cholecystectomy has gained more expertise and the learning curve has been surmounted, the indications for laparoscopic cholecystectomy have been broadened, approaching those of open cholecystectomy.⁵

Laparoscopic cholecystectomy complications have been considerably reduced. However, due to technical difficulties or intraoperative complications, a significant number of patients will have to be transitioned to open surgery.⁶ The important thing to remember about conversion is that it should never be viewed as a complication, but rather as a valid surgical decision.

Materials and Methods

Study Design: Hospital-based cross-sectional study

Study Setting: Department of General Surgery, Gandhi Medical College and hospital

Duration of study: January 2021 to June 2021

Sample size: 100 patients undergoing laparoscopic Cholecystectomy 13 cases converted to open Cholecystectomy

Inclusion Criteria:

- All symptomatic gallstone disease patients
- Gallstone disease with no symptoms in type 2 diabetics
- Gallbladder polyps
- Exclusion Criteria:
- Patients who have a history of liver disease
- Patients who have already had upper GI surgery

There were a total of 100 patients that matched the criteria for inclusion. A comprehensive medical history was obtained, as well as a detailed medical examination was done. Blood tests were performed as part of the admissions process. All of the patients underwent a liver function test. Ultrasonography of the abdomen and upper GI endoscopy were

done on all patients. Patients with suspected pancreatic/common bile duct pathology underwent CECT abdomen. Patients with increased alkaline phosphatase and dilated CBD/associated CBD pathology underwent MRCP. In all cases, consent was obtained for conversion if necessary.

The patients who have been converted to the open technique are the emphasis of this study. They were further analysed in terms of the reasons for converting to the open method owing to per-operative complications.

Statistical Analysis: The SPSS 22 software was used for statistical analysis and the data was presented in the form of means and percentages.

Observation and Results

Table 1: Distribution based on laparoscopic cholecystectomy cases

Parameters	No. of patients	Percentage
Male	48	48%
Female	52	52%
Mean Age group	42.98 + 20.02 yrs	
Obese	18	18%
Pre-operative diagnosis		
Chronic cholecystitis	74	74%
Acute cholecystitis	16	16%
Low albumin	1	1%
Elevated WBC count	2	2%
Elevated alkaline phosphatase	1	1%
Elevated bilirubin	2	2%
Pericholecystic fluid on usg	4	4%
Co-morbidity		
Diabetes mellitus	18	18%
Thickened gallbladder	12	12%

The female predominance was observed. The mean age group was 42.98 + 20 yrs. Chronic cholecystitis was diagnosed in 74% of the cases and acute cholecystitis was diagnosed in 16% of the cases.

Low albumin levels and elevated alkaline phosphatase was seen in 1% of the cases each, Elevated wbc count and elevated bilirubin levels were seen in

2% of the cases each. Pericholecystic fluid on usg was seen in 4% of the cases.

Diabetes mellitus was the most prevalent comorbidity seen in 18% of the cases and thickened gall bladder seen in 12% of the cases.

Out of 100 cases, 13 cases were converted to open cholecystectomy.

Table 2: Distribution based on Gender of converted cases

Gender	No. of patients	Percentage
Male	7	53.84%
Female	6	46.15%
Total	13	13%

Out of 13 laparoscopic cholecystectomy conversion cases, 53.84% of the cases were males and 46.15% of the cases were females. The male: female ratio was 1.16:1.

Table 3: Distribution based on Age group of converted cases

Age group	No. of patients	Percentage
20-30 yrs	3	23%
30-40 yrs	2	15%
40-50 yrs	6	46%
50-60 yrs	2	16%

Out of 13 laparoscopic cholecystectomy conversion cases, Majority of the patients belonged to the 40 to 50 yrs age group with 46%, followed by 20 to 30 yrs age group with 23%, 16% belonged to the 50 to 60 yrs age group and the least belonged to the 30 to 40 yrs age group with 15%. The mean age was 45.15 ± 4.54 yrs.

Table 4: Distribution based on reasons for conversion of laparoscopic cholecystectomy

Converted Cases reason	No. of patients	Percentage
Dense adhesions	5	38.46%
Difficult anatomy around Calout's	3	23.07%
Arterial Injury	3	23.07%
Hepato biliary injury	1	7.69%
Technical difficulty	1	7.69%

In majority of the cases, dense adhesion was the reason for conversion of laparoscopic cholecystectomy to open cholecystectomy in 38.46%. Arterial injury and difficult anatomy around calout's was the reason for conversion in 23% of the cases each. Hepato biliary injury and technical difficulty was the reason for conversion in 7.69% of the cases each.

Discussion

The gold standard treatment for cholelithiasis is laparoscopic cholecystectomy. The superiority of laparoscopic cholecystectomy over open cholecystectomy has been studied, and the results show that laparoscopic cholecystectomy is superior to open cholecystectomy. Today, even in developing countries like India, cholelithiasis is treated using the laparoscopic approach.⁶

When the feasibility of a laparoscopic cholecystectomy cannot be assured, the treatment must be converted to an open cholecystectomy. The identification of characteristics that indicate conversion enhances preoperative patient counselling, perioperative planning, operating room efficiency, and the ability to prevent laparoscopic-related complications by doing an open surgery when necessary.

According to studies from different countries, conversion rates range from 5% to 14%. The conversion rate in this study was 13%. Michael Rosen et al⁷, Singh Kuldip et al⁸, H.J.J Van Der Steeg et al⁹, and Ajay Anand et al¹⁰ have all published prospective studies with outcomes that are identical to ours.

It should not be deemed as failure or inexperience of the surgeon owing to multiple and repeated analyses and studies in this particular component of laparoscopic cholecystectomy. Conversions are usually done for the sake of the patient's safety and well-being. As a result, the conversion of laparoscopic cholecystectomy should be emphasised as a sign of the surgeon's proficiency and prompt intervention.

Conclusion

Our findings show that widely accessible preoperative data may be used to calculate an accurate and simple risk estimate for conversion from laparoscopic to open cholecystectomy. Recognizing when a patient is at higher risk for conversion can help with preoperative counselling and resource allocation in the operating room, can improve safety by limiting the time it takes to convert to an open cholecystectomy, and can identify patients who would benefit from a planned open approach.

Ethical Clearance: The Ethical clearance was obtained from the institutional ethics committee of Gandhi Medical College and hospital prior to the commencement of the study.

Conflict of interest: Nil

Source of funding: Self

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A Clinical Study of Hollow Viscus Injuries in Abdominal Trauma

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Abstract

Background: Blunt abdominal trauma results in injury to the bowel and mesenteries in 3–5% of cases. The injuries are polymorphic including hematoma, seromuscular tear, perforation, and ischemia. They preferentially involve the small bowel and may result in bleeding and/or peritonitis. The main diagnostic challenge is to promptly and correctly identify injuries that require surgical repair.

Objectives: To study the incidence, management and outcome of Hollow Viscus Injuries in Abdominal Trauma

Methods: A comprehensive history was obtained from 50 patients attendants, including the patient's demographic characteristics, the type of injury (whether blunt or penetrating), the symptoms with which the patient presented, and the time elapsed from injury to admission. All patients underwent baseline tests such as haemoglobin, platelet count, blood urea, blood glucose levels, serum electrolytes, and blood grouping. Ultrasound and CT scans of the abdomen were not performed on all patients. Patients whose x-rays or clinical examinations were inconclusive had USG and CT scans.

Results: Male predominance was observed with 72% and females were 28%. The male: female ratio was 2.57:1. Out of the 50 cases with these kinds of injuries 56% of the cases underwent primary closure of perforation. 20% cases had resection and anastomosis. 14% of the cases had Omental patch closure of perforation and 10% cases with serosal tear underwent simple repair

Conclusion: Many predictors of morbidity and mortality have been identified, and treatment delays have been identified as a strong indication of morbidity that has a substantial impact on the post-operative path.

Keywords: Hollow viscus injury, trauma, blunt, Omental patch

Introduction

In today's modern mobile world, trauma is the significant cause of morbidity and mortality. After head and chest injuries, abdominal organ injuries are the third most prevalent type of injury.¹ In hospital emergency rooms, both blunt and penetrating injuries are prevalent.²

Solid viscera are the most typically injured organs in trauma, and numerous studies have been undertaken upon them. Hollow viscus injuries, on the other hand, are just as prevalent as solid visceral

injuries and are just as serious, resulting in higher blood loss and contaminated bowel injury.³

Intestinal and mesenteric injuries are less prevalent in acute abdominal trauma than solid organ injuries (liver, spleen), but they frequently pose diagnostic challenges that might cause therapeutic delays.⁴

Hollow viscus injuries occur when the oesophagus is injured from the cervical section to the anus, the liver and biliary tract, and the lower genitourinary tract. A serosal tear to a full transection of the gut or tracts are instances of injury patterns.⁵

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Despite modern tools and technologies such as ultrasound, CT scan, MRI scan, and endoscopy, the nature of the injury, a clear clinical history, a comprehensive clinical examination, and basic radiographs can aid in identifying many patients with hollow visceral injuries with decent accuracy. Any delay in diagnosis will increase morbidity and mortality in the long-term.⁶

As a result, a general surgeon should be able to clinically detect and treat trauma, particularly those involving abdominal hollow visceral injuries, which are becoming increasingly common. In this study, efforts were undertaken to study about the prevalence of abdominal trauma, the numerous intra-abdominal organs injured in penetrating and blunt abdominal injuries, and their varied outcomes.

Materials and Methods

Study Design: Hospital-based cross-sectional study

Study Setting: Department of General Surgery, Gandhi Medical College and hospital

Duration of study: July 2021 to December 2021

Sample size: 50 Patients with Hollow abdominal viscus injury

Inclusion Criteria:

- All patients hospitalised with abdominal pain, either blunt or penetrating, who have hollow viscus injuries (contusion, serosal tear or perforation) on clinical or radiographic examination or intraoperative findings.

Exclusion Criteria:

- Patients with abdominal pain owing to trauma who did not have radiological or intraoperative indications of hollow viscus injuries were excluded from the study.

A comprehensive history was obtained from 50 patients attendants, including the patient's demographic characteristics, the type of injury (whether blunt or penetrating), the symptoms with which the patient presented, and the time elapsed from injury to admission. All patients underwent baseline tests such as haemoglobin, platelet count, blood urea, blood glucose levels, serum electrolytes, and blood grouping. Ultrasound and CT scans of the abdomen were not performed on all patients.

Patients whose x-rays or clinical examinations were inconclusive had USG and CT scans.

Statistical Analysis: The SPSS 22 software was used for statistical analysis and the data was presented in the form of means and percentages.

Observation and Results

Table 1: Distribution based on Gender

Gender	No. Of patients	Percentage (%)
Male	36	72%
Female	14	28%

Male predominance was observed with 72% and females were 28%. The male: female ratio was 2.57:1.

Table 2: Distribution based on age group

Age group (yrs)	No. Of patients	Percentage (%)
≤20	11	22%
21-30	17	34%
31-40	13	26%
41-50	4	8%
>50	4	8%
Total	50	100%

The majority of the patients belonged to the age group of 21 – 30 years with 34%, followed by 31 to 40 yrs age group with 26%, <20yrs age group had incidence of 22%, the least no. of patients belonged to the age group of 41 – 50 yrs and >50 years of age group with 8% each.

Road traffic accidents was the most prevalent caused of hollow abdominal viscus injury in 60% of the cases, followed by fall from height in 24% of the cases, Train accidents and stab injuries accounted for 8% of the cases each. The significant injury associated in trauma was Polytrauma with 26% followed by orthopedic injuries constituting 24%, Head injuries in 15% and the least being the thoracic injuries seen in 8% of the patients.

Table 3: Distribution based on time taken for surgery after hollow viscus injury

Hours	No. of patients	Percentage (%)
0-12	33	66%
12-24	15	30%
24-48	1	2%
>48	1	2%

The majority of the patients around 66% were operated within 12 hours of the injury. Around 30% were operated with 24 hrs of the injury. Around 2% of

the cases each were operated between 24 to 48 hrs and more than 48hrs after the injury due to conservative management as the risk was more complicated.

Table 4: Distribution based on type of management

Hours	No. of patients	Percentage (%)
Primary closure of perforation	28	56%
Omental patch closure of perforation	7	14%
Repair of serosal tear	5	10%
Resection and anastomosis	10	20%

Commonest repair methods performed for gastrointestinal injuries include primary closure of perforation, omental patch closure of perforation, serosal tear repair and resection and anastomosis. Out of the 50 cases with these kinds of injuries 56% of the cases underwent primary closure of perforation. 20% cases had resection and anastomosis. 14% of the cases had Omental patch closure of perforation and 10% cases with serosal tear underwent simple repair

Table 5: Distribution based on mortality of patients based on reporting to the hospital after injury

Mortality	No. of patients	Percentage
Presentation <24 hrs	3	6%
Presentation >24 hrs	6	12%

The mortality rate for patients admitted more than 24 hours after the injury was significantly greater than those admitted within 24 hours of the trauma.

Discussion

Primary repair, or resection and anastomosis without a diversion colostomy, is preferable for individuals with colonic or intraperitoneal rectal injuries.⁷ In individuals with extraperitoneal rectal injuries, proximal diversion colostomy alone may be adequate. Because of the increased risk of anastomotic leak, patients with stomach rupture should have a gastrectomy and an intra-abdominal drain placed at the location of the esophagojejunal anastomosis rather than no drainage. Drains are not recommended for other gastrointestinal injuries after repair.⁸ The abdominal wall may need to be temporarily closed after an exploratory laparotomy for trauma so that a second look surgery may be performed later.⁹

Competent clinical judgement, rapid decisions, good and appropriate surgical procedures, and adequate postoperative care are all required for the successful management of traumatic hollow viscus injuries. Regardless of how far technology has progressed, a trained surgeon's competence is by far the most important aspect in managing a hollow viscus injury.¹⁰

In brief, abdominal trauma is a significant category of severe injuries that a surgeon encounters in the emergency room. The clinical appearance of these injuries varies widely depending on the site and severity of the injury, and also differentiates between blunt and penetrating injuries. It might range from a seemingly normal look after a blunt injury to a collapsed and lifeless state after hypotensive shock. Other solid organ damage may complicate matters at times. When dealing with hollow viscus injuries that are coupled with other severe injuries, the management modality should prioritise life-threatening injuries first, followed by other injuries.

Even though most studies suggest that penetrating abdominal trauma increases the risk of hollow viscus injuries, this study reveals that blunt abdominal trauma causes the majority of hollow viscus injuries, highlighting the need of effective trauma care.¹¹

In all cases of blunt abdominal trauma, a hollow viscus injury should be assumed. For accurate diagnosis and to avoid delays in appropriate surgical intervention, multiple clinical examinations with thorough monitoring and repeat imaging are required in uncertain patients. The mode of repair is determined by the condition of the patient, degree of contamination with intestinal contents, concomitant injuries, and overall condition. Above all, it is dependent on the surgeon's clinical expertise as well as the trauma centre's facilities.

Conclusion

Although early diagnosis of gastrointestinal injuries from blunt abdominal trauma might be difficult in some circumstances, it is critical because of the potential for life-threatening complications. The patient's age, anatomical location, and time of manifestation are probably the most important prognostic markers. Many predictors of morbidity and mortality have been identified, and treatment delays have been identified as a strong indication of morbidity that has a substantial impact on the post-operative path.

Ethical Clearance: The Ethical clearance was obtained from the institutional ethics committee of Gandhi Medical College and hospital prior to the commencement of the study.

Conflict of interest: Nil

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Residual Cardiovascular Risk – A Concept in Evolution

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Abstract

The commonest cause of mortality worldwide is cardiovascular disease. The contemporary evidence based therapy targets known risk factors like LDL cholesterol, hypertension and hyperglycemia. Still, the current treatment protocols prevent only half of the CVD deaths. Scientific research is constantly providing newer options to mitigate unfavourable outcomes in those with persistent risk. This review discusses the multiple potential targets of therapy and the drugs available to fill this unmet need.

Keywords: atherosclerosis, cardiovascular risk, inflammation

Introduction

The recent past has seen remarkable developments in the field of therapy for atherosclerotic cardiovascular disease (ASCVD). Substantial inroads have been made in the identification and control of important conventional predisposing factors including raised low-density lipoprotein cholesterol (LDL-C). The widespread use of statins, as part of an aggressive LDL lowering strategy, has substantially reduced morbidity and mortality associated with ASCVD.¹ Newer drugs like PCSK9 inhibitors have made possible reducing LDL to drastically low values. There is robust evidence that lower LDL is not only better but also safe. Importantly, such tremendous decrease of LDL translated to a fall of absolute risk by a meagre 1.5% and a 3 year MACE approached 10% in the two landmark PCSK9i trials (FOURIER and ODYSSEY OUTCOMES). This persistent elevated propensity of adverse outcomes in the face of rigid control of

conventional risk factors is labelled as “residual risk” that encompasses all etiological entities that are underrecognized and hence, undertreated.

Lipids

Raised LDL-C is a conventional established etiological agent for atherosclerosis and its reduction has been unequivocally found to improve outcomes. Allaying fears of cognitive dysfunction, “lower the better” approach has been vindicated by high potency lipid lowering therapy. The 2019 ESC/EAS guidelines recommend LDL-C < 70 mg/dl in high risk and < 55 mg/dl in very high-risk patients. The first drug of choice remains statins followed by ezetimibe if target level is not reached and then, PCSK9 inhibitors in selected patients. While ezetimibe is an efficacious and affordable drug, PCSK9 inhibitors are a highly efficacious but expensive option. PCSK9 inhibitors are human monoclonal antibodies that attach to PCSK9 protein preventing degradation of LDL receptors

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on hepatocytes. Enhanced uptake of LDL-C from the bloodstream results in a fall of LDL-C by about 60%. FOURIER and ODYSSEY OUTCOMES with a cumulative pool of about 50,000 patients documented the clinical benefit of PCSK9 inhibitors.² Adverse effects are minor such as injection site erythema and pharyngitis. siRNA therapy, inclisiran, has made possible halving of LDL levels with six monthly injections. The ORION 4 is a safety and efficacy study that will clarify the role of inclisiran in high risk patients.

A large body of population and gene based studies support the causative role of triglycerides in CVD and the prime culprit in TG-rich particles is cholesterol. Disease risk has been correlated with alteration in apoB level regardless of its presence in LDL-C or chylomicron/VLDL. Disappointingly, trial data do not support CVD-lowering effect of fibrates. The REDUCE-IT trial concluded that 4g of omega-3 fatty acid, icosapent ethyl (on a background of statin therapy) caused significant reduction in CV events.³ However, the modest magnitude of TG reduction and disputability over use of mineral oil as placebo cast doubts on the results. With the STRENGTH study showing negative results, other pleiotropic effects of EPA, rather than TG-lowering, are conjectured to be the main mechanism of its action. Pemafibrate is being studied in diabetics with combined dyslipidemia for both primary and secondary prevention in the PROMINENT study.

The molecule Lp(a) has generated considerable interest. The molecule has two components—one consisting of LDL attached with apo B-100 and the other apo(a) covalently linked by a single disulphide bond on KIV9 situated close to the LDL receptor binding region of apoB.⁴ Apo(a) is a large glycoprotein molecule with molecular weight ranging from 400 to 800 kDa and consisting of multiple kringle IV subunits, a kringle V and a proteolytic subunit. There are 10 kinds of kringle IV repeats with one each of KIV1 and KIV3-10 and multiple number of KIV2. Circulating Lp(a) levels are determined by the genetic variability of apo(a) mediated through KIV2 representation. The number of KIV-2 repeats correlates inversely with levels of lipoprotein(a).⁵ The LPA gene encoding apo(a) is situated on chromosome 6q26. Of note, the kringle V and the proteolytic entities of Lp(a) share structural homology with plasminogen. However, while the PLG gene is ubiquitous in animal species, the LPA gene is present only in humans and

related primates. Apo(a) is synthesized in the liver but its fusion with LDL may occur either in liver or plasma.

Lp(a) is vulnerable to oxidative damage leading to production of damaged molecular complexes recognised by "oxidation specific epitopes" (OSE). This complex consists of LDL, phospholipids, sterols (all oxidised) and apoptotic cells. The KIV repeats contain certain specific regions that mediate inflammation e.g. oxidised phospholipids (oxPLs) of which Lp(a) is the primary carrier. Cytokines that promote inflammation like IL1, IL6 and TNF α are stimulated by Lp(a) which can also enhance release of IL-8 and monocyte chemotactic protein from macrophages. Human vascular endothelial cells are stimulated by Lp(a) to secrete monocyte chemotactic activity. Also, Lp(a) is a strong chemoattractant for human monocytes mediated by a cGMP dependent mechanism. PET/CT based studies reveal augmented metabolic activity in the arterial wall in patients with raised Lp(a). The oxPLs promote transendothelial movement of monocytes. Lp(a) has been found to promote monocyte adhesion and migration, possibly by higher PFKFB-3 and ICAM activity.¹⁰ In patients with coronary artery spasm (CAS), Lp(a) and macrophage numbers are increased. An inflammatory pathophysiology is indicated by raised $\alpha 7$ -nAChR/IL-6/p38 MAPK signalling in such macrophages which is inhibited by tocilizumab. Also, Lp(a) stimulates CD80+ macrophage polarisation and inhibits NO synthase expression, reducing levels of the vasodilatory NO.¹¹

A Danish study of 3 cohorts of white individuals revealed a causal association between elevated Lp(a) and increased risk of MI. The hazard ratio was 1.22 for every two fold increase in Lp(a) levels.¹² Clarke et al studied about 50,000 single nucleotide polymorphisms (SNPs) in 2100 candidate genes and found that the LPA gene had the strongest association with risk of CAD. They identified 2 LPA variants that were strongly associated with an increased level of Lp(a) and a greater risk of CAD. Joint analysis concluded that the 2 variants account for 36% of the variation in Lp(a) levels whereas stepwise regression identified 7 SNPs that together contributed to 40% of the total variation.¹³ A meta-analysis of 26 prospective cohort studies and 10 nested case control studies revealed that Lp(a) correlated weakly with established risk factor for CHD. However, in contrast to earlier postulations of steep threshold effect, it

had a continuous association with risk of CAD with a relative risk (RR) of 1.16 for every 3.5 times rise in Lp(a). The findings were replicated in subanalyses of coronary death and nonfatal MI. This continuous, independent and specific correlation was shown to be limited to vascular outcomes.¹⁴ The biracial ARIC study found Lp(a) levels to be positively associated with CAD and ischemic stroke. Xu et al investigated the impact of Lp(a) on severity of CAD and found that Lp(a) was independently correlated with intermediate to high SYNTAX score.¹⁵ An analysis of data from about 4000 patients revealed a statistically significant relation between Lp(a) and coronary artery calcification (CAC) with a causal link between the two. Also, the LPA SNP rs 10455872 was associated with higher Lp(a) and CAC. In so much as CAC provides a measure of atherosclerotic burden and future CV events, this particular SNP may by raising Lp(a) contribute to development of atherosclerosis.¹⁶ Lp(a) levels positively correlate with plaque volume and unfavorable plaque composition in patients of ischemic heart disease. In ACS patients subjected to PCI, a synergistic effect of GRACE risk score and Lp(a) level was observed in prediction of adverse outcomes. This could help select the candidates for aggressive reduction of Lp(a).¹⁷

Diabetes

Type 2 diabetes mellitus is an important etiological agent for CVD but apart from metformin, no conventional antidiabetic has been shown to confer cardiovascular benefit. The newer drugs, namely SGLT2 inhibitors and GLP-1RA, have been shown to improve cardiovascular outcomes independent of their glucose-lowering effect. While SGLT2i primarily improve heart failure prognosis, GLP-1RA protect against atherosclerosis related events. Multiple trials substantiate the protective effect of SGLT2i on MACE, heart failure hospitalisation and mortality in high risk diabetics. While CANVAS and EMPA-REG demonstrated 14% decrease in clinical endpoint, DECLARE TIMI 58 and VERTIS CV showed no benefit.¹⁸ Irrespective of diabetic status, up to 35% fall in hospital admission for HF was noted. Also, the renoprotective effect was demonstrated as a 40-60% reduction in fall of GFR, ESRD or mortality due to renal causes. EMPA-REG also revealed a 40% fall in CV death. Contemporary societal guidelines consider SGLT2i as preferable in diabetics with HFrEF or CKD. Adverse effects include increased susceptibility to genital infections and diabetic ketoacidosis.

GLP-1RA act as ligands to the widely distributed GLP-1 receptors but when in islets of Langerhans stimulate insulin and inhibit glucagon. Gastric motility is retarded and anorectic effect is also noted leading to weight loss. An anti-inflammatory effect has also been identified. A total of 55,000 odd patients studied over six CV outcome trials showed an improvement in outcome including CV mortality, nonfatal MI and nonfatal stroke.

Inflammation

Apart from controlling LDL-C, HMG-CoA reductase inhibitors have numerous other mechanisms of action including inhibition of inflammation. Multiple trials incriminate inflammation as etiological in ASCVD by revealing that reduced inflammation results in fall of subsequent CV outcomes. The pathophysiology of atherosclerosis starts with deposition of apoB rich lipoproteins in the subendothelium of blood vessels. They are subjected to multiple structural changes (such as glycation and oxidation) leading to the genesis of foam cells. The oxidised LDL inflict damage by endothelial cell injury, promotion of adhesion molecules and localised inflammation via accumulation of white blood cells. The intensity of this inflammation is strongly dependent on the apoB subtype, the effect of which is again influenced by other factors like liver triglyceride content or genetic susceptibility. Oxidised LDL is also proinflammatory by promoting formation of intracellular crystalline cholesterol and damage-associated molecular pattern molecules. The biochemical consequence of these molecular processes is a rise in blood levels of hsCRP and IL-6 which have been proven by numerous studies to be an efficient marker of future ASCVD. The ubiquitous presence of mild, long term inflammation in the pathogenesis of atherosclerosis provides a promising target for prevention and treatment of ASCVD.

The connection between inflammation and dyslipidemia was first uncovered by the landmark statin trials wherein use of statin was associated with fall in hsCRP which in turn was correlated with improved CV outcomes. The change in LDL-C and hsCRP was comparable and had an additive salutary effect on clinical events. Amongst patients taking statins, a sizeable one-third have heightened hsCRP with lipid targets achieved. Notably, the potent hypolipidemic PCSK9 inhibitors have been consistently found to be ineffective in lowering hsCRP. In further support of the inflammation hypothesis,

hsCRP was found to be a predictor of future events even in patients whose LDL-C levels were reduced to less than 20 mg/dl with statins.

Consequently, multiple potential targets of therapy have been identified and explored. The IL-1 β antibody, canakinumab, was tested in a trial of post-MI patients with raised hsCRP (in spite of maximal statin therapy). The drug halved the hsCRP and IL-6 levels and also, lowered the overall major adverse clinical events by 15% and an even more impressive 25% in patients achieving hsCRP concentration below 2 mg/dl. This was comparable to the benefit accrued in prominent PCSK9 inhibitor trials. Methotrexate, on the other hand, proved to be a disappointment. A study on post MI patients or diabetics with multivessel coronary artery disease who were already receiving all recommended drugs showed that weekly methotrexate provided no clinical (5 year MACE) or biochemical (hsCRP reduction) benefits. A recent upsurge in interest in colchicine is the result of the COLCOT study. 4755 post-MI patients were randomised to 0.5 mg daily dose of colchicine or placebo. A 23% and 48% reduction in ischemic ASCVD events was noted in patients enrolled within 30 days or 3 days of MI, respectively. These results were replicated on a cohort of stable angina patients in the LoDoCo2 study wherein the verum group had a 31% lesser relative risk of MACE over a follow up of about two and half years. However, the correlation with inflammation could not be established as no inflammatory parameters were measured in these studies.

The NLRP3 inflammasome has emerged as a crucial and possibly, exclusive pathway in the inflammatory genesis of atherosclerosis. Canakinumab acts by modulating IL-1 β without any effect on IL-1 α whereas colchicine is nonselective as it prevents microtubule assembly. It also inhibits caspase-1 thereby reducing IL-1 β level. Methotrexate prevents conversion of 5-aminoimidazole-4-carboxamide ribonucleotide (AICAR) to formyl-AICAR by the enzymeATIC leading to accumulation of adenosine, a potent anti-inflammatory. Yet, it showed no benefit in clinical trials, indicating that atherosclerosis is mediated by the NLRP3 inflammasome. In consonance with this hypothesis, multiple lipid molecules like oxidised LDL and apoC3 modulate the NLRP3 complex by multiple pathways including upregulating toll-like receptors, increased potassium efflux and enhanced oxidative damage.

The inflammasome acts by stimulating caspase-1 activity resulting in increased production of IL-1 β which serves to attract inflammatory cells, primarily macrophages and T cells. It also promotes IL-6/IL-18 generation and thereby, increases hepatic production of proinflammatory proteins like CRP, fibrinogen and plasminogen. The persistent low grade inflammation sustains the evolution of atherosclerosis from foam cells to fatty streaks to the full blown obstructive plaques.

Inflammation has also been proposed to be a controller of lipid metabolism in the liver. VLDL particles rich in apo-C3 and Lp(a) particles rich in oxidised phospholipids can promote inflammation. Raised TNF- α results in augmented lipogenesis, efflux of VLDL into circulation and lesser apoB breakdown. Teleologically, increased circulating lipids in response to inflammation serves to provide sufficient energy for efficient tissue healing. However, over the long term, it may prove detrimental by fostering development of metabolic syndrome or diabetes. The concept of thromboinflammation entails a two way relationship between thrombosis and inflammation. Inflammation promotes thrombosis by increasing platelet activation, fibrinogen, PAI-1 and tissue factor. Conversely, thrombosis also stimulates inflammation. The influence of lipids on platelet function has been increasingly elucidated by lipidomics. Many lipid moieties like oxidised LDL and Lp(a) increase thrombosis. Rosuvastatin putatively retards thrombosis by decreasing platelet membrane cholesterol and reducing tissue factor, factor VII and factor X. Laboratory evidence indicates that the PCSK9 molecule facilitates platelet dysfunction and thrombosis. Lab mice with PCSK9 deletion had decreased incidence of vascular thrombi and those with increased expression had higher thrombin-antithrombin and lower protein C. To add another dimension, lipoproteins also modulate inflammation and thrombosis by yet undefined mechanisms.

Therefore, dyslipidemia and inflammation are both etiologically associated with atherosclerosis. The dynamics of their mutual interaction are not fully clear but definitely, the long term probability of MACE is more accurate when both are taken into account. Ridker et al in a study of 4786 stable but high risk patients revealed that IL-6 and LDL-C together was thrice more accurate in predicting MACE than either parameter alone. The HR of the highest quartile relative to the lowest was 6.4 whereas the same

value for hsCRP and LDL-C was 4.9. For individual parameters, the HR was 1.79 for hsCRP, 2.11 for IL-6 and 2.38 for LDL-C. Considering that all trial participants were on standard therapy, these data highlight the sizeable residual risk in a high risk population. Also, it underlines the importance of both factors (inflammatory and dyslipidemic) to this residual risk. In consequence, the importance of a holistic principle targeting both these components is in order because use of PCSK9 inhibitors or anti-inflammatory agents individually decreased MACE by a meagre 20-30% leaving a large burden of residual risk. In the absence of trial data, it remains to be seen if a combination of both, on a background of conventional therapy, proves to be synergistic or even superadditive in their efficacy to prevent future events.

The selection of candidate drugs for such a study is an important decision. PCSK9 inhibitors are suitable by way of their neutral effect on hsCRP but the cost is prohibitive. A combination of bempedoic acid and ezetimibe is as efficacious as moderate dose statins and its effect on clinical endpoints still unknown. Inclisiran, a small interfering RNA, is an option as it halves PCSK9 synthesis and requires injection every 6 months. The NLRP-3 inflammasome is the lynchpin of the inflammatory component of atherosclerosis but as compared to the gamut of hypolipidemics available, canakinumab and colchicine are the only two drugs proven to have clinical benefit. No comparative study between the two has been undertaken and would be beset with many practical hindrances including striking difference in cost and route of administration. Colchicine with its oral route of administration, previous safety data, fast action and low cost is clearly the front runner for any trial. Its myriad actions beyond the NLRP3 inflammasome include a fall in multiple other inflammatory mediators like myeloblastin, CEA-related CAM8, azurocidin and myeloperoxidase. It also increases concentration of beneficial factors like fibroblast growth factor and insulin-like growth factor binding protein. However the superior clinical efficacy as compared to canakinumab is still unproven.

CANTOS participants underwent measurement of both IL-6 and IL-18 before and after starting canakinumab and were followed up for a mean of 3.7 years. An impressive 43% reduction of IL-6 notwithstanding, each tertile rise in IL-6, measured 3 months after drug initiation, was associated with a 42%

increased risk of MACE. The corresponding figure for IL-18 was 15% in spite of no change in IL-18 levels. A number of NLRP-3 inflammasome inhibitors that decrease both IL-1 β and IL-18 are under investigation but its potential widespread immunosuppressive actions warrant caution. In CANTOS, a significant increase in life-threatening infections was noted possibly due to direct inhibition of IL-1 β and hence, selective targeting of IL-6 appears to be a more prudent approach. Investigative IL-6 inhibitor molecules are tocilizumab (monoclonal antibody against IL-6) and sarilumab (monoclonal antibody against IL-6 receptor). RESCUE is an ongoing study of ziltivekimab (IL-6 monoclonal antibody) in CKD, a group of patients where colchicine is contraindicated.

Of equal importance is the identification of appropriate high risk patient population who will benefit the most from aggressive therapy. The preferred biomarker for patient selection is yet to be pinpointed. In CANTOS, hsCRP was used as the discriminator whereas in COLCOT, hsCRP was measured in a small percentage of patients. The median concentration of 4 mg/l was comparable to CANTOS but whether it could be generalized to the entire trial is questionable. In contrast, CIRT found median hsCRP to be much less (1.5 mg/l). CANTOS showed that reduction in clinical events was maximal (25%) in patients with on-treatment hs-CRP less than 2 mg/l. The correlation was stronger for IL-6 with a 32% reduction for those with level less than 1.65 ng/l.¹⁹

Other contentious matters include threshold for starting treatment and duration of therapy. The duration of therapy needed to extract maximum clinical benefit is undetermined. Also, a rebound of clinical events after treatment discontinuation cannot be excluded. A secondary analysis of CANTOS was performed to measure the total number of CV events since initiation of therapy. Divergent from primary trial results, a marked decrease of total events was seen in all patients, irrespective of drug dosage. The drug was found to confer protection even without significant fall in hsCRP or IL-6. The COLCHINE-PCI study revealed that pre-PCI intake of 1.8 mg of colchicine reduced immediate increase in IL-6 and hsCRP without any effect on clinical events over 30 day followup. These data point towards need for long term therapy to obtain clinical benefit.

Optimum timing of initiation of therapy is undetermined. Canakinumab has been tried in

patients with history of MI at least 30 days prior to initiation but colchicines has been found useful in both post MI and stable CAD patients. Bouabdallaoui et al showed that clinical benefit was significantly higher when colchicine was started within 3 days as compared to 4-7 days after MI.

Apart from drugs, the old school doctrine of lifestyle modification continues to be an effective strategy. A combination of weight loss, abstinence from smoking, regular exercise and diet modification has been shown to reduce hsCRP to less than 2mg/l in upto 40% of CAD patients. A putative mediator is β -hydroxybutyrate (BHB). Circulating levels rise with exercise and diet restriction. The compound impedes the formation of the NLRP-3 inflammasome and hence, production of IL-1 β and IL-6. Carbohydrate restricted diets promote ketosis and inhibit inflammation in insulin resistance as evidenced by the fall in biomarkers of atherosclerosis.²⁰

Conclusion:

The recent past has brought to light, sometimes serendipitously, the marked salutary effects of multiple drugs on cardiovascular outcomes. The practical application of this knowledge is impeded by apparent randomness in choosing from this array, mostly decided by the prescriber's personal discretion rather than patient candidacy. The need of the hour is a set of clear cut guidelines that assist a physician to rationally individualise therapy for high risk patients wherein conventional therapy may not be enough. While they may represent a minority in daily clinical practice, the substantial benefit accrued from these ancillary drugs should be enough motivation for scientific societies and caretakers alike to handpick the drugs that maximise favourable outcomes.

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Comparative Assessment of two behavioural risk factors (Physical Inactivity and Unhealthy Diet) among obese Bengali women in rural and urban areas of West Bengal, India

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Abstract

This study was aimed to assess dietary pattern and unhealthy dietary factors and to determine the prevalence of physical inactivity among obese Bengali women in rural and urban areas of West Bengal. **This study was conducted in Hooghly district of West Bengal, India and 150 female subjects of 20-50 years age group were recruited for the study considering inclusion and exclusion criteria.** Different physical, anthropometric and socio-demographic variables were documented and dietary information was collected using questionnaire. Global Physical Activity Questionnaire was used to collect information about physical activities. Daily energy comes mainly from carbohydrate in the diet of both groups. Consumption of animal protein and dairy products, fruits, visible fat and sugar were significantly higher in urban group whereas dietary fibre, green leafy and other vegetables, pulses and nuts intake was significantly high in rural group. Physical inactivity prevalence was 64.0% in rural and 78.7% in urban and there was significant differences between rural and urban group regard to all the anthropometric indices.

In summary, the behavioural risk factors are undoubtedly apprehensive and anthropometric indices are pointing out towards associated possible metabolic risks which were poorer in urban group than rural. Further clinical investigation along with proper intervention measure is indispensable.

Keywords: adiposity, food habit, non communicable diseases, sedentarism.

Introduction

Unhealthy eating, physical inactivity and obesity are the trio, amongst many others to heighten the ubiquity of Non Communicable Diseases (NCDs) for the last few decades worldwide. Since the late nineteenth century the pattern of diseases and the cause of mortality of the then developed countries had started to take a shift from communicable

infectious diseases to chronic diseases which were not infectious or transmissible¹. Like the other low or middle income countries, India is also a witness of such transition and these led to the development of 'Lifestyle Diseases' [also called non-communicable diseases, NCD] which are the by-products of 'fast-paced modern lifestyle'. According to report of World Health Organization (WHO), amongst all

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global deaths 71.0% is accountable to NCDs^{2,3}. Disease burden of NCDs is rising by leaps and bounds every year in India as well. As per WHO report 2014, India contributes two- third of all deaths from NCDs occur in south East Asia region of world health organization.

The behavioural risk factors (unhealthy diet; physical inactivity; tobacco and alcohol consumption) interact with one's genetic make-up and lead to metabolic changes and provide the complex aetiology behind the commencement of NCDs⁴. The scenario of NCDs among Indian is quite distressing. Age standardized prevalence of obesity, hypertension and hyperglycaemia have raised by 22.0%, 10.0% and 9.0% respectively among both sexes (age group ≥ 18 years) within four years i.e. 2010-2014. So, India which is facing 'double burden of diseases' (both non-communicable and infectious diseases), time to time monitoring and surveillances on the behavioural and metabolic risk factors among people residing in different states or regions of the country, are utmost important for making health care policies and programmes. Further, 54.4% Indians are physically inactive⁵ and it is more prevalent in urban than rural and among women than men; and urban people are more hypertensive than rural⁷. So Indian women, who have been kept in the centre of Sustainable Development Growth (2015-30) need more surveillances to lessen their burden of NCDs.

West Bengal also follows the similar trends as prevalence of overweight or obesity in female has risen from 11.4% (NFHS-3, 2005-6) to 19.9% (NFHS-4, 2015-16) and in every cases urban women were more prevalent than rural⁶. So, this study was aimed to assess dietary and physical activity pattern among obese women in both the selected rural and urban parts of West Bengal to make a comparison between these two groups.

Materials and Methods

Study Population

This study was a community based cross sectional study of urban and rural areas of Hooghly district in West Bengal. As inclusion criteria, all the females were Bengali (Hindu), permanent residents in those households, age group were 20-50 years and with a body mass index (BMI) between 25-30 kg/m² and free from any clinically diagnosed NCDs; also, they never consumed any form of tobacco or alcohol. As exclusion criteria, those, who were physically, mentally challenged or non-ambulatory; already

suffering from chronic diseases or are on certain medications. Total 150 (n) obese females were selected from both rural ($n_1=75$) and urban ($n_2=75$) areas. Data were collected during January 2017 to January 2018.

Dietary Information

24 hour recall method on multiple, non-consecutive days was done avoiding days of fasting or feasting. Dietary diversity on week days or on weekends also considered. Mean consumption of different nutrients and foods under various food groups were calculated using Diet Cal software (which used nutritive values of Indian foods).

Physical Activity

Global Physical Activity Questionnaire (GPAQ) developed by WHO (2012)⁷ and was standardised and validated in nine countries⁸ was used in the study to collect information on physical activities of subjects. Metabolic Equivalent (MET) scores was calculated and used for physical activity classification.

Anthropometric Measurement

Body weight, height, waist circumference (WC) and hip circumference (HC) were measured using standardized protocols and instruments⁹. Body Mass index (BMI), ratio of waist circumference to hip circumference and waist circumference to body height i.e. Waist to Hip Ratio (WHR) and Waist to Height Ratio (WHtR) were respectively calculated as well. Cut off of BMI, WC and WHR as normal for Indian women were considered according to Bhalerao et al (2014)¹⁰. WHtR >0.5 is seen as strong predictor of cardio-metabolic risk in obesity¹¹.

Statistical Analysis

Descriptive statistics like mean, standard deviation (S.D.) was done and to compare the mean values between the groups two tail, unpaired t-test was performed. $P<0.05$ was considered as significant.

Results

Dietary Profile

Mean intake of calorie/day by rural subjects is 1941.5 ± 168.9 kcal and urban is 2027.4 ± 166.3 kcal and this difference is significant (Table 1). In contrast, mean daily dietary fibre intake is significantly higher in rural females than their urban counterparts. However, no significant difference was observed between rural and urban groups regarding the mean consumption of whole and refined cereals and the root

and tuber groups which is mostly potato. Significant difference between rural and urban groups in terms of having other food groups like dairy products and other animal protein food group(p=0.0001), visible fats(p=0.003), fruits(p=0.004) and added sugar(p=0.01) were observed. Alternatively, mean daily intake of food groups like pulses(p=0.02), green leafy vegetables or other vegetables (p=0.0001) and nuts and oil seeds(p=0.001), rural women showed significantly higher intake than urban women. No significant difference was found between both the group regards to dietary salt intake (mean intake of rural subject 10.1±1.6 gm and in urban 9.8±1.6gm).

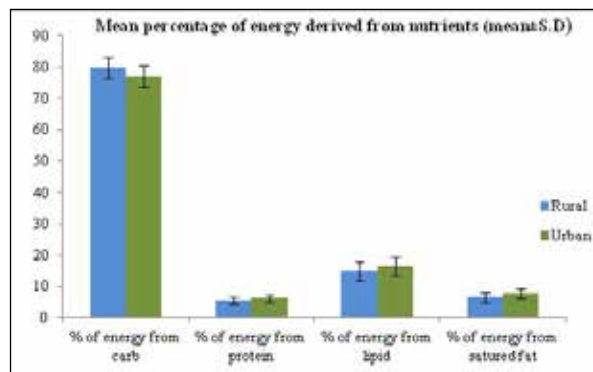
Data of mean percentage of energy/day derived from macronutrients like carbohydrate (carb), protein, fat and saturated fat showed rural subjects derive more energy from carbohydrate than urban subjects. Figure 1A has represented the mean consumption of percentage of energy from those nutrients along with its S.D. values.

Table 1. Average nutrient consumption of study participants

Variables	Rural (Mean ±S.D.)	Urban (Mean ±S.D.)	Level of Significance (<0.05)
Calorie (Kcal)	1941.5 ±168.9	2027.4 ± 166.3	0.002
Dietary fibre (gm)	19.5± 5.5	16.5±4.4	0.0003
Consumption of food groups			
Whole grain+refined cereals (gm)	314.7± 29.1	310.2±21	≥0.05
Pulses (gm)	30.3 ±4.7	28.0±7.2	0.02
Egg/meat/ fish/poultry (gm)	23.5± 7.7	30.6±10.3	0.0001
Dairy products (gm)	64.1± 23.9	84.2±23.4	0.0001
Root & tubers (gm)	100.2 ±26.6	99.7±9.9	≥0.05
Green leafy vegetables (gm)	22.1 ±8.4	15.7±8.4	0.0001
Other vegetables(gm)	74.1±10	50.7±11.2	0.0001
Fruits (gm)	21.8±6.7	25.2 ±7.3	0.004
Visible fats & oils	38.7± 7.4	42.4±7.9	0.003

Variables	Rural (Mean ±S.D.)	Urban (Mean ±S.D.)	Level of Significance (<0.05)
Nuts& oilseeds(gm)	2.2 ±1	1.7±1	0.001
Added sugar (gm)	31.5 ±6.2	34.5±8.1	0.01
Added Salt (gm)	10.1 ± 1.6	9.8±1.6	≥0.05

A.



B.

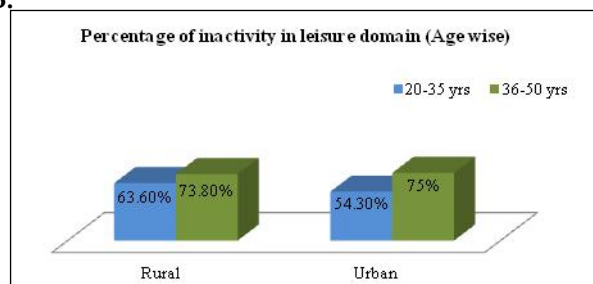


Figure 1. [A] Mean percentage of energy derived from nutrients. [B] Percentage of inactivity in leisure domain (age wise)

Physical Activity

Data revealed that 64.0% of rural subjects and 78.7% of urban subjects are physically inactive i.e., MET scores was <600; percentage of active females (MET score 600-1200) is 32 and 21.3 in rural and urban areas respectively; whereas only 4.0% rural female subjects are highly active (MET score≥1200) and unfortunately among urban subjects that is nil considering all the domains of activity, shown in Table 2.

Table 2. Sample distribution on total energy expenditure on low/ moderate/ vigorous activity/week

BASED ON TOTAL ENERGY EXPENDITURE		
MET VALUE	RURAL n ₁ =75(%)	URBAN n ₂ =75(%)
PHYSICALLY INACTIVE <600	48 (64.0%)	59 (78.7%)
ACTIVE 600- 1200	24 (32.0%)	16 (21.3%)
HIGHLY ACTIVE ≥1200	3 (4.0%)	0
BASED ON PHYSICAL INACTIVITY		
DOMAIN	RURAL n ₁ =75(%)	URBAN n ₂ =75(%)
WORK	45(60.0%)	57(76.0%)
TRAVEL	38(50.6%)	44(58.7%)
RECREATION	52(69.3%)	49(65.3%)

Table 2 also has depicted that among the subjects in both the areas prevalence of physical inactivity in particular domains were also assessed and it was found that among rural subjects, most was inactive in recreational domain (69.3%) and lowest percentage of inactivity was seen in travel domain (50.6%). On the other hand among urban female subjects mostly was inactive in occupational domain (76.0%) and least in travel domain (58.7%). Age group-wise distribution indicated that subjects belong to the 36-50 yrs of age group was more inactive than the age group of 20-35 yrs in both the areas (Figure 1B).

Mean time/ day spend on various domains with vigorous to moderate intensity activity was also calculated (Table 3). No significant differences were found regard to mean time spent on vigorous work and recreation but differences were significant in terms of travel and moderate intensity occupational work domains. Urban obese subjects spend more time on sitting than rural and the difference was significant ($p=0.03$).

Table 3. Mean time spend on different activities/day (Mean ±S.D.) and level of significance

ACTIVITY	DOMAIN	Rural	Urban	Level of Significance <0.05
VIGOROUS	WORK	9.61±40.1	1.4±3.21	≥0.05
	RECREATION	0.61±1.9	0.83±1.64	≥0.05
MODERATE	WORK	16.6±35.6	6.5±12.3	0.02
	TRAVEL	8.9±10.1	5±6.8	0.005
	RECREATION	3.09±5.4	3.12±5.1	≥0.05
SITTING		327.7±99.9	366.5±117	0.03

Anthropometric Profile

Anthropometric indices of urban obese female subjects had significantly higher values than their rural counterparts (Table 4). Body weight and BMI which indicates generalised obesity among both urban and rural females. WC and WHR value were also significantly higher in urban group. WHtR was 0.57±0.02 for rural and 0.58±0.02 for urban group and was significantly different ($p=0.04$).

Table 4. Anthropometric profile of rural and urban samples (Mean ±S.D.)

Variables	RURAL	URBAN	Level of significance <0.05
Body weight (kg)	69.5±5.05	71.6±5.9	0.01
BMI(kg/m ²)	27.4±1.4	28±1.6	0.008
WC (cm)	91.7±3.4	93±3.4	0.02
WHR	0.89±0.02	0.9±0.02	0.001
WHtR	0.57±0.02	0.58±0.02	0.04

Discussion

In our study, two major behavioural factors like unhealthy diet and physical inactivity of NCDs along with anthropometric parameters among the obese Bengali women (20-50 years of age) from selected parts of both rural and urban groups were studied. Previous study on changed dietary pattern of Indians has noted that consumption of dietary fibre, fruits and vegetables are gradually decreasing whereas intake of visible fats and added sugar are escalating rapidly¹². Consumption of plant and animal protein was lower than the recommended value in both groups. Urban obese group was having more animal protein, dairy products, fruits, visible fat and oil and added sugar than rural group whereas rural group was consuming more pulses, green leafy and other vegetables and nuts and oil seeds. Our study also revealed that most of the daily energy is coming from carbohydrate, possibly be a reason behind increasing diabetes in India. Poor consumption of dairy products and animal protein especially in rural group as reported in this study is in line with the reporting of Sharma et al. (2020)¹³ differs from the observations of Shetty (2002)¹².

Physical activity which has been measured in this study, another behavioural risk factor for lifestyle diseases was also not satisfactory as well. More than half of all subjects, in both groups were inactive i.e. MET score <600. Urban obese women were more inactive (78.7%) than rural group (64.0%). Across all the domains, urban subjects were mostly inactive in occupational domain whereas highest percentage of inactivity among rural subjects was found in recreational domain. Age group wise participation in leisure activity was measured and emerged that older age group was less active in leisure among both the groups.

Ample researches have been done on physical activity pattern among adults (both sexes) in different regions covering both the rural-urban parts across India and most of them specified more physical inactivity amongst urban females than their rural counterparts, which also goes with our observation¹⁴. In contrast, other studies^{15,16} found no significant differences between rural and urban females regarding diet, physical activity and obesity in North India population. Whereas, Newtonraj et al. (2019)¹⁷ noted lesser percentage of physical inactivity in rural females than urban which was 22.5%, almost comparable to the prevalence of global physical inactivity i.e. 27.5%.

The subjects from both the rural and urban areas were found obese i.e. BMI >25 kg/m² and all the selected anthropometric parameters were significantly higher in urban females than their rural counterparts indicating higher obesity in urban females. These findings are well in line with earlier studies^{18,19}. Thus, we hypothesised that such lofty parameters are indicators of different health issues like cardio-vascular diseases, insulin resistance, diabetes mellitus, metabolic syndrome, reproductive hassles, different cancer and so on among both the groups.

Conclusion

This study reported unhealthy diet in both the rural-urban groups whereas physical activity profile was worse in urban females than the rural group. Lifestyle modification through dietary intervention and recommendation of enough physical activity can be beneficial to cut down the risk factors which could be investigated in future as well.

Conflict Of Interest

The author declared no conflict of interest.

Source of Funding

Self

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Assessment of Appropriateness of Doing CT Scan for Investigating Headache in a Tertiary Care Hospital in Eastern India

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Abstract

Background: Headache is one of the most common presenting symptoms encountered in day to day clinical practice. A computed tomography is often the most common imaging modality to diagnose the underlying causes of headache, majority of which turns out to be normal. The objective of this research is to study the morbidity patterns in the CT scan reports of patients presenting with headache in the population attending a tertiary care hospital in Eastern India.

Method: The study was a retrospective analysis of all the CT scan reports performed in a tertiary care government hospital performed for diagnostic evaluation of headache referred from different clinics and included all patients regardless of the age during the time period December 2018 to November 2019.

Results: All the patients were classified into two groups traumatic and non- traumatic depending on the history. Out of a total 1142 patient evaluated, 649 patients (56.83%) did not yield any positive findings on CT scan, i.e. the reports were normal. In fact, a routine CT scan is not advised for all headache complaints even by the ACR (American College of Radiology) appropriateness criteria. The difference between the number of patients with normal CT scan and abnormal CT scan in both the groups was statistically significant ($p < 0.05$).

Conclusion: In concordance with the previous similar studies, it may be concluded that in evaluation of headache, CT scan should be advised only in selected cases as recommended by ACR Appropriateness Criteria® Headache or any other guidelines that may be developed for this purpose.

Keywords: Headache, Computed Tomography Scan, CT scan findings.

Introduction

Headache is one of the most common presenting symptoms encountered in day to day clinical practice. According to WHO estimates, the prevalence of headache among adults is about 50%.¹ Unfortunately, there are insufficient statistics for the prevalence of headache in India and other developing countries.²

Though there may be regional variations, yet headache disorders are a worldwide problem, affecting people of all ages, ethnicities, socio-economic status and geographical areas. A computed tomography is often the most common imaging modality to diagnose the underlying causes of headache. Previous studies have shown that in most of these cases, CT findings turned

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out to be normal.^{3,6} The objective of this research is to study the morbidity patterns in the CT scan reports of patients presenting with headache in the population attending a tertiary care hospital in Eastern India.

Materials & Methods

The study was a retrospective analysis of all the CT scan reports performed in the Department of Radiology College of Medicine and Sagore Dutta Hospital (CoMSDH), Kamarhati, Kolkata – a tertiary care government hospital and Medical College, from December 2018 to November 2019. It was basically a secondary data analysis carried out on the information retrieved from the CT scan reports of the patients who underwent CT scan of head for diagnostic evaluation of headache referred from different clinics and included all patients regardless of the age.

The study was carried out in accordance with the guidelines of the Institutional Ethics Committee (Registration No. ECR/1210/Inst/WB/2019 issued under Rule 122 DD of the Drugs and Cosmetics Rules, 1945) at the College of Medicine and Sagore Dutta Hospital.

CT scan reports of all patients referred for CT scan of head for evaluation of headache at CoMSDH for a period of 1 year was included in the analysis. A structured checklist was used for the analysis and the information collected was based on the following parameters:

Individual: Age in completed years/ Gender/ History of trauma in completed days/other associated symptoms like vomiting/loss of consciousness/vertigo.

Radiological: The CT scans were carried out on 16-slice spiral CT scanner (GE MEDICAL SYSTEM, OPTIMA CT540) in Department of Radiology CoMSDH. 5 mm contiguous slices were taken from foramen magnum to the vertex, which were reconstructed into 1mm slices both in soft tissue and bone window.

The CT scan findings were classified into 26 categories: Normal, Mild diffuse cerebral atrophy, Diffuse cerebral atrophy, Periventricular ischemic changes, Lacunar infarcts, Focal gliosis, Encephalomalacic changes, Chronic ischemic changes, Sub acute infarct, Intracranial haemorrhage, Intra-axial calcification, Hydrocephalous, Neoplasm, Intra-axial lesion other than neoplasm, Extra axial lesion, Mega cisterna magna, Extra axial collection, Infection, asymmetrical dilatation of lateral ventricle, Osteoma, Contusion, Scalp hematoma, Extra axial calcification, Metastasis, Deviated nasal septum, Sinusitis.

The data thus collected was compiled and tabulated and checked for consistency and outliers. The proportions of CT scan with and without abnormality are expressed in percentages. The distribution of the morbidity patterns among the abnormal CT scan according to different population groups are also expressed in percentages.

Results:

A total of 1142 patient's CT scan reports were evaluated in our study. Out of them 32.2% (n=368/1142) of the patients were males, the rest 67.8% (n= 774/1142) were females. The mean age of the patients was 37.92 with a standard deviation of 16.67. The median age was 36. From the histories obtained from these 1142 patients, who's CT Scans were evaluated, the patients were classified under two groups, namely traumatic 27.4 % (n=313/1142) and non-traumatic 72.5% (n= 829/1142). In the non-traumatic category, 54.28 % of patients (n=450/ 829) had normal findings on CT scan. In the traumatic category, 63.5% (n=199/313) of the patients showed no abnormal findings on CT scan. Out of the total 1142 patients included in the study, 649 patients (56.83%) did not yield any positive findings on CT scan, i.e. the reports were normal.

The results obtained on statistical analysis are summarised in the following tables (Table 1 -3):

Table 1: Distribution of findings in both groups:

CT Scan findings	Non-trauma	Trauma	Grand total
Normal	450	199	649
Mild diffuse cerebral atrophy	62	17	79
Diffuse cerebral atrophy	16	1	17
Periventricular ischemic changes	33	5	38
Lacunar infarcts	71	13	84
Focal gliosis	18	3	21

CT Scan findings	Non-trauma	Trauma	Grand total
Encephalomalacic changes	2	0	2
Chronic ischemic changes	2	0	2
Sub acute infarct	5	1	6
Intracranial haemorrhage	2	0	2
Intra-axial calcification	12	4	16
Hydrocephalous	3	1	4
Neoplasm	0	0	0
Intra-axial lesion other than neoplasm	1	0	1
Extra axial lesion	6	1	7
Mega cisterna magna	5	6	11
Extra axial collection	4	1	5
Infection	0	0	0
Asymmetrical dilatation of lateral ventricle	5	1	6
Osteoma	3	1	4
Contusion	0	3	3
Scalp hematoma	0	4	4
Extra axial calcification	1	0	1
Metastasis	0	1	1
Deviated nasal septum	193	67	260
Sinusitis	90	18	108
Grand Total	829	313	1142

Table-2: Distribution of findings according to gender:

Category	CT Scan Findings	Gender		Total
		F	M	
1	Normal study	454 (70.0)	195 (30.0)	649
2	Mild diffuse cerebral atrophy	41 (51.9)	38 (48.1)	79
3	Diffuse cerebral atrophy	10 (58.8)	7 (41.2)	17
4	Periventricular ischemic changes	22 (57.9)	16 (42.1)	38
5	Lacunar infarcts	56 (67.5)	27 (32.5)	83
6	Focal gliosis	16 (76.2)	5 (23.8)	21
7	Encephalomalacic changes	1 (50.0)	1 (50.0)	2
8	Chronic ischemic changes	2 (100.0)	0	2
9	Sub acute infarct	1 (16.7)	5 (83.3)	6
10	Intracranial hemorrhage	1 (50.0)	1 (50.0)	2
11	Intra-axial calcification	14 (87.5)	2 (12.5)	16
12	Hydrocephalous	3 (75.0)	1 (25.0)	4
13	Neoplasm	0	0	0
14	Intra-axial lesion other than neoplasm	1 (100.0)	0	1
15	Extra axial lesion	4 (57.1)	3 (42.9)	7
16	Mega cisterna magna	8 (72.7)	3 (27.3)	11
17	Extra axial collection	3 (60.0)	2 (40.0)	5

Category	CT Scan Findings	Gender		Total
		F	M	
18	Infection	0	0	0
19	Asymmetrical dilatation of lateral ventricle	3 (50.0)	3 (50.0)	6
20	Osteoma	3 (75.0)	1 (25.0)	4
21	Contusion	0	3 (100.0)	3
22	Scalp hematoma	3 (75.0)	1 (25.0)	4
23	Extra axial calcification	1 (100.0)	0	1
24	Metastasis	1 (100.0)	0	1
25	Deviated nasal septum	169 (65.0)	91 (35.0)	260
26	Sinusitis	65 (60.2)	43 (39.8)	108
Total		774 (67.8)	368 (32.2)	1142

Table 3: Table showing the results of the Chi square test.

Groups	Normal	Abnormal	Marginal Row Totals
Traumatic	199 (176.56) [2.85]	165 (187.44) [2.69]	364
Non-traumatic	450 (472.44) [1.07]	524 (501.56) [1]	974
Marginal Column Totals	649	689	1338 (Grand Total)

Chi-square: 7.609; p= 0.005808.

OR=1.404

(95% CI) (1.103-1.788)

According to the results of the Chi-square test given above, the difference between the number of patients with normal CT scan and abnormal CT scan in both the groups was statistically significant ($p < 0.05$).

Discussion:

A careful consideration of the above table (Table 1) throws up some interesting results. Majority (almost 57%) of the patients with complaints of headache, who went for a CT scan, came back with normal reports. Even among patients in the traumatic category, a sizeable portion of the patients (about 63.5%) showed normal findings on CT. Our findings have been corroborated by other studies conducted in various parts of India and abroad also. But, the proportion of patients with abnormal findings in our study was higher than other studies. It has been further noted that even those who had abnormal findings on CT scan, most of them were deviated nasal septum and sinusitis and not any significant intracranial lesions. Our study has included the findings of the visualized paranasal sinuses which can be a potential cause of headache in patients and evaluation of paranasal sinuses was not reported in the previous studies.^{4,5}

In a similar study reported from Nigeria, the authors opined that the yield of significant abnormalities on CT scans did not justify the huge number of CT Scans performed for the diagnosis of headache.⁴ An analysis of about 2500 patients with headache from Chandigarh reported a poor yield of positive findings too.⁵

CT scan is almost routinely prescribed for investigation of chronic headache and has quite a few advantages. It is easily and widely available in many places, easy to perform and inexpensive. But, many studies have shown the futility of routinely prescribing Computed tomography to all patients with chronic headache. In most of these cases, either no serious intracranial pathology was found, or the CT scan findings did not significantly alter the clinical or therapeutic jurisdiction. So, our findings are in agreement with other studies where similar findings have been reported. Whenever there has been an audit of CT Scans prescribed for headache, the findings have been interestingly similar. In fact, a routine CT scan is not advised for all headache complaints even by the ACR⁶ appropriateness criteria.⁷

The concurrence of findings in similar studies drives home the point that not all headaches reported to the outdoor and emergency for consultation merits a prescription for a CT scan, for it may not yield a positive finding. Even those patients who reported a positive finding, the diagnosis were mostly benign causes like sinusitis. Therefore we recommend reporting of pathology of the visualized paranasal and deviated nasal septum, if any in every CT scan referred for evaluation of headache as it may yield a potential cause.

The retrospective nature of our study is the main limitation as the referrals requisitions were occasionally incomplete in clinical information.

In concordance with the previous studies our study reiterated that in evaluation of headache, CT scan should be advised only in the cases of sudden severe headache, new headache with optic disc edema and with worsening headache in patients with history of trauma and MRI with or without contrast should be the preferred imaging modality in other cases as recommended by ACR Appropriateness Criteria® Headache.⁸ This recommendation is however not followed in lot many cases because of the demand of the patients as such or the patient's relatives. There should be structured recommendations for the treating physicians as to when a CT scan should be advised; otherwise it would be just a waste of resources.

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Conflict of interest:

None declared.

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Management of Tympanic Membrane Perforation with Cartilage Tympanoplasty in Relation to Temporalis Fascia Graft Technique

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Abstract

An Observational Study was undertaken at Department of Otorhinolaryngology,. The aim of this study was to observe the outcome of cartilage tympanoplasty for tubotympanic type of CSOM. All the patients attending ENT OPD at SIMS within the age group of 11-60 years, irrespective of sex with tubotympanic CSOM either unilateral or bilateral were included in this study. In our study of 80 patients, 40 patients had graft uptake after disease clearance and 8 had failure of graft uptake without chronic otorrhoea and 2 had failure with chronic otorrhoea. Through this study we concluded that cartilage tympanoplasty for tubotympanic type of CSOM is an excellent technique for complete removal of disease especially from inaccessible areas of middle ear cleft.

Keywords: Tympanoplasty, Temporalis fascia, Endoscopic Tympanomastoidectomy, Pure tone audiometry, Impedence audiometry.

Introduction

The Tympanic Membrane (TM) plays a significant role in the physiology of hearing as well as in the pathophysiology of chronic inflammatory middle ear diseases. The TM perforations significantly impair the quality of life for millions of patients.

⁽¹⁾ The term 'chronic ear disease' includes a wide range of clinical entities, including chronic otitis media, chronic suppurative otitis media (with and without cholesteatoma), chronic mastoiditis, tympanosclerosis, and cholesterol granuloma.⁽²⁾

The term **Tympanoplasty** was introduced in 1953 by Wullstein to describe surgical techniques for

reconstruction of the middle ear hearing mechanism that has been impaired or destroyed by chronic ear disease. In 1953, the Zeiss operating microscope became available commercially and, in the same year, Wullstein and Zöllner launched their tympanoplasty methods with a split-thickness skin graft.⁽⁷⁾ In 1956, Zöllner successfully used autologous fascia lata.⁽⁸⁾

Heermann was the first to introduce the cartilage palisade technique, in 1962.^(4,5)

In the Heermann's technique of palisade tympanoplasty, the cartilage strips with perichondrium preserved on the outer surface were placed parallel to the malleus until the middle-

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ear cavity was covered.^(4,9)Six groups of cartilage tympanoplasty have been proposed in the literature by Mirko Tos. The choice of technique is determined by the surgeon's preference, size of the perforation, integrity of the ossicular chain, and the presence of cholesteatoma.

Aim:

1. To compare success rate between type 1 cartilage tympanoplasty and type 1 temporalis fascia tympanoplasty within the period of October 2021 to September 2022.
2. To compare post-operative failures using both these techniques
3. To compare post-operative hearing status using both these techniques

Material and Methods

The study was carried out in the Department of Otorhinolaryngology, SARASWATHI INSTITUTE OF MEDICAL SCIENCES, Hapur (U.P). Total of 80 Patients were evaluated who attended the OPD of ENT during the period of October 2020 to September 2022. The cases for the study were selected on the basis of following criteria -

All the patient attending the Department of Otorhinolaryngology in Saraswathi Institute of Medical Sciences, Hapur (U.P) with chronic ear disease.

Criteria for Patients Selection

Inclusion Criteria

- 1) Chronic otitis media
- 2) Small, medium, large, subtotal, total and attic perforations
- 3) Traumatic perforations
- 4) Atelectatic ear
- 5) Tympanosclerotic patches
- 6) Retraction pockets
- 7) Patient willing to participate in the study

Exclusion Criteria

- 1) Acute otitis media
- 2) Otosclerosis

- 3) Congenital hearing disorder
- 4) Chronic otitis media with predominant sensorineural hearing loss
- 5) Isolated serous otitis media
- 6) Active intracranial complication of chronic otitis media
- 7) Patients with history of diabetes mellitus, HIV and TB
- 8) Radical mastoidectomy
- 9) Patients who did not turn up regularly for follow up.

Study design Hospital-based, two arm, prospective, comparative study

Results

The study consists of 80 patients with tubotympanic chronic suppurative otitis media who were analysed taking into consideration a number of parameters.

The following are the observations made during our study:

In our study patient age varied from 11 yrs. to 40 yrs. as shown above in table. The maximum incidence was 43 percent in the third decade than 31 percent in second decade and followed by 26 percent in the fourth decade. The mean age in this study was 24 years.

In our study the most common symptom encountered was otorrhoea in 86% patients for which we managed conservatively and managed, followed by impaired hearing in 82%. Otagia and tinnitus were seen in 17% and 11.5% patients respectively. Vertigo was seen in 11.5% patients.

In our study 46% patients had CSOM in the active stage with persistent ear discharge. 42% patients presented with occasional discharge and 11.5% presented with no discharge, we treated conservatively for discharging ear for 3 weeks before operating.

44/50 patients presented with complaints of discharge. Out of these 44 patients, 39 presented with some degree of hearing impairment. As shown in table longer duration of otorrhoea more is the severity of the disease and more the hearing impairment.

In our study complete visualization of the tympanic membrane without any manipulation was possible in 50% of the cases and visualization after manipulation was possible in 34% of the cases. However partial visualization even after manipulation was seen in 17% cases.

18 patients showed perforation in more than one quadrant and out of these 11 patients (22%) showed medium size while 7 patients (14%) showed total perforation.

In 55% of the cases the diseased ear showed retracted pars tensa with the TM. 14% patients showed same side central perforation and 31% showed normal TM. On the contralateral side retraction was noticed in 40% of the cases, perforation in 9% and about 51% had normal TM.

Out of 50 cases B/L sclerosis was noted in about 31% and U/L sclerosis on the affected side in 37%. B/Lly Pneumatized mastoid was noted in 26%. The cavitary mastoid diagnosed in only 6%.

Pure CHL implies > 25db air conduction loss and A-B gap > 20db and in the mixed variety the bone conduction loss > 25db and A-B gap > 20db. In our study 66% showed Pure conductive hearing loss and 33% showed mixed hearing loss.

The disease was seen extending to the attic and aditus as well in 26% of the cases, spreading further to mastoid antrum in 26% of the cases and involving both the posterior mesotympanum and aditus ad antrum was seen in 40% of the cases.

On the basis of extent of the disease different surgical procedures were used, 100% cortical mastoidectomy with tympanoplasty.

While assessing the post-operative graft uptake it was observed that successful graft uptake was seen in 94% cases while graft uptake was unsuccessful in 6% cases after 6 months of follow up. At routine follow ups of 1, 3 and 6 months it was observed that the chances of graft uptake decreased as the post op time period increased ($p < 0.05$).

While assessment of post op chronically discharging ear it was observed that only 2% of the cases had chronic discharge at 6 month follow up period. The above table shows that chronically discharging ear is negatively associated with post operative time period ($p < 0.005$). As time progresses the rate of chronically

Degree of hearing improvement is from 10-14dB in 36% of cases and 15-19 dB in 34% of the cases and 20-25 dB in 2% of the cases and 25- 30 dB in 1% of the cases at the end of the study period. When the degree of hearing improvement was compared at 1, 3 and 6 months follow up it was observed that endoscopic tympan mastoidectomy had a positive effect on post operative degree of hearing improvement ($p \text{ value} < 0.05$).

Discussion

The management of CSOM is one of the most challenging tasks in otologic surgery as the chances of residual disease and the morbidity of the conventional procedures involved in treatment are high. With incorporation of endoscopes in the otologic field much of the recidivism and morbidity of the procedures has been reduced.

As stated by Takahashi (2000) middle ear pressure is maintained by two routes, the Eustachian tube and the middle ear mucosal gas exchange. Ventilation through Eustachian tube is quick and active mechanism that helps in adapting to transient fluctuations in middle ear pressure. The middle ear mucosal gas exchange is passive and constant phenomenon, that functions even during sleep v/s the Eustachian tube which closes during sleep, helps in continuous maintenance of middle ear pressure. In our present study apart from the eradication of disease and reconstruction of the middle ear much importance has been given to the preservation of middle ear cleft mucosa and restoration of ventilation of middle ear and mastoid.

Jacob and Sade (1992) stated that CSOM ears usually possess poorly pneumatized or non pneumatized temporal bones, in our study about 67% of our patient had sclerosed mastoid, that reduces the middle ear buffering capacity.

In our study we have not used silicon sheets in any of the patients instead we used cartilage in the middle ear to augment the myringoplasty versus Takashi in 2000 who used tympanostomy tube in patients and 0.5mm silicon sheets in the tympanic cavity and found no significance in the recovery of mastoid aeration with tympanostomy tubes.

Advantages of the cartilage tympanoplasty is that it helps in restoration of the middle ear air space enabling the drainage of blood clot and other collection from attic, aditus, antrum, anterior epitympanum via the middle ear into the Eustachian tube to the pharynx. The tympanic membrane gets perforated when

cartilages other than handle of malleus comes into direct contact with it but in cartilage tympanoplasty where the composite cartilage placed between the ossicular graft and tympanic membrane overcomes this disadvantage.

So far in our 6month follow up we have not encountered any residual, recurrent disease just 1 chronically discharging ear, also the healing time (period for complete epithelization of cavity) was also less in 27+/-10 days compared to Takahashi 2000 where it was 31.5+/-19days. All our procedures were done exclusively with endoscopes where the need for bone removal for accessing is less compared to the Takahashi (2000) procedures which were done exclusively with microscopes, excessive bone and mucosal.

Conclusion

The success of Tympanoplasty in terms of graft uptake and hearing improvement is better in patients with lesser duration of disease, less pre-operative Air bone gap and with medium sized perforations when compared to subtotal perforations.

The success of cartilage tympanoplasty in terms of graft uptake and hearing improvement is better in patients with lesser duration of disease and less pre-operative Air bone gap.

In post-operative evaluation of patients with unilateral hearing loss, application of Belfast rule of thumb enables the actual hearing benefit of the patient.

Ethical clearance: taken from ethical committee of institute

Consent: taken from of patients

Conflict of interest: no

Source of funding: self

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Lilliputian Hallucination-An Exceptional Psychiatric Symptom

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Abstract

As in normal cases in Psychiatry we have seen so many types of hallucination like tactile, auditory, visual, gustatory. But in this review article reader will get to know about a very rare & unique type or category of hallucination i.e., Lilliputian Hallucinations. The AIWS is a clinical presentation of distorted body images and/or objects surrounding the subject experiencing the syndrome. Several medical conditions have been accompanying to this unique type of hallucinatory disease condition, the exact cause of which is yet unknown. AIWS can also be described as a set of symptoms with alteration of body image. An amendment of visual perception is found in that way that the sizes of body parts or sizes of external objects are perceived erroneously. The causes may be epilepsy, stroke, brain tumor, Head trauma, Migraines, Infection etc. The exact treatment modality is still not unknown. The finest way to treat this condition is simply by helping the patient become more comfortable. For example, if the problem is caused by migraines, the treatment of the migraine itself may be the best way to assuage Alice in Wonderland Syndrome symptoms.

Keywords: Alice in Wonderland syndrome, Todd's syndrome, dysmetropsia, temporal lobe epilepsy, Epstein-Bar virus

Introduction

AIWS is a rare neurological syndrome characterized by misrepresentations of visual perception, the body image, and the experience of time. People may see things smaller than they are, feel their body alter in size or experience any of the syndrome's numerous other indications.¹



AIWS, also recognized as Todd's syndrome or dysmetropsia, is a neuropsychological illness that roots a distortion of perception. People may experience falsifications in visual perception of objects such as seeming smaller

(micropsia) or larger (macropsia), or appearing to be nearer (pelopsia) or farther (teleopsia) away than they actually are. Spin may also occur for senses other than vision.²

AIWS can also be described as a set of symptoms with amendment of body image. A variation of visual perception is found in that way that the sizes of body parts or sizes of exterior objects are perceived erroneously. The most common perceptions are at night. The causes for AIWS are still not known precisely. Typical migraine, temporal lobe epilepsy, brain tumours, psychoactive drugs to Epstein-Barr virus are causes of AIWS. AIWS has no confirmed, effective treatment. The treatment plan entails of migraine prophylaxis and migraine diet.³

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Methodology

We performed a PubMed quest in April, 2022 by using the phrases "AIWS," "AIWS pathophysiology," "AIWS treatment," and "Lilliputian Hallucination." The search bore almost 46 papers, including reviews, case reports, case series, and small clinical studies. After excluding the 16 non-English reports without an English abstract, we encompassed the remaining 30, irrespective of publication date.

History

AIWS is also known as Todd's syndrome. This symptom was first identified in the 1950s by Dr. John Todd, a British psychiatrist. He noted that the symptoms and recorded anecdotes of this syndrome closely resembled episodes that the character Alice Liddell experienced in Lewis Carroll's novel "Alice's Adventures in Wonderland."⁴

Background

The syndrome is sometimes termed as Todd's syndrome, in reference to a persuasive description of the condition in 1955 by Dr. John Todd (1914–1987), a British consultant psychiatrist at High Royds Hospital at Menston in West Yorkshire. Dr. Todd discovered that several of his patients' veteran severe headaches causing them to see and perceive objects as greatly out of proportion. In addition, they had altered sense of time and touch, as well as slanted perceptions of their own body. Despite having migraine headaches, none of these patients had brain tumours, damaged eyesight, or mental illness that could have accounted for these and similar symptoms.

Dr. Todd speculated that Carroll had used his own migraine experiences as a source of encouragement for his famous 1865 novel Alice's Adventures in Wonderland. Carroll's diary discloses that in 1856 he consulted William Bowman, a renowned ophthalmologist, about the visual manifestations of the migraines he habitually experienced. In Carroll's diaries, he often wrote of a "bilious headache" that came attached with severe nausea and vomiting. In the year of 1885, he wrote that he had "experienced, for the second time, that odd optical affection of seeing moving fortifications, shadowed by a headache".^{5,6}

Another Name- AIWS, Todd's syndrome, Lilliputian hallucinations, dysmetropsia

Risk Factors - Several conditions are linked to Todd's syndrome. The following may increase the risk for it:

Migraines- Todd's syndrome may be a type of aura, or a sensory warning of a coming migraine. Some doctors also believe that Todd's syndrome may be a subtype of migraines.

Infections- AWS episodes may be an early symptom of the EBV. This virus may cause infectious mononucleosis, or mono.

Genetics- family history of migraines and AWS may have a higher risk for experiencing this rare condition.

Common Causes

Still the causes of AWS, but doctors are working to better understand this unique condition. They do know that AWS isn't a problem with the patient's eyes, a hallucination, or a mental or neurological illness.

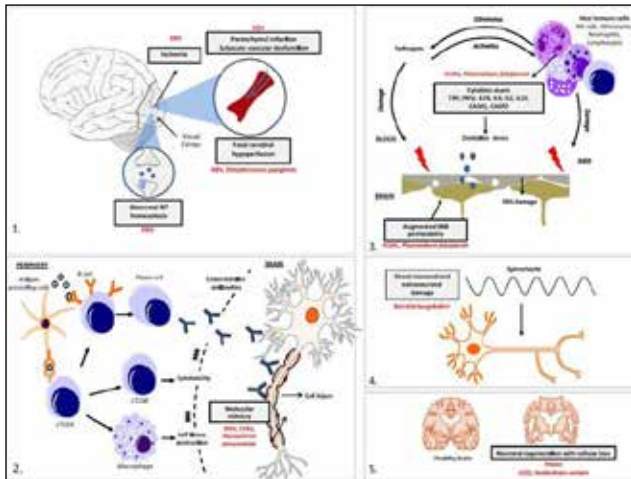
Researchers believe unusual electrical activity in the brain causes abnormal blood flow to the parts of the brain that process our environment and experience visual perception. This infrequent electrical bustle may be the result of several causes. Even if more research is needed, migraine is painstaking the leading cause for AWS in adults. Infection is painstaking the primary cause for AWS in children. Other possible causes include:

- infection
- brain tumours
- stress
- cough medicine
- use of hallucinogenic drugs
- epilepsy
- stroke
- head trauma
- migraines
- brain tumour
- acute Disseminated Encephalomyelitis^{4,7}

Pathophysiology

The TPO junction connects the temporo-occipital, parieto-occipital, and temporo-parietal junctions is where visual and somatosensory data are integrated to generate the inner and external representation of self. Other intricate perception can be professed by the patient if other areas of the brain are involved, evolving into complex somatosensory disorder. AIWS has been ascribed to the migrainous cortical dysfunction of the non-dominant parietal lobe.

Various studies have publicized that electrical stimulation of the parietal lobe chiefs to distortion in the size and length of the image perceived. Decreased perfusion to the non-dominant parietal lobe during an attack leads to discernment of symptoms. Generally, symptoms of AIWS can precede or accompany a migraine attack.⁹



Symptoms

- AIWS disorder may cause various numbers of symptoms like-
- **Dysmorphopsia:** Straight lines or edges appear to be wavy.
- **Macrosomatognosia:** A person’s own body feels much bigger than it is.
- **Microsomatognosia-**A person’s own body feels much smaller than it is.
- Visual hallucinations
- **Metamorphopsia** - visual distortions
- **Macropsia** - seeing images larger than normal
- **Micropsia** - seeing images smaller than normal
- **Achromatopsia** - inability to perceive colour
- **Teleopsia** - seeing farther than normal
- **Pelopsia** - seeing nearer than normal
- **Micropsia:** Objects seems much smaller than they really are
- **Macropsia:** Objects seems much larger than they are in real life
- **Teleopsia:** Objects seem further away than they are
- **Pelopsia:** Objects looks closer than they are
- **Partial/total body macro/micro-matognosia**

- Quick-motion phenomenon
- **Dysmorphopsia** – lines and contours look as if wavy
- Feeling of derealization, depersonalization, somatopsychic duality
- Alteration in judgement of time⁷

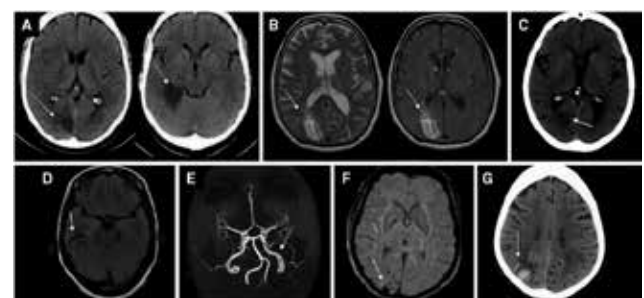
Symptomatic Types

Types	Obligatory symptoms	Facultative symptoms
A	Aschematia:partial or total macro-somatognosia or micro-somatognosia; paraschematia	Derealization, depersonalization, somatopsychicduality, aberration in judgement of time
B	Macro- and micropsia and/or tele- and pelopsia. When micropsia and telopsia seems at the same time and for the same object:porropsia Lilliputianism (people appearing smaller)	
C	Type A + type B symptoms	

Diagnostic Evaluation

- One or more episodes of self-experienced body schema illusion or metamorphopsia
- Duration < 30 min
- Accompanied by headache or a history of migraine
- MRI, CSF analysis, andEEG all normal. However, visual evoked potentials may be abnormal

The below picture shows different scanned photos of MRI in case of AIWS affected patients-



Treatment

There is no particular treatment for AIWS still. The superlative way to treat this condition is simply by helping the patient develop more comfortable with the perceptual problem which does not exist in reality. For instance, if the problem is caused by migraines, the treatment of the migraine itself may be the best way to assuage Lilliputian hallucination.

At present condition (2017), Lilliputian hallucination has no identical treatment plan. Since symptoms of Alice in Wonderland syndrome often disappear, either spontaneously on their own, or with treatment of the underlying disease, most clinical and non-clinical AIWS cases are considered to be benign. This unique condition is caused by underlying chronic disease, nevertheless, symptoms tend to reappear during the active phase of the fundamental cause (e.g., migraine, epilepsy). If treatment of Alice in Wonderland Syndrome is determined essential and useful, it should be engrossed on treating the suspected underlying disease. Treatment of these underlying conditions mostly involves remedial medications such as antiepileptics, migraine prophylaxis, antivirals, or antibiotics. Antipsychotics are seldom used in treating Todd's syndrome symptoms due to their minimal effectiveness.

Reported Cases

Report No. 1-A case of 24-year-old man with a identified cerebral vascular anomaly and seizures presented with a two-week history of visual and perceptual instabilities. Described visual disturbances comprise a physician "coming through a portal like Doctor Strange" to the patient's left side and the same physician's right shoulder and arm growing in size while the left hand was shrinking in size. Other perceptual disturbances contained within cars floating, people morphing into other people, and experiencing *jamais vu*. EEG proved nonconvulsive position epilepticus that was resilient to antiepileptic therapy with levetiracetam, phenytoin, and valproic acid. MRI of the brain revealed a right parietal cavernous deformity that increased in size as associated to prior imaging. A right parieto-occipital craniotomy with microdissection was made to separate the malformation from the normal brain parenchyma. Mutually gross and histological neuropathology were steady with an arteriovenous malformation. The patient was discharged from the hospital on levetiracetam and has had no reappearance

of symptoms since the resection of the arteriovenous malformation.¹¹

Report No. 2-A 69-year-old Thai man without an underlying illness presented with multiple episodes of transient visual disturbances of macropsia (seeing things larger than they are) including enhanced stereoscopic vision (an exaggeration of the depth and detail of visually alleged objects). The visual symptoms continued for a few seconds and were escorted by impairment of awareness, which his daughter described as not responding to others, for nearly a minute. He was seen chewing even nevertheless there was no food in his mouth. He has confronted those events 2 or 3 times per day for a twosome of months and more often in a week before he came to our hospital. He sometimes howled of palpitations as "rapid heartbeat" presently during the event. He did not reminiscence any dizziness, chest pain, shortness of breath, fever, headache, numbness, or weakness prior to each occurrence. He had not ever had symptoms like these before. He testified as a 35 pack-year times past and social drinking. He deprived of over-the-counter medication misuse, food and drug allergy, and a family history of unexpected cardiac death or epilepsy.¹⁰

Report No. 3-A case of 78-year-old emerus male - with comorbid condition of diabetes and hypothyroidism - was referred to the psychiatric department in Kolkata Medical college from ophthalmology of the same hospital for VH of 1-year time period. The patient had the previous history of unembellished depressive episode 2 years back and had not taken any psychotropic medications or psychoactive substances for more than 1 year. He too had a history of bilateral cataract, which had led to deterioration in his visual acuity over the last few years. He checked to his ophthalmologist 1 year ago, reporting VH. The ophthalmologist supposed CBS, and he was successfully operated for his cataract; however, the VH persisted.¹¹

Report No. 4-A 44-year-old gentleman, wedded and unemployed, had a history of bullous lesions over the tongue, palate and buccal mucosa. Dermatological assessment revealed bullae and crusted erosions over the forehead scattering toward the chest, abdomen, and ventral aspects of thighs. He responded unwell to dapson (100 mg/day), prednisolone (20 mg/day) and azathioprine (100 mg/day) for 10 weeks. While doing the MSE, a thought-provoking phenomenon

noted was the fruition of tiny Lilliputian hallucinations into gigantic Brobdingnagian hallucinations (size of 10 feet) on treatment with the combination of steroids. The illumination of the visuals could not fit dysmegalopsia or visual imagery. His tedious blood investigations and CT scan of the brain were within the normal bounds. A diagnosis of organic depression with psychotic indications was made by consultation-liaison psychiatry team and in progress on oral escitalopram up to 20 mg and risperidone up to 4 mg/day. Within a week of treatment, the size of hallucinations abridged back to tiny people (from 10 feet to 2 feet) while conserving the shape of them and completely resolved by the end of 2 weeks. His depression amended at the time of releasing from the department backed by MSE and drop in the Hamilton Depression Rating Scale which scores from 18 to 6.¹²

Conclusion

Lilliputian hallucination is a very rare as well as exceptional category of mental disorder but can be observed and scared by seeing various social media footages in you tube, Facebook and other sites. So, we, authors have tried to cover the allied information regarding the rarely known disorder. We expect that the readers will get enough information as well as interest about this special and unique type of hallucination.

List of Abbreviations

AIWS-Alice in Wonderland syndrome

MSE-Mental status examination

EBV- Epstein-Bar virus

CBS-Corticobasal syndrome

VH-Visual hallucinations

TPO-Temporo-parieto-occipital

MRI-Magnetic resonance imaging

CSF-Cerebrospinal fluid

EEG-Electroencephalogram

TPO-Thyroid peroxidase

CT-Computed tomography

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Ethical Clearance - Not required

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Effect of Vaginal pH on Efficacy of Prostaglandin Gel for Labour Induction

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Abstract

Background: Inducing Labour Is A Procedure Intended To Trigger Artificial Contractions Of The Uterus That Generally Involve Progressive Erasure And Dilation Of The Cervix. This Will Hopefully Lead To The Birth Of A Baby Through The Vaginal Route.

Objective: To Assess The Effect Of Vaginal Ph On Efficacy Of Prostaglandin Gel For Labour Induction

Methods: A Total Of 200 Women With An Unfavourable Cervix Were Enrolled In This Retrospective Study. In Group I, There Were 100 Cases With Vaginal Ph Of ≤ 4.5 And In Group Ii, 100 Cases With Vaginal Ph Of > 4.5 . Patients With Minimal Change In Bishop Score, Received Up To 3 Doses Of Prostaglandin Gel Intracervically, 6 Hours Apart. Women Who Had No Change In Bishop Score At The End Of Induction With 3 Doses Of Prostaglandin Gel, Were Further Reassessed.

Results: In Terms Of Maternal Age, Parity, Gestational Age, And Initial Bishop Score, There Was No Significant Difference Between The Two Groups. Prior To Induction Of Labour, The Average Bishop Score Was 3.6 ± 0.9 In Group I And 4 ± 1.0 In Group Ii. Out Of 200 Cases, 33% Cases Required Oxytocin Infusion In Group I And 13% In Group Ii.

Conclusion: Parity Has A Major Impact On The Pre-Induction Of The Bishop Score And The Ph Itself Has A Vaginal Influence. Knowing The Pre-Induction Vaginal Ph May Also Be A Helpful Method For Determining The Outcome Of Pge2 Induction.

Keywords: Vaginal pH, Labour, Induction, Pge2 Gel

Introduction

Labour Induction Is A Procedure That Artificially Induces Uterine Contractions, Culminating In Cervical Effacement And Dilation. This Should Ideally Culminate In The Baby Being Born By Vaginal Delivery.¹

One Of The Most Prevalent Obstetrical Interventions Is Induction Of Labour. The Most Routine Way Of Inducing Labour Is Using Prostaglandins. Induction Of Labour In An Unfavourable Cervix Has A Varied Response To Pge2.² The Ph Of The Vaginal Fluid Is Hypothesised To Play A Role In Inducing Labour. During Pregnancy, The Ph Of The Cervix Normally

Ranges Between 6 And 7. The Ph Of The Vaginal Fluid Is Regulated Between 3.8 And 4.8.³ Lactobacillus Is A Healthy Vaginal Flora That Generates Lactic Acid, Which Causes An Acidic Vaginal Ph. Lower Genital Tract Infections, Ruptured Membranes, Douching, And Other Factors Might Affect Vaginal Ph During Pregnancy.⁴

Prostaglandins Are Organic Acids With A Low Ph And Limited Solubility In Aqueous Solution. The Acidity Of The Vaginal Mucosa May Affect The Drug's Release, Resulting In A Varying Clinical Reaction. The Effectiveness Of Intravaginally Administered Prostaglandins May Be Affected

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By Vaginal Ph. Various Potential Causes Include Changes In Prostaglandin Uptake And Metabolism.⁵

The Influence Of Vaginal Ph On The Efficiency Of Intracervical Prostaglandin Gel Administration In Preinduction Cervical Ripening Is Ambiguous, And There Is A Paucity Of Research On The Topic. That's Why This Study Was Undertaken.

Materials and Methods

Study Design: Random Prospective Observational Study

Study Population: Both Pregnant Women Aged 18-35 Who Had Been Admitted Into Safe Confinement In The Department Of Obstetrics And Gynecology And Were Between 37 And 42 Weeks Of Gestation Were Enrolled. All Participants Had A Diagnostic Or Obstetric Indication For Labour Induction.

Sample Size: 200 Women Divided Equally Into 2 Groups

Inclusion Criteria:

- Pregnant Women With Singleton Pregnancy With Foetus In Vertex Presentation >37 Weeks Of Gestation With Unfavourable Bishop's Score ≤ 5 Were Included.

Exclusion Criteria:

- Women With Following Conditions Such As Cephalopelvic Disproportion, Ruptured Membranes, Suspected Chorioamnionitis, Abnormal Vaginal Discharge, Parity >4, Previous Lscs Or H/O Uterine Surgery, Severe Iugr, Severe Pre-Eclampsia, Abruptio Placenta And Abnormal Nst Were Excluded From The Study

Prior To The Commencement Of Study Informed Consent Form Was Obtained. Once The Patient Who Required Induction Was Admitted In Labour Room, Vaginal Ph Was Measured Prior To Per Vaginal Examination. A Speculum Analysis Was Performed To Each Participant; And The Ph-Value Of The Vaginal Was Measured Using A Wide And Narrow Ph Paper. The Participants Were Classified Into Two Subgroups As Group I And Group Ii Depending On Their Vaginal Ph. Group I Comprised Patients With Vaginal Ph ≤ 4.5 And Group Ii Included Vaginal Ph >4.5 And Discrepancies Within Groups With Regard To Menstrual Age, Parity, Gestational Age Were Recorded. After Ph Measurement, The Bishop Score Was Calculated On The Basis Of The Following

Parameters: Cervical Dilation, Cervical Deletion, Cervical Continuity, Cervical Location, Foetal Station. A Score Of 0-2 Or 0-3 Was Given To Each Part. The Highest Possible Score Was 13 And <5 Is Unfavourable If Induction Is Necessary.

All Women Were Induced With The Initial Dose Of Intracervically Placed Prostaglandin Gel (0.5 Mg). The Patient Was Advised To Stay Reclusive For A Period Of 30 Minutes After Application. A Repeat Score From The Bishop Was Done After Initial 6 Hours Of Cervical Maturation. All Participants Were Exposed To The Uniform Intrapartum Care Regimen. Those Women With Minimal Change In Bishop Score, Received Up To 3 Doses Of Prostaglandin Gel Intracervically, 6 Hours Apart. Women Who Had No Change In Bishop Score At The End Of Induction With 3 Doses Of Prostaglandin Gel, Were Further Reassessed. Women Who Had Any Improvement In Bishop Score But Are Not In Sufficient Labour Got Oxytocin Infusion For Improvement. The Shift In Bishop's Score Over 6 Hours, Induction-Active Step Interval, Induction-Interval Of Delivery, Mode Of Delivery And Neonatal Outcome Is Recorded For Both Groups.

Statistical Analysis: Spss 22 Software Was Used For Statistical Analysis. The Data Was Presented In The Form Of Means And Percentages. $P < 0.05$ Was Considered Statistically Significant.

Observations and Results

Table 1: Distribution Based On Baseline Characteristics

Characteristics	Group - I (mean \pm SD)	Group - II (mean \pm SD)	p-value
Maternal age (in years)	26.5 \pm 4.5	25.7 \pm 4.1	0.911
Gestational age (in weeks)	39.3 \pm 0.9	38.8 \pm 1.4	0.954
Vaginal pH	4.1 \pm 0.2	5.1 \pm 0.3	<0.001
Initial Bishop score	3.6 \pm 0.9	4.0 \pm 1.0	0.884

The Age Group Ranged From 18 To 35 Yrs And The Mean Age In Group I Was 26.5 Years And Group Ii Was 25.7 Years. The Majority Of Patients Were Having 37 To 41 Weeks Of Gestational Age The Mean Gestational Age Was 39.3 Weeks In Group I And 38.8 Weeks In Group Ii. There Was No Statistically Meaningful Correlation Between The Two Classes With Regard To Maternal Age, Gestational Age,

Parity And The Original Bishop Scores. Around 60% In Group I And 37% In Group Ii Had A Pre-Induction Bishop Score Of 4. The Mean Bishop Score Before Labour Induction Was 3.6 ± 0.9 In Group I And 4 ± 1.0 In Group II.

Table 2: Comparison Of Vaginal pH With Various Factors

Maternal Age	Group - I	Group - II
≤25years (n, %)	49(49%)	46(46%)
>25years (n, %)	51(51%)	54(54%)
Parity		
Primi	68 (68%)	62(62%)
Multi	32 (32%)	38(38%)
Number of inductions		
One	53(53%)	70(70%)
Two	27(27%)	23(23%)
Three	20(20%)	7(7%)
Induction-Active phase interval		
≤6 hours	40(40%)	60(60%)
>6 hours	60(60%)	40(40%)
Mode of delivery		
Vaginal delivery	90(90%)	87(87%)
LSCS	10(10%)	13(13%)

No Significant Correlation Has Been Identified Between Vaginal Ph And Maternal Age. Patients With A Higher Vaginal Ph (>4.5) Required Higher Number Of Inductions Compared To Patients With Lower Vaginal Ph, But This Observation Was Not Statistically Significant. Majority Of The Patients In Both Groups Required Only One Dose Of Pge2 To Initiate Labor. The Number Of Vaginal Deliveries Was Comparable In Both Categories, 90% In Group I And 87% In Group Ii. The Caesarean Section Was Comparable In Both Groups (10% Vs 13%). There Was No Substantial Variation Between Groups In The Mode Of Delivery.

Table 3: Comparison of Labour Outcomes

Outcome	Group - I	Group - II	P - value
Bishop score changes over 6 hours (Median Q1 to Q3)	10(1-9)	23(2-9)	0.023

Outcome	Group - I	Group - II	P - value
Augmentation required (%)	33.3%	13.3%	-
Induction- Active phase interval in minutes (Median time, (Q1 to Q3))	390 (240-630)	420 (300-720)	0.771
Induction delivery interval in minutes (Median Q1 to Q3)	510 (390-855)	580 (312-870)	0.976

In Group II, Bishop's Score Changes Over 6 Hours After The Start Of The First Intracervical Prostaglandin Gel Were Significantly Higher Than Those In Group I (23 Vs 10 Cases. No Significant Correlation Has Been Identified Between Vaginal Ph And Induction-Active Step Interval, Induction-Delivery Interval. Out Of 200 Cases, 33% Cases Required Oxytocin Infusion In Group I And 13% In Group II.

Table 3: Neonatal Outcome.

Neonatal Outcome	Group - I	Group - II	P - value
Birth weight (in kgs)	3.05±0.5	3.06±0.4	0.996
5min APGAR score < 7	0	0	-
NICU admission (n %)	7(7%)	10(10%)	0.466

The Average Birth Weight, Apgar Score At 5 Minutes, Need For Nicu Admission Outcomes Were Nearly Similar In Both The Groups. Total 17 Babies Required Nicu Care, Of Which 7 Were From Group I And 10 From Group Ii. Most Common Indication For Nicu Admission Was Respiratory Morbidity In Both The Groups. All Babies Were Discharged Within A Week. No Perinatal Morbidity In Both The Groups.

Discussion

There Was No Statistically Significant Difference In Bishop's Score Changes Between The Two Groups Following The First Dosage Of Prostaglandin Gel. There Was No Statistically Significant Correlation Between The Number Of Gels Required To Ripen The Cervix And Vaginal Ph. The Duration From

Induction To Active Labour, Rupture Of Membranes, And Vaginal Delivery Did Not Differ Substantially Between The High And Low Vaginal Ph Groups. In Individuals With Varied Vaginal Ph, There Was No Significant Variation In Mode Of Delivery.

Few Previous Studies Have Shown Contradictory Results.^{6,7} A Study Of The Influence Of Vaginal Ph On Intracervical Prostaglandin Gel Administration Found That Individuals With High Vaginal Ph Had A Considerably Higher Bishop's Score Prior To Induction And Had Higher Vaginal Delivery Rates.⁸

Similar Research Using Intracervical Prostaglandin Gel Found A Statistically Significant Difference In Labour Result Between Vaginal Ph Groups. There Was A Shorter Time To Active Labour, Full Cervical Dilation, And Delivery In Individuals With A High Vaginal Ph.⁹

According To Studies On Pg Vaginal Inserts, Vaginal Ph Had An Influence Solely On The Change In Bishop's Score Following The First Dosage Administration.^{10,11} They Found No Difference In Other Outcomes With A Change In Vaginal Ph.¹²

The Findings Of This Study Reveal That Changes In Vaginal Ph Have No Influence On The Efficacy Of Pg Intracervical Administration. Since The Cervical Ph In Pregnant Women Ranges Between 6 And 7, Triacetin-Based Pge2 Preparations Are Appropriate For Intracervical Administration As Vaginal Ph Is Unaffected. Instead Of A Preset Induction Approach For All Women, Evaluating Cervical And Vaginal Ph For Each Patient And Selecting The Optimal Prostaglandin Preparation For Their Ph Will Aid In Effective Induction.

Strengths and Weakness:

- Our Study's Strength Is Its Big Sample Size. In Our Study, Strict Exclusion Criteria Were Applied, Which Helped To Eliminate Confounding Bias.
- Cervical Ph, On The Other Hand, Could Have Been Measured, Which Would Have Aided In Comparing Vaginal And Cervical Ph With Pge2 Efficacy And Labour Progress. This May Have Shed Further Insight On The Research.

Conclusion

Our Research Showed That The Vaginal Ph Doesn't Seem To Have A Significant Impact On

The Effectiveness Of Prostaglandin Gel In Cervical Maturation And Labour Induction. However, Our Research's Observational Evidence Indicates That Vaginal Ph Is Unlikely To Impact The Effectiveness Of Prostaglandin Gel.

Ethical Clearance: The Ethical Clearance Was Obtained From The Institutional Ethics Committee Prior To The Commencement Of The Study.

Conflict Of Interest: Nil

Source Of Funding: Self

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Ophthalmic Manifestations in Blood Dyscrasias - An Observational Study

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Abstract

Aim: The present study was conducted to study the spectrum of ophthalmic manifestations in blood dyscrasias and to assess the prevalence of ocular manifestations between acute and chronic blood malignancies.

Material and Methods: The Present observational study was conducted on a total of 200 patients diagnosed with blood dyscrasias at the Department of Ophthalmology, tertiary care hospital, Bhuj, during the study period of 2 years. Detailed history and examination were conducted, and findings were noted. All relevant haematological investigations were also done.

Results: Out of 200 patients, anemia was the most common diagnosis observed in 70 (35%) cases, followed by sickle cell anemia 54 (27%). Out of 70 patients with anemia, the majority of cases, i.e. 33, had iron deficiency anemia followed by 13 and 5 cases with megaloblastic and aplastic anemia, respectively. Retinal Veinous Tortuosity was the most common finding in Thalassemia. In contrast, Veinous Fullness and Tortuosity and sub - conjunctival bleeding were the most common finding in patients with leukemia and coagulation disorders, respectively.

Conclusion: The ocular changes of blood dyscrasias are not uncommon as is proved by various clinical and pathological studies. These changes in the eye are due to the hemorrhagic effect of the blood disorders or due to the infiltration of the ocular tissues by malignant cells. Ophthalmic manifestations are commonly observed in patients with blood dyscrasia.

Keywords: Anemia, Blood dyscrasias, Retinal Veinous Tortuosity, Sub - conjunctival bleeding

Introduction

The blood is common to every tissue, and its disorder can affect any part of the body. Anemia is the most common haematological disorder in India, which the pallor of palpebral conjunctiva can identify, although not a highly accurate index of severity of anemia. Damage by anemia can be an indicator for retinal damage manifesting as haemorrhage or pallor.¹ As the disease progresses, haemorrhages, exudates, distended tortuous retinal veins and ultimately even papilloedema may occur in the ocular fundus.²

The word dyscrasia comes from the Greek language and means "bad temperament". An

increase or decrease in the total number of red cells in a given patient is referred as polycythaemia or anemia respectively.³ A large population of atypical or neoplastic white blood cells within the blood constitutes leukemia. A subnormal number of platelets in the circulating blood or loss of normal platelet function can lead to bleeding disorders or coagulopathies.⁴

The ocular fundus examination offers a unique opportunity for direct observation of small blood vessels and vascular lesions. In any systemic condition, fundus examination helps in the diagnosis and/or prognosis of the condition.⁵ Besides the skin

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and mucous membranes, where blood dyscrasias can sometimes produce visible symptoms, the retina presents our best early diagnostic opportunity. Indeed, significant ocular manifestations are not uncommon in these disorders and vision related issues may be the presenting symptom.⁶ However, since patients may often present without symptoms, a review of retinal signs associated with blood dyscrasias is warranted.

Changes in the retina are the most common clinical manifestation of Leukemic involvement of the eye. These manifestations include vascular sheathing and tortuosity, pallor, haemorrhages and exudates, cotton wool spots and neovascularization at the periphery of the disc.⁷ The presence of ocular involvement is associated with poor prognosis in acute childhood leukaemia.⁸ Coagulative disorders such as Purpuras can present with haemorrhages involving the whole of the retina and vitreous in young girls, especially those who suffer from Idiopathic thrombocytopenic purpura.⁹ Sickle cell disease can present with lid edema, conjunctival sickling sign, iris atrophy, and iris neovascularisation and angioid streaks. In the sickle cell, Thalassaemia exudative and haemorrhagic changes have been found in the retina.¹⁰ Notably, the incidence of proliferative retinopathy is highest in patients with HbSC or S-beta Thal, while patients with HbSS have a 3% incidence of proliferative retinopathy.¹¹

Various reports indicate that there exists a link between haematological abnormality and ocular manifestations.⁸ Ocular manifestations of thrombocytopenia included papilloedema, extraocular muscle palsies and visual field defects, which usually result in concomitant CNS findings. Retinal findings consist of hemorrhages, vascular occlusions and serous detachments.

The present study was conducted to study the spectrum of ophthalmic manifestations in blood dyscrasias and to assess the prevalence of ocular manifestations between acute and chronic blood malignancies. The study also aimed to correlate ophthalmic findings in anaemia, thalassaemia, leukaemia, lymphomas and other bleeding disorders.

Material and Methods

Patients with blood dyscrasias referred for complete ophthalmic examination from the Department of Medicine and Paediatrics to Department of Ophthalmology, Gujarat Adani Institute of Medical

Science, Bhuj were included in the study for the duration of 2 years. Sample size was 200 patients diagnosed with blood dyscrasias.

Ethical approval was taken from the institutional ethical committee and written informed consent was taken from all the participants.

Inclusion criteria: All the patients diagnosed with blood dyscrasias, including anaemia, thalassaemia, leukaemia and bleeding disorders; belonging to an age group of fewer than 70 years and giving consent for the complete ophthalmic examination.

Exclusion criteria: whereas pregnant females; patients with the known ocular disorder; with a history of any ocular trauma due to RTA/head injury/ocular injury and not giving consent for the study.

Detailed history regarding sociodemographic variables such as age, gender, socioeconomic status etc., was obtained and entered the questionnaire. Clinical history regarding the blood dyscrasias, presence of ocular symptoms, time since diagnosis, chemotherapy received, and other relevant information was obtained from all the study participants and documented. The examination of the eyes was carried out at the bedside or in the eye department. Visual acuity was recorded using Snellen charts, and refractive error was assessed. Anterior segment examination was done using a slitlamp. Intra-ocular pressure was measured using schiottz tonometer and applanation tonometer. Fundus examination was done by slit-lamp biomicroscopy, binocular indirect ophthalmoscopy. Fundus Fluorescein angiography and fundus photography were done wherever indicated. Additional procedures including Fundus Fluorescein Angiography (FFA) and OCT, B-SCAN of the eyes, central nervous system examination was done in cases suggested.

Further, all relevant hematological investigations like Hb%, TLC, DLC, peripheral smear, reticulocyte count, serum iron studies, bleeding and coagulation profile, serum iron studies were done in all the cases. Other routine investigations like serum electrolytes, urine routine microscopy, blood sugar profiles were ordered wherever indicated. And appropriate hematological/ histopathological investigations like bone marrow studies were ordered whenever indicated.

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

Out of 200 patients, anemia was the most common diagnosis observed in 70 (35%) cases, followed by sickle cell anemia 54 (27%). Out of 70 patients with anemia, the majority of cases, i.e. 33, had iron deficiency anemia followed by 13 and 5 cases with megaloblastic and aplastic anemia, respectively. However, anemia secondary to other causes was observed in 19 cases. Out of 54 patients with sickle cell anemia, Sickle Cell Anaemia (Homozygous) Hb-SS was seen in 27 (50%), Sickle Cell Trait (SC-As) in 18, Sickle Cell Disease-Thalassemia (ScThal) in 7 and HbD (Punjab variant) were noted in 2 cases. Among 18 patients, AML, ALL, CML and CLL were observed in 5, 3, 9 and 1 cases, respectively.

The majority of cases were males in our study (52%). The mean age of patients was 27.8 years, and the majority of patients belonged 0 to 10 years (29%), followed by 30 to 40 years (22%). (Table 1)

In patients with anemia, 57.14% of cases had normal results, whereas 37.14% had conjunctival pallor. However, in sickle cell anemia, conjunctival pallor and comma sign was observed in 61.1% of cases each. Retinal Veinous Tortuosity was the most common finding in Thalassemia. In contrast, Veinous Fullness and Tortuosity, and subconjunctival hemorrhage were the most common findings in patients with leukemia and coagulation disorders, respectively. (Table 2)

The above table suggests that the most common findings in blood dyscrasias were pallor of the fundus and veinous tortuosity/ fullness. Both these findings were observed in maximum proportions of cases with anemia, sickle cell anemia and Thalassemia. However, retinal hemorrhages were the most common finding in leukemia, whereas Veinous Tortuosity/ Fullness were the most common finding in coagulation disorders.

Table 1: Distribution of study participants according to sociodemographic variables

	Variables	Number	Percentage (%)
Gender	Male	104	52
	Female	96	48
Age (years)	0-10	58	29
	11-20	44	22
	21-30	46	23
	31-40	44	22
	41-50	30	15
	51-60	6	3
	>60	2	1

Table 2: Ophthalmic manifestations in various blood dyscrasias

Blood dyscrasias	Ophthalmic finding	Number	Percentage (%)
Anemia (n=70)	Normal	40	57.14
	Conjunctival Pallor	26	37.14
	The pallor of fundus, Veinous Tortuosity/venous Fullness	25	35.7
	Flame Shaped Haemorrhages With White Centres	20	28.5
	Superficial Haemorrhages With Cotton Wool Spots	7	10
	Neo- Vascularisation	4	5.71
	Subhyaloid Haemorrhage	3	4.2

Blood dyscrasias	Ophthalmic finding	Number	Percentage (%)
Sickle cell anemia (n=54)	Conjunctival Pallor	33	61.1
	Conjunctival Sign (Comma Sign)	33	61.1
	Normal	20	37.03
	The pallor of fundus, Veinuous Tortuosity/venous Fullness	32	59.25
	Flame Shaped Haemorrhages With White Centers	26	48.1
	Cotton Wool Spots	15	27.7
	Retinitis Proliferans with Neovascularisation	3	5.5
	Black Sunburst Sign	1	1.85
	Vitreous Haemorrhage	3	5.55
Thalessemia (n=40)	Normal	19	47.5
	Dry eye	4	10
	Lenticular Opacities	3	7.5
	Retinal Veinuous Tortuosity	13	32.5
	Retinal Pigment Epithelium Changes(Degeneration/ Mottling)	11	27.5
	Defective Color Vision	3	7.5
	Defective Visual Field	2	5
Leukemia (n=18)	Normal	5	27.7
	Orbital Involvement	1	5.5
	Sub-Conjunctival Haemorrhage	1	5.5
	Veinuous Fullness and Tortousity	13	72.2
	Flame Shaped Haemorrhage with White Centers	9	50
	Cotton Wool Spots	3	16.6
	Pre-Retinal Haemorrhage	5	18
	Papilloedema with Neo-Vascularisation Over Disc	3	16.6

Discussion

Many studies and case reports highlighting the ocular manifestations of different blood dyscrasias are present in the literature. However, the results shown by them are not uniform and the significance of these changes and their relationship with hematological parameters has been reported differently by various studies.⁹⁻¹¹ There are, however, certain common denominations in these diseases which predispose to the formation of retinal lesion.¹²

The maximum number of patients had iron deficiency anemia which is a common factor in our country. Anemia was observed in patients with a mean age of 27.8 years with a slightly high male: female ratio. In our study, around 39% of cases with anemia had retinopathy. Similarly, 28.35% and 22.5% of patients had retinopathy in a survey by Rubenstein et al.¹² and Merin et al¹³, respectively. The subsequent common finding comprised of flame-shaped haemorrhages

and haemorrhages with central pallor suggestive of Roth spots. It has been documented in the literature that fundus findings have been associated with a profound fall of haemoglobin, and a critical level of 50% fall has been described by Ballantyne et al.¹⁴

Out of 54 patients with sickle cell anemia, 33(61.1%) patients had conjunctival sign positive in them, and 20 of them belonged to SS, had AS, and 5 were cases of sickle- thalassemia trait. Cordon et al¹⁵ reported corkscrew-like dilated conjunctival vessels in 74 out of 76 SS patients. They correlated this finding with irreversibly sickled cells.

The authors described retinitis proliferans to be common in HbC (SC) and auto- infarction in homozygous (SS) disease. Meurs et al¹⁶ observed proliferative retinopathy in 2% of SS patients and 50% of SC patients. It led to vitreous hemorrhage in 18% and RD in 8% of cases.

In this study, 18 cases with leukaemia were enrolled, of which chronic leukaemia was found more in number than acute leukaemia. About 75% of subjects had venous fullness and tortuosity, 50% of patients had flame-shaped hemorrhage with white centres, however, 16.6% had neovascularisation on the disc and cotton wool spots in the general fundus, and 16.6% had bilateral papilloedema. Retinopathy in leukemia was observed in 56% of Kataria et al¹⁷ and 44% cases by Holt et al¹⁸. The wide variation in incidence of ocular involvement in these studies may be ascribed to majority of them being pathological studies whereas ours was a clinical study. The figures of retinal hemorrhages in all types of leukemia are 43% by various studies.¹⁹⁻²¹

Most common ocular finding in patients with Thalassemia was retinal venous tortuosity followed by retinal pigment epithelium changes. Similar findings were observed by Jafari et al.²² in which ocular findings such as the dry eye, cataract, retinal pigment epithelium degeneration, colour vision deficiency and visual field defects were detected in 69% of the thalassemic group. Barteselli et al.²³ reported ocular fundus abnormalities characteristic of pseudoxanthoma elasticum (PXE) in 70 of 255 patients (27.8%) with Thalassemia. These findings were supported by Sodhi et al²⁴, in which the authors stress subconjunctival bleeding as the first presenting clinical feature in ITP. Retinal hemorrhages were noted in around 44 % of the cases in our study. This was in agreement with several studies.^{11,25}

Conclusion

The ocular changes of blood dyscrasias are not uncommon as is proved by various clinical and pathological studies. These changes in the eye are due to the hemorrhagic effect of the blood disorders or due to the infiltration of the ocular tissues by malignant cells. Ophthalmic manifestations are commonly observed in patients with blood dyscrasia. The routine ocular examination must be conducted in blood dyscrasias; especially posterior segment evaluation should be mandatory in severe anaemia/sickle cell haemoglobinopathy and leukaemia, which is both diagnostic and prognostic of the severity of this disease. Also, there is a need to develop a standard referral protocol between the haematology clinic and the eye clinic so that blood dyscrasia patients can have periodic evaluations.

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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A Comparative Study of Hernioplasty With Suction Drain and Without Suction Drain in Inguinal Hernias at Tertiary Care Hospital

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Abstract

Background: Inguinal hernia occurs in about 15% of adult population and inguinal hernia repair is one of the most commonly performed surgical procedure. In the era of minimal invasive surgery, hernia repair has seen a paradigm shift from open to laparoscopic technique.

Objectives: To assess the outcome of drain placement Vs no drain use, in patients undergoing open mesh repair of inguinal hernias.

Methods: This is a prospective study comprising of 50 patients of inguinal hernia over a period of 23 months. The patients were randomized into 2 groups - With and without the use of drains. The patients underwent open inguinal hernia mesh repair by a standardized method. The outcome of seroma formation, hematoma formation, infection at surgical site, and duration of hospital stay was recorded and analyzed.

Results: In the present study 16% of cases in drainage group and 20% in non-drainage group developed post operative wound infection. P value is insignificant. The mean post operative hospital stay in drainage group was 9.7 days and in non-drainage group was 6.7 days.

Conclusion: The early post operative complications like seroma, hematoma, wound infection rates are similar in both drainage and non-drainage groups. So, it appears that suction drain usage can be restricted in Lichtenstein's tension free mesh repair in simple inguinal hernias unless hernia is complicated or there is extensive dissection

Keywords: Hernioplasty, Inguinal Hernias, Seroma, Lichtenstein

Introduction

Hernia is defined as a protrusion of a viscus or a part of a viscus through an abnormal opening in the walls of its containing cavity.¹ Most commonly seen in the inguinal region followed by paraumbilical/incisional hernia. Inguinal hernia occurs in about 15% of adult population and inguinal hernia repair is one of the most commonly performed surgical procedure. In the era of minimal invasive surgery, hernia repair has seen a paradigm shift from open to laparoscopic technique. Evolution in the treatment

of inguinal hernias has equalled to the technological developments in this field. The most significant advances to impact inguinal hernia repair have been the addition of prosthetic materials to conventional tissue repairs.²

The laparoscopic inguinal hernia repair includes Totally Extraperitoneal approach (TEP)/Trans Abdominal Preperitoneal approach(TAPP).³ Following introduction of mesh for hernia repair, newer measures focus on post hernioplasty pain syndrome, quality of life and return to normal

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activities. They show although laparoscopic operation takes longer to perform, proven advantages are reduced pain both following surgery, more rapid return to full activity and reduced chance of wound complications. They commonly occur due to pre-existing risk factors which include age, obesity, chronic obstructive pulmonary disease (especially emphysema), diabetes mellitus, smoking, drug intake around the time of surgery (like steroids), infection at the surgical incision site. The prosthetic materials available for inguinal hernia repair may be of Biological or Synthetic type. Because of various factors, like the increased cost and non-availability, the biological mesh use is very less. The synthetic materials are used more frequently.⁴

Available synthetic meshes include polypropylene (Prolene, Marlex), expanded PTFE (Gore-tex) and polyester Prolene mesh is the most commonly used material in our institute for open repair of inguinal hernias. Regardless of the technique employed in open repair of inguinal hernias the use of drains is almost universal, especially for large hernias. Insertion of drain is usually to evacuate the blood and fluid collection, which might happen in the potential space created, and to allow tissue apposition and better healing. Hence traditional teaching tells us that drains reduce the accumulation of fluid and blood, which reduce the incidence of postoperative hematoma, seroma and wound infection, and thereby reduce the recurrence of inguinal hernia.⁵

However, many have found no discernable benefit of the insertion of drains, while others have in fact found a better outcome without the insertion of drains. The proponents of no-drain insertion also argue that the complications of inserting a drain can be avoided.

Materials and Methods

Study design: Comparative study.

Setting: Department of General Surgery, Osmania General Hospital, Hyderabad. **Study population:** Patients admitted to department of General Surgery during the period of the study.

Study period: 18 months From 14th October 2019 to 5th December 2021.

Sample size: This is a prospective study comprising of 50 patients of inguinal hernia over a period of 23 months

Inclusion Criteria:

1. Age >18 years of age
2. Patients giving consent for participation in the study.
3. Patients fit for surgery.
4. All patients with reducible non obstructive direct or indirect inguinal hernia

Exclusion criteria:

1. Patients not willing to participate in the study
2. Patients not fit for surgery.
3. All the patients with irreducible or obstructed or recurrent inguinal hernias.

All patients fitting the inclusion criteria for the study were. Data collection was done in the ward. The patients were planned for an ultrasound between 7-10 days, and necessary arrangements done.

In order to assess the outcome of patients undergoing open inguinal hernia mesh repair, with and without the use of drains, the patients were randomized into 2 groups - With and without the use of drains. The patients underwent open inguinal hernia mesh repair by a standardized method. The outcome of seroma formation, hematoma formation, infection at surgical site, and duration of hospital stay were recorded and analyzed.

Intraoperative procedure

- Open Inguinal Hernia repair.
- Polypropylene Mesh (Ethicon) used.
- Skin to be closed by 3-0 Prolene.

Postoperatively, they were followed up in the ward by examination of the wound following dressing removal prior to discharge. In the out-patient department, they were reviewed at the first outpatient department visit. An ultrasound examination was done for patients who did not have wound gaping or intervention or a clinically obvious seroma.

Statistical methods: Data entry was done using the Epidata software version 3.1. Descriptive statistics were computed with use of the SPSS software (version 21). Sample size was calculated. Data Analysis was done using SPSS software and p values were computed with Pearson's Chi square.

Observation and Results

Table 1: Distribution based on Age group

AGE GROUP	NO. OF CASES	PERCENTAGE
10-20	1	2%
21-30	8	16%
31-40	8	16%
41-50	10	20%
51-60	15	30%
61-70	7	14%
71-80	1	2%

Over the period of study only male patients presented with inguinal hernia. The age of patients ranged between 18 to 80 years. In the study majority of patients presented between 50-60 years of age.

Table 2: Type and location of Hernia

TYPE	NO.OF CASES	PERCENTAGE
DIRECT	21	42%
INDIRECT	29	58%
BOTH	0	0%
LOCATION		
RIGHT	25	50%
LEFT	22	44%
BOTH	3	6%

In the present study 42% cases were of direct type and 58% cases were of indirect type. In present study 56% cases had right sided hernias and 44% had left sided.

Table 3: Distribution based on pain

TYPE	C/O OF PAIN	No Significant pain	Percentage
Drainage group	8	17	32%
Non-drainage group	2	23	8%

In drainage group pain was seen in 8 patients as compared to 2 in non-drainage group.

Table 4: Distribution based on Hematoma and Seroma group

TYPE	HEMA-TOMA	NO HEMATO-MA	PER-CENT-AGE
Drainage group	0	25	0%

TYPE	HEMA-TOMA	NO HEMATO-MA	PER-CENT-AGE
Non-drainage group	1	24	4%
TYPE	SERO-MA	NO SEROMA	
Drainage group	3	22	12%
Non-drainage group	3	22	12%

In our study 0% and 4% of patients developed hematoma in drainage and non-drainage group. The difference was statistically insignificant (p -value > 0.05)

Table 5: Distribution based on Post-operative complications and hospital stay

TYPE	INFECTION	NO INFECTION	PERCENT-AGE
Drainage group	4	21	16%
Non-drainage group	5	20	20%
Hospital stay			
Average hospital stay	9.1	6.7	

In the present study 16% of cases in drainage group and 20% in non-drainage group developed post operative wound infection. P value is insignificant.

In the present study, patients in drainage group mean post operative hospital stay is 9.7 and in non-drainage group is 6.7 days.

Discussion

The use of drains in elective surgery appears to be a never ending story. The increasing use of minimally invasive techniques for hernia repair has raised new interest in reducing discomfort after open hernia repair. Such discomfort may be in part may be due to insertion of drains into wound area. Another though slightly minor issue is the need for drains regarding to treatment cost. Finally may be undesirable when surgery needs to be performed as an outpatient procedure. On the other hand all of us recall patients with large and unpleasant seromas and hematomas following hernia repair. Such seromas and hematomas may cause considerable discomfort and embarrassment to the surgeon. PAIN Residual

neuralgia following Lichtenstein meshplasty represents the mosting vexing complication in the inguinal region. In some cases, the post operative pain can be debilitating requiring re-exploration and dividing of the nerves. In the present study only immediate post operative pain was evaluated.⁶ 32% of patients in the drainage group complained of pain whereas 8% of patients complained of pain in non drainage group. P value being less than 0.05, difference was significant. In a previous study, there was no significant difference in pain following Lichtenstein mesh hernioplasty with and without drains(95% vs90%). Here p value is insignificant.⁷

Hematoma: Bleeding from either artery or vein may result at all anatomic levels during an inguinal hernia repair resulting in hematoma formation. In our study 0% and 4% of patients developed hematoma in drainage and non-drainage group respectively. The difference was insignificant (p value >0.05).

Seroma: In the present study 12% of patients in drainage group developed seroma and 12% of patients in non-drainage group developed seroma.

Studies concerning post operative drainage to prevent seroma are contradictor. In two RCTs of patients following open intervention, no advantage was observed. The risk of seroma is rarely big enough to necessitate leaving a drain, except in a case of excessive diffuse blood loss or patients with coagulopathies.⁸

Infection: Infection represents a dreaded complication for all types of surgeries and it is no difference in inguinal hernia surgeries. Inguinal hernia surgeries complicated by infections have a higher rate of recurrence as the repairs are destroyed along with the tissues. Furthermore, it is important to recognize superficial from deep infections as deep infections are ominous and requires removal of mesh. In the present study 16% of cases in the drainage group and 20% of patients in the non-drainage group developed post operative superficial wound infection. None of the patients required removal of mesh.

The risk increased with increased duration of wound drainage. In a previous study presence of risk factors for wound infection based on surgery are the use of drains and the use of antibiotic prophylaxis.⁹

Post operative hospital stay: In the fast paced life of today, duration of mean hospital stay after surgery may be the determining factor when the rates of other

complications are comparable. In our present study the mean hospital stay in case of drainage group is 9.1days whereas in non-drainage group is 6.7days

In a previous study, post operative hospital stay is 2.9 days in drainage group and 1.48 days in the non-drainage group which is statistically significant.¹⁰

Conclusion

The early post operative complications like pain, mean post operative stay in hospital is increased in Lichtenstein's with drainage group. The early post operative complications like seroma, hematoma, wound infection rates are similar in both drainage and non-drainage groups. So, it appears that suction drain usage can be restricted in Lichtenstein's tension free mesh repair in simple inguinal hernias unless hernia is complicated or there is extensive dissection

Ethical Clearance: The ethical clearance was obtained from Osmania Medical College and General Hospital prior to the commencement of the study.

Conflict of Interest: Nil

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A Study of Enhanced View Total Extraperitoneal Laparoscopic Hernioplasty (E-tep) For Inguinal Hernia In Tertiary Care Hospital

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Abstract

Background: Generally, TAPP and TEP has been done, but it gives both technically less space to surgery and there is a need to suture the mesh. In our new study we get more space to operate and no sutures required.

Objectives: To study enhanced view total extraperitoneal laparoscopic hernioplasty (e-tep) for inguinal hernia

Methods: The data for this prospective study was obtained from 21 patients undergoing Laparoscopic hernioplasty (21 from E-TEP) in Osmania General Hospital, Hyderabad, Telangana between November 2019 to May 2021 inclusive of a follow up period of 6 months. Consent for the procedure was obtained. E-TEP procedure were performed using Polypropylene mesh.

Results: Minor complication rate was 26.66% for ETEP group. There was one case of converted from ETEP to TAPP method. The recurrence in E-TEP is zero. The hospital stay in E-TEP was 2.27 days.

Conclusion: ETEP is the best method of hernioplasty for a primary inguinal hernia. However largescale study and long term follow up studies are required.

Keywords: ETEP, TEP, Lichenstein Meshplasty, Inguinal Hernia.

Introduction

Inguinal hernia the most common abdominal wall hernia and consequently inguinal hernia repair rank among one of the most often performed surgical procedure. It is estimated that more than 20 million groin hernia repairs are performed every year worldwide.¹ Despite the frequency of this procedure no surgeon has ideal results and complications such as postoperative pain, infection, early return to work, recurrence remain.²

Advancements in perioperative anesthesia and operative technique have made this an outpatient ambulatory operation with low recurrence rates and morbidity. Given this success, quality of life and the

avoidance of chronic pain have become the most important considerations in hernia repair.³

Approximately 70% of femoral hernia repairs are performed in women; however, inguinal hernias are five times more common than femoral hernias. The most common subtype of groin hernia in men and women is the indirect inguinal hernia. Inguinal hernias form because of a defect in the myopectineal orifice that allows intra-abdominal contents to protrude into the groin. The anatomy can be difficult to grasp, however, before performing inguinal hernioplasty, the surgeon must understand inguinal anatomy to avoid complications such as chronic pain and recurrence.⁴

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Five laparoscopic techniques are currently available for repairing an inguinal hernia: totally extraperitoneal (TEP) repair, extended view totally extraperitoneal (ETEP), transabdominal preperitoneal (TAPP), intra-peritoneal on lay mesh (IPOM), and reduction of the sac with or without closure of the ring.⁵ It is our philosophy that surgeons interested in a laparoscopic approach should be skilful in all of the available techniques to accommodate the needs of all patients and to be able to convert to a different technique when necessary.

Materials and Methods

Study design: Prospective observational study.

Study setting: Upgraded department of general surgery, Osmania general hospital.

Duration of study: 18 months.

Sample size: 21

Inclusion criteria:

1. All age groups in males.
2. All inguinal hernias include.
 - a) Direct & indirect
 - b) Complete and incomplete
 - c) Reducible

Exclusion criteria:

- a) Patients who are unfit for general anesthesia.
- b) Previous history of pelvic surgeries.

The data for this prospective study was obtained from 21 patients undergoing Laparoscopic hernioplasty (21 from E-TEP) in Osmania General Hospital, Hyderabad, Telangana between November 2019 to May 2021 inclusive of a follow up period of 6 months. Consent for the procedure was obtained. E-TEP procedure were performed using Polypropylene mesh.

Statistical analysis: The SPSS 22 software was used to analyze and the data was presented in the form of means and percentages.

Observation and Results

The study was conducted at Osmania general hospital from November 2019 to May 2021 in Department of general surgery. The study involved 21 male patients who satisfied inclusion criteria. 21 patients were subjected to ETEP repair.

Table 1: Distribution based on Age Distribution.

Age Distribution (yr)	Number(n)	Percentage (%)
21-30	6	28.57%
31-40	3	14.2%
41-50	4	19.04%
51-60	3	14.2%
61-70	3	14.2%
>70	2	9.52%
Total	21	100%

The cumulative prevalence of inguinal hernia in males is 28.56% for age 21-30yrs, 14.2% for age 31-40yrs, 19.04% for age 41-50yrs, 14.2% for age 51-60yrs, 14.2% for age 61-70yrs, 9.52% for age >70yrs. Inguinal hernias occurs eight time as often in men as in women and consequently approximately 90% of all inguinal hernias repair performed in male patients.

Table 2: Distribution based on Side and type of hernia

Side of Hernia	Number(n)	Percentage (%)
Rt. Side	12	57%
Lt. Side	9	43%
Type of Hernia		
Direct	6	29%
Indirect	15	71%

Among 21 cases studied 12 cases were found to have inguinal hernia whereas 9 cases were left sided hernia.

Among 21 cases studied, 15 cases had Indirect inguinal hernia and 6 had direct inguinal hernia. Although all cases were preoperatively evaluated most of the diagnosis on the type of hernia was made intra operatively.

Diabetes was the common comorbidity in the present study group, other comorbidities include systemic hypertension

Intraoperative complications:

Intraoperative complications like major vessel injury or bladder injury were observed. No intraoperative complications were encountered during the study period in the above 21 cases.

Duration of surgery:

The Duration of surgery was observed to be longer for indirect hernia and shorter in direct hernia. Shortest

duration recorded is 90 minutes and longest is around 120 minutes. Mean duration of surgery in ETEP is 100 minutes.

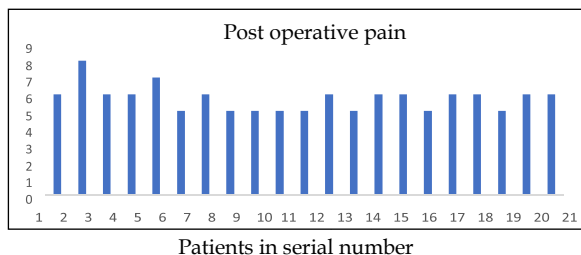


Figure 1: Post operative pain

The post-operative pain was measured using Visual Analog Scale (VAS) 6 hours after the surgery. The patient was given a dose of Injection Tramadol 100mg in after the surgery. The next dose of analgesic was given based on the VAS score. ETEP procedure mean post operative pain is 5.76 which is usually less.

Table 3: Distribution based on Seroma

Seroma	Number(n)	Percentage (%)
Seroma	2	10%
Normal	19	90%

Post operative seroma was observed only in 2 cases. This cause prolonged hospital stays and prolonged antibiotic usage and late return to work. Seroma was subsided within 1 month completely.

Hematoma: Post operative hematoma were observed. There is no post operative hematoma seen.

Port site infection: Post operative port site infection were observed. There is no single case of port site infection seen.

Length of hospital stay (time of discharge): Length of hospital stay usually less in ETEP procedure with mean duration is 2.28 days. In ETEP we can discharge early.

Time to return to work: Time taken to return for work is depend on variable factors like profession and patient related factors. ETEP mean time taken to return for work is 7.7 days.

Recurrence: Post operative recurrence were observed. there is no single of recurrence is seen in follow up period.

Discussion

Inguinal hernia repair is one among the most commonly performed operation in India, owing to a

significant lifetime incidence and variety of successful treatment modalities. Advancements in perioperative anaesthesia and operative technique have made this an outpatient ambulatory operation with low recurrence rates and morbidity. Given this success, quality of life and the avoidance of chronic pain have become the most important considerations in hernia repair.

Approximately 75% of abdominal wall hernias occur in the groin. The lifetime risk of inguinal hernia is 27% in men and 3% in women.⁶ Of inguinal hernia repairs, 90% are performed in men and 10% in women.⁷ The incidence of inguinal hernias in males has a bimodal distribution, with peaks before the first year of age and after age 40. Abramson demonstrated the age dependence of inguinal hernias in 1978.⁸ Those age 25 to 34 years had a lifetime prevalence rate of 15%, whereas those age 75 years and over had a rate of 47%.⁹

Primary unilateral inguinal hernias without complications can be treated with ETEP.¹⁰ Although no major intraoperative complications were noticed in present study, literature shows evidence of major vessel organ damage, even mortality following laparoscopic procedure. ETEP has lesser complication rates and early discharge and early return to work and less post operative pain.¹¹ Hence according to the present study ETEP is the best method of hernioplasty for a primary inguinal hernia. However, large scale studies and long-term follow-up studies are required to evaluate for the chronic pain, recurrence rates and learning curve in laparoscopic hernia repair.¹² Our study supports the view that ETEP repair of inguinal hernia is safe and efficacious, but long-term Randomised Control Trials with enhanced sample size and reduced confounding factors are still required to standardize the procedure of ETEP.

Conclusion

ETEP is the best method of hernioplasty for a primary inguinal hernia. However largescale study and long term follow up studies are required.

Ethical Clearance: The ethical clearance was obtained from Osmania Medical College and General Hospital prior to the commencement of the study.

Conflict of Interest: Nil

Source of Funding: Self

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Burden of Overweight and Obesity Among Secondary and Senior Secondary Students of New Delhi Municipal Council Schools

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Abstract

Introduction: Obesity is an emerging global public health problem of concern. Importantly, 50 to 80 percent of obese children grow up to be obese adults, and all adult obesity issues are exacerbated if obesity begins in childhood. This study was done to assess the prevalence of obesity among adolescents and the influence of the risk factors causing obesity.

Methodology: This was a cross-sectional study of 244 students of grade 9th to 12th in schools under NDMC. WHO BMI growth charts were used to categorize the BMI. Statistical analysis was using licensed SPSS software version 21.0.

Results: The mean BMI among the participants was found to be 19.8 kg/m² (SD±3.89). Majority (153, 62.7%) had a normal BMI, 29(11.9%) were overweight and 7(2.9%) were obese. The prevalence of obesity/overweight among study participants was lower in vegetarians. Students who skip their meals daily were at increased risk of being obese as compared to those who skip rarely or never and the results were statistically significant (AOR 3.165 CI 1.173 – 8.544 p= 0.023). The mean physical activity score of the overweight/obese was 2.21(SD±0.804) as compared to the mean score of 2.27(SD±0.745) among the non-obese/overweight.

Conclusion: The result of this study indicates that the overweight and obesity is highly prevalent among adolescents. There was an significant association between type of diet, skipping of meals, religion, mother's education and overweight/obesity.

Keywords: childhood, obesity, overweight, physical activity, adolescence.

Introduction

Obesity is an emerging global public health problem of concern. Obesity is defined “as a condition of abnormal or excessive fat accumulation in adipose tissue, to the extent that health may be impaired”.¹ The fundamental root of obesity and overweight is the energy disparity between calories consumed and calories burnt. Globally, it has been observed that an increased consumption of energy-dense foods that are rich in fat and carbohydrates and an decrease in physical activity due to the evolving sedentary nature of many forms of work, changing modes of transport,

and increasing urbanization. Childhood obesity is not only restricted to industrialised countries, as even the developing countries also experience a higher rates of the condition. Over the last few decades, substantial socioeconomic changes and new behavioural patterns have evolved in developing countries, affecting nutritional patterns. Few of the studies have reported that BMI is 25–40% heritable.² The genetic factor accounts for less than 5% of childhood obesity.² Nevertheless, genetic susceptibility commonly needs to be coupled with behavioural and environmental factors in order to alter weight.²

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Against this background, this study was conducted in New Delhi to assess the prevalence of obesity among adolescents and the influence of the risk factors causing obesity. We had also determined the modifiable factors and preventive measures of obesity at the end of the study.

Materials and Methods

The study was conducted in New Delhi school students of 9th to 12th grade and aimed to find out the prevalence of obesity along with factors associated with it.

Study Design, Sampling:

The study was a school based cross-sectional study carried out among adolescents including 9th to 12th grade students in the schools under New Delhi Municipal Council from November 2019 to April 2021. Pretesting, modification of the questionnaire and ground work for data collection was done within this period. The study population was selected using simple random sampling. According to the study conducted by Melissa H Stigler in Delhi the combined prevalence of overweight and obesity was 16.6%.³ So, taking the prevalence as 16.6%, the sample size according to the formula $4pq/l^2$ and taking the relative error of 20%, was 536. Due to COVID pandemic, the sample size was recalculated and reduced by taking the absolute error of 5%, the sample size was calculated to be 244. Out of the nine senior secondary schools with co-education, one school was randomly selected using lotter method and complete enumeration was done with all the available students. The study included all school students of grade 9th to 12th and excluded students whose parents did not give consent and those who were not contactable during the entire data collection period.

Data Collection and Measurement:

After initial rapport building, briefing was given to all the class teachers about the study and its purpose. The consent forms was distributed to all the students for getting consent signed from the parents. The students submitted the duly signed /thumbprint form to the class teacher. The forms was collected by the investigator on the next visit.

The school arranged a classroom for conducting one-to-one interview, self-administered questionnaire on physical activity, anthropological measurements and examination for signs of nutritional deficiency. First the interview regarding the sociodemographic

data and dietary practices such as type of diet, skipping of meals, coffee/tea intake, intake of fruits and vegetables, junk foods and soft drinks was obtained. Then briefing about the self-administered physical activity questionnaire was given and doubts were clarified. The students were given 15 mins of time to fill the questionnaire. Finally anthropological measurements were taken along with physical examination and at the end of the session, all the students were made aware of ill effects of consuming junk foods and the importance of physical activity and healthy food intake. If the student were categorised under obesity or overweight he/she was given proper health education, dietary recommendation and was advised for medical management if it was needed.

WHO BMI growth charts were used to categorize the students. These growth curves are closely aligned with the WHO Child Growth Standards at 5 years, and the recommended adult cut-offs for overweight and obesity at 19 years. It fills the gap in growth curves and provide an appropriate reference for the 5 to 19 years age group.⁴ The operational definitions used in the study are enlisted: BODY MASS INDEX: a person's weight in kilograms divided by the square of the person's height in metres (kg/m²).⁴ OVERWEIGHT: Students with BMI cut-off greater than +1SD (Equivalent to BMI 25kg/m² at 19 years) will be classified as overweight.⁴ OBESITY: Students with BMI cut-off greater than +2D (Equivalent to BMI 30 kg/m²) will be classified as obese.¹ Socio-demographic data were analysed based on Kuppaswamy socio-economic status scale 2021. SKIPPING OF MEAL: "Meal skipping is the omission or lack of consumption of one or more of the traditional main meals (breakfast, lunch or dinner) throughout the day"⁵. JUNK FOOD: The term 'Junk food' was coined in 1972 by Michael Jacobson, director of Center for sciences. Junk food are those which contains high level of refined sugar, white flour, trans fat, polyunsaturated fat salt and numerous food additive such as mono sodium glutamate(MSG) and tartrazine, and lacking in protein, vitamin and fibre.⁶ Type of junk food: Various types of junk food is available in market out of which the most popular and locally available junk food includes samosa, kachori, pakoda, chips, namkeen, cake, pastry, pizza, burger, French fries, noodles, corn flakes, soup powder, chaat, gol guppa and chowmein were included in the questionnaire. Physical activity questionnaire: The Physical Activity questionnaire for Adolescent (PAQ-A) has been designed by Kowalski, Crocker, & Kowalski⁷. Each of

the 9 (PAQ-A) questionnaire items is scored between 1 (low) and 5 (high physical activity). The mean score of all items gives the overall PAQ score. PAQ-A has high validity and reliability and captures the child's physical activity during the last 7 days.

Statistical Analysis

The data was entered in Microsoft Excel and cleaned for errors and missing values. Data analysis was done using licensed SPSS software version 21.0. Data was presented in the form of tables and appropriate diagrams. Qualitative data was summarised as proportions while quantitative data as mean, median and appropriate measures of dispersion including confidence intervals. Quantitative data was analysed using t-test and qualitative data by chi-square / Fisher Exact test. $P < 0.05$ was taken as significant.

Results

The study was conducted among 244 students of grade 9th to 12th studying in schools under New Delhi Municipal Council. The response rate was 100%. The mean age of the participants is 15.74 (SD \pm 1.31). Out of 244 study participants, the maximum number of students i.e. 79(32.4%) were under the age group of 16 years. Majority of the study population i.e., 67.2% were males. More than three-fourth of the study population i.e. 207(84.8%) were Hindus and Christians, Muslims and Sikhs contributed the rest. 86.9% were nuclear family. The socio-economic status was analyzed using Kuppaswamy socio-economic status scale and were categorized accordingly. 3(1.2%) were Upper (I) class, 228(93.4%) were Upper middle(II) class and (5.3%)13% were lower middle class(III).

BMI categories:

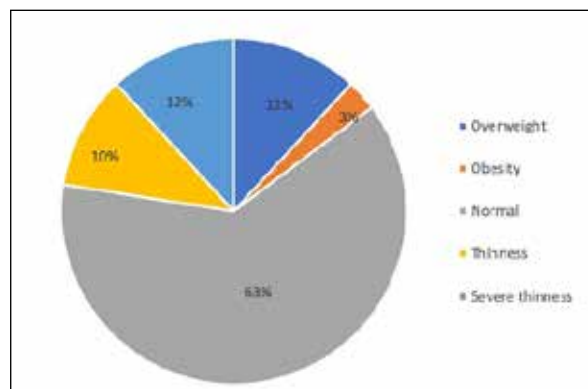


Figure 1: Distribution of study participants according to body mass index(BMI) (N=244)

The mean BMI of participants was found to be 19.8 kg/m² (SD \pm 3.89). Majority (153, 62.7%) had a normal BMI, only 29(11.9%) were overweight and 7(2.9%) were obese. Almost one-fourth 55(22.6%) were either thin or severely thin(Figure 1).

Bivariate Analysis of Factors Affecting Overweight and Obesity

Table 1 shows bivariate analysis of factors affecting overweight and obesity. Religion, mother's education, type of diet had significant association with overweight and obesity ($p < 0.005$). But consumption of vegetables, fruits, junk foods and soft drinks were not significantly associated with overweight and obesity.

Table 1: Bivariate Analysis of Factors Affecting Overweight & Obesity

Variable	Overweight & Obese Number(%)	Non obese / overweight Number (%)	Total Number (%)	p value
RELIGION				
Christian	1(25)	3(75)	4(100)	0.005*
Hindu	27(13)	180(87)	207(100)	
Muslim	6(19.4)	25(80.6)	31(100)	
Sikh	2(100)	0	2(100)	
MOTHER'S EDUCATION				
Illiterate	15(22.1)	53(77.9)	68(100)	0.034*
Primary	3(7)	40(93)	43(100)	
Middle	8(9.3)	78(90.7)	86(100)	
High School & Above	10(21.3)	37(78.7)	47(100)	
TYPE OF DIET				
Vegetarian	6(6.0)	94(94.0)	100(100)	0.001*
Mixed diet	30(20.8)	114(79.2)	144(100)	
CONSUMPTION OF VEGETABLES IN A TYPICAL WEEK				
Everyday	18(13.4)	116(86.6)	134(100)	0.778*
3 to 6 times/ week	10(14.7)	58(85.3)	68(100)	
1 to 2 times / week	8(19.5)	33(80.5)	41(100)	
Rarely or never	0	1(100)	1(100)	

CONSUMPTION OF FRUITS IN A TYPICAL WEEK				
Everyday	9(15.8)	48(84.2)	57(100)	0.623*
3 to 6 times/ week	16(17.0)	78(83.0)	94(100)	
1 to 2 times / week	10(13.3)	65(86.7)	75(100)	
Rarely or never	1(5.6)	17(94.4)	18(100)	
CONSUMPTION OF JUNK FOODS IN A TYPICAL WEEK				
Everyday	1(10)	9(90.0)	10(100)	0.811*
3 to 6 times/ week	6(12.2)	43(87.8)	49(100)	
1 to 2 times / week	24(16.6)	121(83.4)	145(100)	
Rarely or never	5(12.5)	35(87.5)	40(100)	
CONSUMPTION OF SOFT DRINKS IN A TYPICAL WEEK				
Everyday	2(15.4)	11(84.6)	13(100)	0.569*
3 to 6 times/ week	2(6.9)	27(93.1)	29(100)	
1 to 2 times / week	16(14.4)	95(85.6)	111(100)	
Rarely or never	16(17.6)	75(82.4)	91(100)	

Multivariate Logistic Regression Analysis

Table 2 shows the multivariate logistic regression analysis results examining the associations of overweight/obesity adjusted for variables such as gender, religion, education of mother, type of diet, frequency of skipping of meals. Adjusted odds ratio (AOR) and corresponding 95% confidence intervals (CI) are presented. Males are tend to be overweight/obese relative to females though not statistically significant(AOR 1.483; CI 0.571 - 3.850 p=0.419). Muslim and Christian students were positively associated with overweight/obese relative to Hindu students (for Muslim, AOR 2.240; CI 0.191 - 26.335, p = 0.521), for Christian, (AOR 1.423; CI 0.475 - 4.261, p = 0.529). Students of mother with education level high school are at increased risk of being overweight/obese relative to students of illiterate mothers (for high school and above AOR 1.219 ; CI 0.444 - 3.347, p = 0.070). Students with mixed diet are tend to be

overweight/obese as compared to vegetarians and the results are statistically significant(AOR 5.777 CI 1.962 - 17.008 p= 0.001). Students who skip their meals daily are at increased risk of being obese as compared to those who skip rarely or never and the results are statistically significant (AOR 3.165 CI 1.173 - 8.544 p= 0.023).

Table 2: Multivariate logistic regression analysis assessing the relationship between various independent variables and overweight/obesity.

Variables		Adjusted OR(95% CI)	p-value
Gender	Male	1.483(0.571 - 3.850)	0.419
	Female	rf	
Religion	Hindu	rf	
	Muslim	2.240(0.191- 26.335)	0.521
	Christian	1.423(0.475- 4.261)	0.529
Mother's Education	Illiterate	rf	
	Primary	0.172(0.034- 0.880)	0.035
	Middle	0.435(0.164- 1.154)	0.094
	High School and Above	1.219(0.444- 3.347)	0.700
Type of Diet	Mixed Diet	5.777(1.962- 17.008)	0.001
	Vegetarian	rf	
Frequency of Skipping of meals	Rarely/ never	rf	
	1-2 days/ week	1.722(0.559- 5.305)	0.344
	3-6 days/ week	0.530(0.109- 2.584)	0.432
	Daily	3.165(1.173- 8.544)	0.023

Discussion

In our study, overweight and obesity was observed to be 11.9% and 2.9% respectively (Table 1). Studies done by Gautam et al and Kumar AP et al in government schools of Udupi, Karnataka and Vijayawada has reported prevalence of overweight and obesity similar to ours.^{8,9} The prevalence of overweight and obesity among different religion was studied and the higher prevalence was among Sikhs (100%) and Christians (25%) followed by Muslims(19.4%). The religion and obesity prevalence were statistically significant in the bivariate analysis(Table 1), but when examined

under multivariate logistic regression adjusted for gender, mother's education, type of diet and skipping of meals, the results were not significant for Muslims and Christians in relative to Hindu participants (Table 2). Similarly, in a study done by Gautam et al at Karnataka, the prevalence was more among Muslims (26.8%) followed by Christians (25.5%).⁸ Obesity was shown to be less common among Hindus, possibly due to the Hindu nutritional culture, which places a greater emphasis on vegetables rather than meat. Nevertheless, other factors also may come into play. The prevalence of overweight and obesity depending on the socio-economic status was also studied and the results were not statistically significant. This may be because very less number of participants fall under upper and lower middle (i.e. 1.2% and 5.3% respectively) compared to the upper middle class (93.4%) and also there were no students coming under lower and upper lower socio-economic groups.

From our study, it was observed that the mother's education was significantly associated with the prevalence of obesity/overweight (Table 1). The students whose mother with primary education (aOR-0.172, $p=0.035$) were less likely to be obese compared to illiterate mothers (Table 2). Similar kind of findings were observed in a study conducted by Tomar et al at Madhya Pradesh in the year 2014 among 184 that over-weight and obese were higher in children of illiterate mothers and the age group of students were between 14-17.¹⁰ This can be explained by the fact that educated mothers tend to be more cautious about the diet of their children comparing the illiterate mother. The association between skipping of meals and prevalence of obesity/overweight was studied but there was no significant difference with or without skipping of meals. In our study, the prevalence of overweight and obesity was more among adolescents who were on mixed diet i.e. 30(20.8%) than adolescents on vegetarian diet (Table 1,2). Sivakumar et al. conducted a similar study in Kerala and observed that the majority of overweight and obese children (16.10 percent) ate a non-vegetarian diet, which is consistent with our findings.¹¹ The most important difference between vegetarian and non-vegetarian diet is that the former contains large amount of dietary fibre. Furthermore, non-vegetarian meals are high in cholesterol, which could explain why the mixed diet participants had a higher prevalence.

The association between consumption of vegetables in a typical week and the prevalence of overweight and obesity was studied, and the results were not statistically significant, but prevalence of overweight and obesity was high (19.5%) in those who took vegetables 1 to 2 times/week and was comparatively less (13.4%) in those who took vegetables daily. In our study, the association between consumption of fruits and prevalence of overweight and obesity was also not statistically significant, whereas other Indian studies report lesser prevalence of obesity with higher intake of fruits. The association between consumption of junk foods and prevalence of overweight and obesity was studied and the results were not statistically significant (Table 1). Also in a study done in Kurukshetra by Goel et al in the year 2013, there was no association found between junk foods and obesity/overweight prevalence.¹² In our study, the association between consumption of soft drinks and the prevalence of overweight and obesity was studied and the results were found to be statistically insignificant. The importance of physical activity was studied in relation to prevalence of overweight and obesity. The mean physical activity score of the overweight/obese was 2.21(SD±0.804) as compared to the mean score of 2.27(SD±0.745) among the non-obese/overweight. Also there was no significant difference observed between the mean physical activity score among boys and girls in our study. A Dehradun based study by Bhargava et al in the year 2013 found a significant association between the lack of physical activity and overweight and obesity in school-going children.¹³

Conclusion

The result of this study indicates that the overweight and obesity is highly prevalent among adolescents. There was a significant association between prevalence of overweight/obesity and religion where Muslims and Christians tend to be obese in relative to Hindus. The students of literate mothers are less likely to be overweight/obese as compared to the student of illiterate mothers. The type of diet was also significant with the prevalence of overweight/obesity, participants with mixed diet are more likely to be obese compared to vegetarians. There was a significant prevalence of overweight/obesity among the participants who skip their breakfast daily. There association between overweight/obesity and rest of the variables like gender, socioeconomic status,

coffee/tea intake, fruit and vegetable consumption, junk food and soft drink consumption, physical activity. Although not statistically significant there was an increase in prevalence of overweight/obesity among participants.

Ethical Approval:

Ethical clearance was obtained from Institute Ethics Committee of Vardhman Mahavir Medical College & Safdarjung Hospital, New Delhi. Each eligible student was explicitly explained about the purpose of the study by the investigator and an informed written consent was obtained from the parent/guardian, prior to inclusion. The privacy of subjects and confidentiality of information was also maintained.

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Conflict of Interest : Nil

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Attitude of Healthcare workers towards Disaster Management practices in a Hospital of Gujarat

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Abstract

Background: Effective management of a disaster requires preparedness and appropriate attitude of healthcare workers. Attitude of the healthcare workers will impact their response during any emergency situation coping. This study was conducted to assess overall attitude towards disaster management among the healthcare staff of 650 bedded hospital in North Gujarat region.

Methodology: This is a cross sectional survey study carried out on 201 healthcare staff of the hospital under study. The data was collected through an online questionnaire consisting the demographic details of the participants and followed by questions regarding the attitude of participants toward disaster management and disaster management practices in the hospital. Data was coded and analysed with MS Excel and SPSS.

Result: From the responses we received, it was conclude that 45.8% staff of the study hospital have taken the training for disaster management and 44.8% staff have faced disaster during their work experience at the hospital. Among the respondents, majority are students (56.2%), nursing staff (25.4%), doctors (11.9%) and others (6.5%). Looking to their perception, 39.3% staff believes that the disaster preparedness in the hospital is sufficient, 22% says it is insufficient while 38.8% have neutral response.

Conclusion: Attitude of health care workers towards disaster management is very important as it impacts their response during any emergency situation. Study showed the awareness regarding the disaster occurrence and vulnerability of the hospital and health care workers' attitude requires improvement. Which can be positively impacted by trainings, mock-drills, making them aware about their roles during a disaster and disaster policy related information.

Keywords: Disaster management, Attitude, Perception, preparedness

Introduction

A disaster is an unexpected event either natural or man-made origin which can cause great destruction of property, environment and human life.^{1,2} Effective management of a disaster require preparedness and appropriate attitude. Attitude of the healthcare staff

will impact their response during any emergency situation handling.

Preparedness for any disaster requires implementation of various practices in the hospital and willingness of the healthcare workers to actively participate in the disaster management process. This

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practices of disaster preparedness should be a part of routine functioning of the hospital which allows the hospital to provide standardized care and efficient resource utilization during the disaster.³

There have been a lot of researches conducted across the globe about assessing the knowledge, attitude and practice regarding disaster management and disaster preparedness⁴⁻⁷ among different healthcare workers like physician, nursing staff, emergency staff etc.⁸⁻¹⁰ Factors impacting the disaster preparedness¹¹⁻¹³ which showed the staff requires adequate knowledge, ability to take the decision quickly⁷ during any critical condition, knowing the disaster plan, effective communication within the hospital, ethical issues⁹ and attitude to take a lead for effective Disaster management. Perception regarding disaster preparedness of a healthcare worker is influenced by training, experience, and support¹². Proper education regarding disaster management, knowing their role during emergency might improve the disaster preparedness by improving coordination among the healthcare workers⁸.

Currently world is facing the complex disaster of SARS Cov-2 virus pandemic, even though the number of cases have been showing the variations, the hospitals need to be more resilient not only to fight with impact of Covid-19 pandemic but also as a part of preparation for upcoming challenges also.¹⁴ Improving the overall attitude of health care worker towards disaster preparedness is also important along with strengthening the healthcare system, improving communication and technological aspects.

This study has been conducted to understand overall attitude towards disaster management among the healthcare workers of a 650 bedded hospital in North Gujarat region.

Method:

This is a cross sectional survey study. The self - constructed questionnaire was prepared and sent through online mode i.e. Via Google form. Pilot survey was conducted to test the questionnaire. Informed consent was obtained in first part of the questionnaire itself. Other part consists of participant details including name, age, gender, work department, educational qualification, history of facing disaster, training status about disaster management etc. Third part of questionnaire consists of questions regarding attitude of participants towards managing the disasters. All the questions were based on five-point

Likert scale from 1 = disagree to 5 = strongly agree.

The study was carried out on the staff during the period of 5th may to 15th June 2021. The data as collected through online questionnaire consisting the demographic data and questions regarding disaster management. The questionnaire sent to 400 staff, among which 201 responded. Both male and female gender responded nearly equal percentage. Majority of participants fall in the age group of 21-30 years of age group.

We selected doctors, nursing staff, medical and nursing students, administrative staff, other paramedical staff working in the hospital including staff of isolation wards and ICU departments also.

Data was collected and statistical analysis was done with the help of MS excel and SPSS V.20. Descriptive statistics and frequency analysis were done. Reliability of data was checked with Cronbach's alpha test as shown in Table 2.

Table 1: Details of the participants

Demographics	Category	Frequency (Percentage %)
Gender	Male	99(49.3%)
	Female	102(50.7%)
Age	<20 years	05(2.5%)
	21-30 years	166(82.6%)
	31-40 years	26(12.9%)
	41-50 years	04(2%)
	>50 years	00(0%)
Educational Qualification	School	11(5.5%)
	Diploma	33(16.4%)
	Graduation	142(70.6%)
	Post- Graduation	15(7.5%)
Work Department	OT	13(6.5%)
	OPD	23(11.4%)
	ICU	41(20.4%)
	Wards	36(17.9%)
	Isolation ward	6(3%)
	Emergency	5(2.5%)
	Others (Labour room/ DEIC/ Covid registration/ Dental/ Physiotherapy)	77(38.3%)

Demographics	Category	Frequency (Percentage %)
Designation	Doctor/consultant	24(11.9%)
	Nursing staff	51(25.4%)
	Administrative staff	2(1%)
	Paramedical Staff	9(4.5%)
	Others	2(1%)
	Students	113(56.2%)
Work Experience	<1 year	122(60.7%)
	1-5 years	46(22.9%)
	5-10 years	23(11.4%)
	>10 years	10(5%)
Training Received	No	109(54.2%)
	Yes	92(45.8%)
Marital status	Unmarried	152(75.6%)
	Married	49(24.4%)
	Separated	00(0%)
Faced Disaster	Yes	90(44.8%)
	No	83(41.3%)
	Not sure	28(13.9%)

Result

Among the respondents, ~ 60% had less than 1-year experience of working in the hospital. 92 respondents

Table 3: Attitude towards disaster management practices

	Items studied	Mean	Std. Deviation	Kurtosis
1	Do you think disaster occurs only due to natural causes	3.56	1.248	-.870
2	Perceived requirement of disaster management policy	4.55	1.095	5.030
3	I should know about disaster management policy	4.61	0.921	6.644
4	Our hospital is safe from disaster	2.49	1.297	-.739
5	Nothing can be done for the disaster	2.59	1.294	-.809
6	I should know about disaster management committees	4.63	0.886	8.120
7	Do you think mock drill helps in effective disaster management	4.35	0.959	1.842
8	Perceived requirement of mock drill for all staff	4.5	0.895	3.285
9	Perceived Requirement fire safety training for all staff	4.73	0.794	10.713
10	Perceived requirement for regular disaster management training	4.63	0.816	6.675
11	You should Know about your responsibility during disaster	4.71	0.83	10.155

(45.8%) had taken training for disaster management. 44.8% participants have faced disaster and 13.9% staff are not sure about they have faced any disaster or not.

Attitude towards disaster management includes knowing their responsibility during disaster, the importance of mock drills, willingness to attend fire safety training, feeling that the hospital is having sufficient preparedness for disaster, occurrence of disaster etc. Are included in the calculation. Total 16 questions were taken in consideration which had responses in five-point Likert scale from 1 (disagree) to 5 (strongly agree). Descriptive statistic of studied items is described in Table no.3

47.3% staff (n =95) had neutral, 24.9% staff had negative and 22.4% had positive attitude towards disaster management and preparedness. This survey was conducted during the ongoing Covid-19 pandemic.

Table 2: Alpha Reliability of data

Cronbach's Alpha [Alpha reliability]	Number of items
0.8205	16

The data was validated with Cronbach's alpha which was 0.8205, which showed the data was reliable and it is having good internal consistency.

	Items studied	Mean	Std. Deviation	Kurtosis
12	Staff experience helps in better management of disaster	4.6	0.879	5.561
13	Need for Upgradation of disaster management policy	4.6	0.861	6.178
14	Can we take uninformed leave during disaster?	2.2	1.518	-.754
15	Do you think the disaster preparedness in your hospital is sufficient?	3.25	1.174	-.567
16	Will you give First aid when a disaster Strikes?	4.53	0.944	4.677

Discussion

There have been limited researches about disaster preparedness among healthcare workers in India emphasizing on educating health worker, better resource allocation, training, capacity building, psychological preparedness, communicating effectively and developing effective training tools for training of the healthcare worker and infrastructure development in India.¹⁵⁻¹⁸

Hospital staff working in the hospital should know the susceptibility or vulnerability of a hospital for type of disasters possible to occur, so they can be prepared in advance for coping up the emergency situation. Regular fire safety trainings, mock drills will keep health care workers prepared for unexpected crisis. Knowing their roles during disaster management practice and previous experience will aid the better management of disaster. Hospital should have updated disaster management plan and policy and health care worker working in the hospital should be aware of them.

Table 4: Responses of questions regarding disaster management practices

Items Studied	1 (Strongly Disagree)	2 (Disagree)	3 (Neutral)	4 (Agree)	5 (Strongly Agree)
Do you think disaster occurs only due to natural causes	14 (7%)	21 (10.4%)	73 (36.3%)	25 (12.4%)	68 (33.8%)
Perceived requirement of disaster management policy	13 (6.5%)	3 (1.5%)	8 (4%)	13 (6.5%)	164 (81.6%)
I should know about disaster management policy	6 (3%)	6 (3%)	7 (3.5%)	22 (10.5%)	160 (79.6%)
Our hospital is safe from disaster	62 (30.8%)	38 (18.9%)	64 (31.8%)	15 (7.5%)	22 (10.9%)
Nothing can be done for the disaster	47 (23.4%)	61 (30.3%)	45 (22.4%)	24 (11.9%)	24 (11.9%)
I should know about disaster management committees	7 (3.5%)	1 (0.5%)	10 (5%)	24 (11.9%)	159 (79.1%)
Do you think mock drill helps in effective disaster management	4 (2%)	6 (3%)	27 (13.4%)	42 (20.9%)	122 (60.7%)
Perceived requirement of mock drill for all staff	3 (1.5%)	6 (3%)	19 (9.5%)	33 (16.4%)	140 (69.7%)
Perceived Requirement fire safety training for all staff	4 (2%)	4 (2%)	7 (3.5%)	13 (6.5%)	173 (86.1%)
Perceived requirement for regular DM training	3 (1.5%)	5 (2.5%)	10 (5%)	28 (13.9%)	155 (77.1%)

Items Studied	1 (Strongly Disagree)	2 (Disagree)	3 (Neutral)	4 (Agree)	5 (Strongly Agree)
You should Know about your responsibility during disaster	5 (2.5%)	4 (2%)	6 (3%)	15 (7.5%)	171 (85.1%)
Staff experience helps in better management of disaster	4 (2%)	5 (2.5%)	14 (7%)	22 (10.9%)	156 (77.6%)
Need for Upgradation of disaster management policy	4 (2%)	5 (2.5%)	11 (5.5%)	27 (13.4%)	154 (76.6%)
Can we take uninformed leave during disaster?	104 (51.7%)	29 (14.4%)	24 (11.9%)	11 (5.5%)	33 (16.4%)
do you think the disaster preparedness in your hospital is sufficient?	20 (10%)	24 (11.9%)	78 (38.8%)	44 (21.9%)	35 (17.4%)
Will you give First aid when a disaster Strikes?	6 (3%)	4 (2%)	16 (8%)	27 (13.4%)	148 (73.6%)

Providing information about disaster management practices, actions allotted to them during emergency, regular mock-drills and trainings will significantly enhance the attitude of health care workers towards better disaster management.

Studies have shown that there are insufficient knowledge among healthcare workers about the disaster management and about their roles during emergencies will negatively impact their responses.¹⁹⁻²¹ The knowledge can be improved with emphasising more on teaching and practical training sessions regarding disaster management during learning phase of health professionals. Preparations of to be doctors and nursing staff for better responding to healthcare crisis can be achieved by specific curriculum inclusion in the medical curriculum itself.²² When medical students are not exposed with disaster management training, this may affect community health once their independent practices starts.²³ For combating the upcoming challenges, it is beneficial to have pandemic preparedness subject in medical curricula to strengthen the resilience among frontline healthcare workers.^{20,22,24,25}

Effective training which include simulation trainings, mock drills, evaluating the improvement among health care worker by trainings through assessing knowledge and preparedness are essential for providing timely care to the patients during crisis.²⁶ One study conducted in Tanzanian regional hospitals, gap found in disaster preparedness of health professionals and their response during emergencies.²⁷ Conducting disaster training

programmes along healthcare workers or students will aid gaining the knowledge and acquire the skill, but practical implications are limited and requires constant monitoring and evaluation of participants' response during an emergency situation.^{28,29}

Current study showed that 23.8% staff believes that nothing can be done for any disaster. Among the respondents [45.8% trained for disaster management and 44% faced disaster in past] showed that there was requirement of effective training of disaster management to all the staff. 90% staff agrees that they should know about the hospital's disaster management policy. 39.3% staff believes that the disaster preparedness in the hospital is sufficient, 22% says it is insufficient while 38.8% have neutral response. This perception will also impact their response during the disaster. Healthcare workers of the hospital showed positive attitude towards giving first aid whenever a disaster strikes (87%) internally or during an external disaster also. While some health care worker believes that they can take un-informed leave during the disaster (21.9%).

Limitation of the study is that, it was conducted in a single tertiary care hospital. And the questionnaire was based on individual perceptions, which might also be influenced by personal factors or work-related factors also.

Conclusion

Disasters are sudden and inevitable for any hospital or community, hospital's response to which becomes crucial to save human lives during the critical time. Attitude of health care workers towards disaster

management is very important as it impacts their response during any emergency situation. Looking to the overall attitude of the staff, 22.4% were having positive attitude, 24.9% health care staff had negative attitude, and 47.9% staff were having neutral response. The Study showed the awareness of healthcare workers regarding the disaster management policies and their role during the disaster, requires improvement at the study hospital. Their willingness to provide urgent care in critical time is strongly on positive side showing their dedication of work even in challenging situations. Still, there is a need of conducting more trainings and continuous observation studies for disaster preparedness in the hospital.

Declaration: This research is a part of a major research project of corresponding author for Masters in Hospital Management course at Hemchandracharya North Gujarat University, Patan, Gujarat.

Ethical Clearance: Not required as it was a cross sectional online survey study. The identity of participants and hospital have not been disclosed anywhere in the study.

Source of Funding: Nil

Conflicts of interest: Nil

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Study of Complications and Outcomes of Phacoemulsification Cataract Surgery

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Abstract

Background: It's unknown if surgical complication rates and long-term visual acuity results differ between patients who had phacoemulsification cataract surgery.

Objective: To study the complications and outcomes of phacoemulsification cataract surgery

Methods: Out of numerous cataract surgeries performed at the hospital, around 50 patients had developed intra-operative and post-operative complications for phacoemulsification. The operations were carried out under local anaesthetic. The intraoperative problems, as well as the operational step in question, were recorded. Visual acuity and a full anterior and posterior segment evaluation were reported postoperatively.

Results: Male predominance was observed with 54% and females were 46%. The male: female ratio was 1.17:1. The mean age was 52.34 ± 6.71 yrs. Majority of the cases around 92% had visual outcome of 6/12 or Better Around 6% had visual outcome of $< 6/12$ but $\geq 6/60$ and 2% had visual outcome of $< 6/60$.

Conclusion: Although the risk of problems from cataract surgery using the phacoemulsification technique is lower, anticipating of these risks, as well as preparation and preventative measures, may help to reduce the risk of difficulties.

Keywords: Phacoemulsification, Cataract, Intra-operative complications, Post-operative complications

Introduction

Despite the fact that cataracts may be quickly and affordably repaired with a conventional procedure, they remain the most common cause of blindness globally. Cataract surgery is one of the most common procedures performed in the world. The operation restores eyesight to the large proportion of individuals who have crystalline lens opacification.¹

Cataract surgery procedures and outcomes have evolved considerably during the last three decades. In the United States, intracapsular cataract extraction has largely given way to almost entirely extracapsular procedures.² Smaller incisions have become the norm, with most surgeons opting for phacoemulsification

as their preferred procedure. Improved intraocular lens materials and designs have accompanied these advancements, making them particularly well adapted for usage with tiny incisions.³

More than 20 years ago, phacoemulsification was proposed as a procedure for removing a cataractous lens.⁴ The popularity of phacoemulsification has risen dramatically as procedures and equipment have improved, resulting in improved safety and efficiency.⁵

Phacoemulsification had been a breakthrough in cataract surgery. Prior to the development of phacoemulsification, surgeons would remove the entire lens and capsule.⁶ It was difficult to place

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an intraocular lens because of this. The eye's lens provides a significant amount of focusing power.⁷ Phacoemulsification is usually done at an outpatient surgical centre, and there is no need to stay in the hospital. Local anaesthetic or topical anaesthesia are used during cataract surgery.

Materials and Methods

Study setting: Department of Ophthalmology

Sample size: 50 patients with complications for phacoemulsification

Inclusion Criteria:

- Consecutive phacoemulsification cataract surgeries.
- Age between 40 years to 75 yrs.

Exclusion Criteria:

- Age < 40 years or > 75 years
- Mature and Hyper mature cataract
- Inability to give informed consent
- Previous intra ocular injury, inflammation or surgery

Out of numerous cataract surgeries performed at the hospital, around 50 patients had developed intra-operative and post-operative complications for phacoemulsification

Uncontrolled diabetes, uncontrolled hypertension, and active infection in any part of the body. Details about the patient's demographics and medical history were obtained. Blood pressure was taken, and regular blood and urine tests were performed. Each patient had a full anterior segment examination, posterior segment examination, intraocular lens powering, and intraocular pressure measurement performed prior to surgery.

The specifics of the pre-operative, operational, and post-operative procedures were recorded. The operations were carried out under local anaesthetic. The intraoperative problems, as well as the operational step in question, were recorded. Visual acuity and a full anterior and posterior segment evaluation were reported postoperatively.

Observation and Results

50 patients had developed complications for phacoemulsification cataract surgery

Table 1: Distribution based on Gender

Gender	Frequency	Percentage
Male	27	54%
Female	23	46%
Total	50	100%

Male predominance was observed with 54% and females were 46%. The male: female ratio was 1.17:1.

Table 2: Distribution based on Age group

Age	Frequency	Percentage
41 -50	6	12%
51 - 60	25	50 %
61 - 70	18	36%
>70 years	1	2%

Majority of the patients belonged to the age group of 41 to 50 yrs with 50% frequency, followed by 36% belonging to the age group of 61 to 70 yrs, 12% belonged to the age group of 41 to 50 yrs and 2% belonged to the age group of >70 yrs. The mean age was 52.34 ± 6.71 yrs.

Table 3: Distribution based on Visual outcome after management

Visual outcome after management of complications (after 1 month)	Frequency	Percentage
6/12 or Better	46	92 %
< 6/12 but \geq 6/60	3	6%
< 6/60	1	2%
Total	50	100%

Majority of the cases around 92% had visual outcome of 6/12 or Better Around 6% had visual outcome of < 6/12 but \geq 6/60 and 2% had visual outcome of < 6/60.

Table 4: Distribution based on Intra-operative complications

Intra-operative Complication	No. of patients (n=23)	Percentage
Posterior capsule rupture with vitreous loss	8	34.78%
Posterior capsule rupture without vitreous loss	4	17.39%
Zonular Dialysis	3	13.04%

Intra-operative Complication	No. of patients (n=23)	Percentage
Descemet's Membrane Detachment	3	13.04%
Failure to implant lens	2	8.69 %
Iris Prolapse	1	4.34%
Capsulorrhexis Extension	1	4.34%
Broken Haptic	1	4.34%

Intraoperative complications like Posterior capsule rupture with vitreous loss was seen in 34.78% of the cases, 17.39% of the cases had Posterior capsule rupture without vitreous loss. Descemet's Membrane Detachment was seen in 13% of the cases. Failure to implant lens was seen in 8.69% of the cases. Iris prolapse, Capsulorrhexis Extension and Broken Haptic was seen in 4.34% of the cases.

Table 5: Distribution based on Post-operative complications

Post-operative Complication	No. of patients (n=27)	Percentage
Corneal oedema	10	37.03%
Wound Leak	6	22.22 %
Secondary Glaucoma	4	17.39%
Epithelial defect	3	13.04%
Hyphaemia	2	8.69 %
Retained cortical matter	1	4.34%
Decentred IOL	1	4.34%

Post-operative complications like Corneal oedema was seen in 37% of the cases, wound leak was seen in 22.22% of the cases, Secondary glaucoma was seen in 17.39% of the cases, epithelial defect was seen in 13% of the cases, Hyphaemia was seen in 8.69% of the cases, Retained cortical matter and decentred IOL was seen in 4.34% of the cases each.

Discussion

Following cataract surgery, phacoemulsification provides desired anatomical and functional results, and it has become the gold standard technique in industrialised nations. It is so reassuring that early best corrected visual acuity correlates equally well with later best corrected vision in these instances as in those with more recent surgery that uses smaller incisions.

Randleman JB et al. reported phacoemulsification under topical anaesthetic done by resident surgeons. A BCVA of 20/40 or greater was reached in 86.6 % of patients. The rate of postoperative complications was 9.9%. In 4.1 % of patients, there was vitreous loss.⁸ Aravind et al, also reported the similar outcomes.⁹

A first-day postoperative (POD1) visit is recommended by the American Academy of Ophthalmology in functionally monocular patients who have experienced intraoperative problems or who are at high risk of immediate postoperative issues such as an increase in intraocular pressure (IOP).¹⁰ A follow-up appointment should be planned within 48 hours for people who do not pose these concerns. In contexts where follow-up is inadequate, early vision evaluation for all patients and follow-up examination just for patients who return to the clinic without prompting are appropriate indicators of surgical quality. A progressive training path in which adequate expertise with big incision ECCE comes before learning manual SICS, and phacoemulsification is taught only after manual SICS (which includes capsulorrhexis) is mastered.¹¹ The cost of the Phaco machine, maintenance and improvements to the equipment and facilities, personnel pay, and consumables are all related with high expenses in phacoemulsification surgery. Phacoemulsification, on the other hand, may be taught to residents with satisfactory aesthetic outcomes and a similar risk of significant surgical problems.

Conclusion

Although the occurrence of problems associated with cataract surgery using the phacoemulsification technique is low, anticipating of these issues, as well as preparation and preventative measures, may reduce the incidence of these complications.

Ethical Clearance: Ethical clearance was obtained from Government Medical College, Nalgonda, prior to the commencement of the study

Source of funding: Self.

Conflict of interest: Nil

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Perspective approach to Nutritional anemia among Medical students using Health Belief Model: A cross sectional study in Tamil Nadu

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Abstract

Introduction: Anemia is one of the major public health problem more commonly encountered in both developed as well as developing countries¹. Various causes for anaemia are nutritional deficiencies, infectious diseases and chronic blood loss. Nutritional anemia is the most widespread nutritional disorder in the world affecting 500 million to 1 billion individuals⁴. The most vulnerable population for nutritional anaemia is Adolescents aged 10-19 years. Most of the anemia initiatives are directed towards maternity and early childhood, there is not much attention shown towards adolescent population. This study was conducted to throw light on attitude towards nutritional anemia among undergraduate medical students by using Health belief model.

Study Methodology: This study was conducted in a private medical college at Chengelpet district of Tamil Nadu. 122 students from first year were selected by using universal sampling method. A self administered questionnaire comprising of two parts was used to collect data, first part was general information about the participants and second part were questions under five factors of Health benefit model.

Result: Mean value of perceived benefit was 3.2 ± 1.54 , perceived barrier was 1.7 ± 0.47 , perceived self efficacy was 2.69 ± 1.14 interpersonal influence was 2.45 ± 0.73 and situational influence was 2.26 ± 1.2 . Nearly 82.8% had perceived benefit on highest scale, 76.2% had perceived barrier on a moderate scale and 52.5% had perceived self efficacy on a moderate scale.

Conclusion: The study participants with high self efficacy were able to overcome the barriers and perceive benefit of reduced risk in acquiring nutritional anaemia.

Keywords: Nutritional Anemia. Health Belief Model

Introduction:

Anemia is one of the major public health problem more commonly encountered in both developed as well as developing countries¹. It is defined as a reduced absolute number of circulating RBCs\ or a condition in which the number of RBCs (and

subsequently their oxygen-carrying capacity) is insufficient to meet physiologic needs. The function of Hemoglobin is to carry oxygen to the tissues and this explains the common clinical symptoms associated with anemia like fatigue, shortness of breath, bounding pulses or palpitations, and conjunctival and palmar pallor². Various causes for

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anaemia are nutritional deficiencies, particularly iron deficiency, folate and vitamins B12, infectious diseases, chronic blood loss and hemoglobinopathies³. Some trace elements like copper and zinc found in the structures of enzymes that act on iron metabolism are also associated with anemia. Copper may contribute to anemia through reductions in erythropoietin (EPO) thus increasing oxidative stress and reducing RBC life span². Nutritional anemia result when concentrations of hematopoietic nutrients which are involved in RBC production or maintenance are insufficient to meet the demand². It is the most widespread nutritional disorder in the world affecting 500 million to 1 billion individuals⁴. The most vulnerable population for nutritional anaemia is Adolescents aged 10-19 years and they constitute about 21% of India's population which in absolute numbers translates to 253 million. Adolescents suffer from nutritional anemia because of social factors like erratic lifestyle, structural poverty, social discrimination, negative social norms, and poor eating habits⁵. In 2012, the World Health Assembly (WHA) approved a Comprehensive Implementation Plan on Maternal, Infant and Young Child Nutrition that identified six global targets related to priority nutrition outcomes to be achieved by 2025. Following this initiative in 2014, Member States approved the Global Nutrition Monitoring Framework (GNMF) on Maternal, Infant and Young Child Nutrition that included six global targets⁶. Most of the anemia initiatives are directed towards maternity and early childhood and there is not much attention shown towards adolescent population. This study was conducted to throw light on attitude towards nutritional anemia among undergraduate medical students by using Health belief model

Study Methodology

This study was conducted in a private medical college in Chengelpet district of Tamil Nadu. Total number of students studying first year were 250 and among them 122 students were selected by using universal sampling method. The study was initiated among the study participants after explaining in detail about the purpose of study and getting an informed consent to participate in the study. A self administered questionnaire comprising of two parts was used to collect data, first part was general information about the participants like name, age, sex and second part were questions under five factors of Health benefit model namely perceived benefits, perceived barrier, perceived self efficacy, interpersonal

influences and situational influences. Health Belief model is a theoretical model used to guide health promotion and disease prevention programs. The Key elements of Health Belief Model primarily focus on individual beliefs about health conditions and predicts individual health-related behaviours. The model defines the key factors that influence health behaviours as an individual's perceived threat to sickness or disease (perceived susceptibility), belief of consequence (perceived severity), potential positive benefits of action (perceived benefits), perceived barriers to action, exposure to factors that prompt action (Perceived barriers), and confidence to succeed (self-efficacy)⁷. To facilitate response from the participants, the questions were standardised to a five point Likert scale ranging from 0 (strongly disagree) to 4 (strongly agree). The content validity of questions were evaluated by panel of experts from field of preventive medicine, nutrition and Paediatrics and their comments were also incorporated. Before starting this study the questionnaire was also pilot tested among 15 higher secondary school students in Kancheepuram district. Mean value of each sub-scale was evaluated by dividing total points by number of items in the sub-scale. Depending on the scores in each sub-scale attitude towards each factor among the study participants was categorised as mild, moderate and severe. The data collected was entered in excel sheet and statistical analysis was done by using IBM SPSS software. The scores in each sub-scale of health benefit model was expressed by mean value and Pearson correlation was used to find the association between each of the sub-scales.

Result

This study was done to evaluate the attitude of adolescents towards nutritional anemia and to understand their needs to overcome a major health issue like anemia. Anemia unlike any other disease does not have major symptoms unless there is severe decrease in Hemoglobin and remains unnoticed especially in adolescent age group because of the other social factors more common during this age group. Medical undergraduate students were selected since they are the future of healthcare and it is important to address their positive outcome towards any health ailment. Among 122 participants selected majority were girls 64.8% and the remaining were boys 35.2%. As mentioned earlier 5 factors in health belief model was used and their mean values were obtained by using Likert scale from 0-4 for each questions in

the factor. Accordingly mean value of perceived benefit was 3.2 ± 1.54 , perceived barrier was 1.7 ± 0.47 , perceived self efficacy was 2.69 ± 1.14 interpersonal influence was 2.45 ± 0.73 and situational influence was 2.26 ± 1.2 . A frequency distribution table was made to know the number of participants who had perceived more belief on the factor concerned and it was found that nearly 82.8% had perceived benefit on highest scale, 76.2% had perceived barrier on a moderate scale and 52.5% had perceived self efficacy on a moderate scale. With regards of interpersonal and situational influences 82% of individuals had faced interpersonal influence on moderate scale and 77.9% had faced situational influence on moderate scale. According to the Health Belief Model Perceived barriers were the most powerful single predictor of preventive health behavior across all behaviours and perceived severity was the least powerful predictor⁸. The most common barrier perceived by medical students were that most of the students stay away from their hometown and second common barrier was skipping breakfast for want of time. There was also a positive association found with Pearson correlation between perceived benefit with self efficacy and perceived self efficacy with interpersonal influences. These associations were also found to be statistically significant.

Table 1: Mean value of HBM constructs

HBM Constructs	Mean±SD
Perceived benefit	3.2±1.54
Perceived barrier	1.7±0.47
Perceived self efficacy	2.69±1.14
Interpersonal influences	2.45±0.73
Situational influences	2.26±1.2

Table 2: Correlation between HBM Constructs

HBM Constructs	Perceived benefit	Perceived barrier	Perceived self efficacy	Interpersonal influences	Situational influences
Perceived benefit	+	-.114	.92**	.177	.164
Perceived barrier	+	+	.121	-.092	-.183*
Perceived self efficacy	+	+	+	.64**	.042
Interpersonal influences	+	+	+	+	-.053
Situational influences	+	+	+	+	+

Discussion

Most of the previous study done by using Health Belief Model was interventional studies using education as a tool and it primarily focussed on effect of health education. Health Belief Model has been an

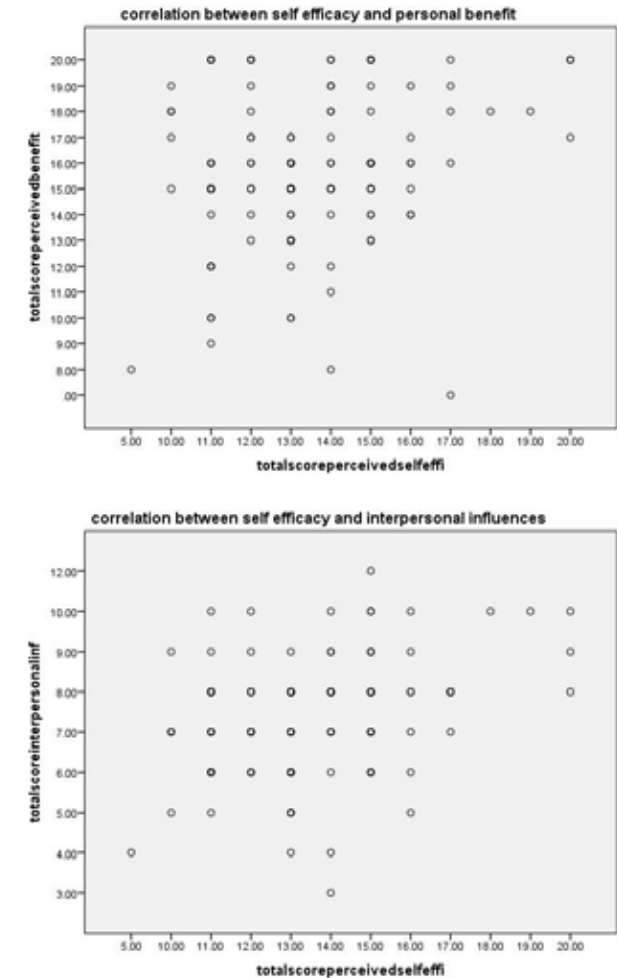


Figure 1: Scatter plot showing positive correlation between self efficacy to personal benefit and interpersonal influences

effective tool over years in evaluating several health programs. It proposes that people are most likely to take preventative action only if they perceive the threat of a health risk to be serious and feel that they are personally susceptible. Health Belief Model could

function as a causal chain, It is referred to as serial mediation, for example, campaign exposure could increase self-efficacy, self-efficacy could influence perceived barriers, and perceived barriers could predict behavior⁹. This study takes into account the demographic, socio-psychological, and structural variables which affect an individual's perceptions of dietary change and thus indirectly influence his or her ability to sustain new eating behaviors¹⁰.

In a study done by Mirzaei Hamed et¹¹ on Application of Health Belief to promote preventive behaviour against iron deficiency anemia among female students, the students were divided into intervention and control group and education on iron deficiency was given. The study suggested that following education there was a significant difference in the mean score of perceived susceptibility, severity, benefits, barriers, perceived self-efficacy, practice guidance and health performance and this was found to be statistically significant. In present study association between the factors of health belief model was analysed in order to guide the health care workers to focus on the factor which will provoke beneficiary effect in the participants. Khadije Baharzadeh¹² study on health belief model to promote preventive behaviors against iron deficiency anemia among pregnant women was also an interventional study in the form of health education. The highest score belonged to the structure of perceived susceptibility 63.12 before intervention and 97.1 after intervention and this was found to be statistically significant. In our study nearly 82.8% had perceived benefit on a highest scale and the mean value of this factor was 15.7. Naseh Ghaderi¹³ study on effect of education on anemia preventive behaviours among Iranian girl students by using HBM was a quasi experimental study conducted among 128 students. This study had highest score for perceived benefit before and after intervention which was similar to our study.

Marziye Reisi¹⁴ did a cross sectional study for Investigating of Mothers' Behavior Based on the Health Belief Model about using iron Supplementation in 6 to 24 month old children. This study concluded that awareness, sensitivity and perceived severity and also perceived benefits of most studied cases (59%) were acceptable but the attitude of a considerable number of the cases (41%) towards removing the barriers (perceived barriers) was found to be poor. In our study there was a significant positive association between perceived benefit and self efficacy. The

study participants were having more self confidence to perceive benefit in order to overcome the health ailment.

Hamideh Mohaddesi¹⁵ studied effect of intervention based on health belief model on the change in nutritional behaviour of pregnant mothers with iron deficiency anemia referred to health centres and the results showed that there was no significant difference between the two intervention and control groups in terms of the health belief constructs and nutritional behavior before the intervention. It was also suggested that based on independent t-test, the mean scores of knowledge, model constructs, self-efficacy and nutritional behavior after intervention were significant compared to the control group ($P < 0.001$). In our study self efficacy had significant association with perceived benefit and interpersonal influences. Marshall H Becker¹⁶ in his study on prediction of dietary compliance by using Health Belief Model which was a prospective experimental design evaluated the ability to predict and explain mothers' adherence to a diet prescribed for their obese children. The result of this study suggested significant correlations between each major dimension of the Model and the outcome measures, and findings from multiple regression analyses also supported the usefulness of the Model as a whole.

Conclusion

Health Belief Model is a psychological model that attempts to explain and predict health behaviors by focusing on the attitudes and beliefs of individuals¹⁰. The study concludes that 82.8% of participants had perceived benefit on highest scale, 76.2% had perceived barrier on a moderate scale and 52.5% had perceived self efficacy on a moderate scale. It also suggested that the study participants with high self efficacy will be able overcome the barriers and perceive benefit of reduced risk in acquiring nutritional anaemia.

Recommendation

The Health belief model is likely to be influential when used by health practitioners especially doctors in a clear and specific manner, when it is placed in the context of overall risk for diseases, and dietary change recommendations can be linked prospectively to tangible risk reduction¹⁰. According to RMNCH+A strategy all interventions are aimed at reproductive, maternal, newborn, child, and adolescent health under a broad umbrella focusing on the strategic lifecycle approach¹⁷. Hence adolescent health should

be of primary concern and everyone in the chain of life cycle including the adolescents should understand their responsibility to lead a healthy life.

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Conflict of Interest: Nil

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Clinical Profile of Unilateral Disc Edema: A Cross-sectional Study

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Abstract

Background and Aim: Optic disc swelling is due to arrest or obstruction of axoplasmic flow at the lamina cribrosa. It may be due to various pathological conditions like ischemia, infiltration, inflammation, compression, metabolic and toxic damage. In this study, the clinical profile of each case of unilateral disc edema was analysed in relation to age of presentation, gender, systemic association, risk factor and prognosis.

Material and Methods: The present study was done in the department of ophthalmology, medical college and hospital. The patients with the unilateral disc edema were included in the study. Visual acuity was measured using Snellen's acuity chart and converted to logmar for the purpose of statistical analysis. Intraocular pressure was recorded. Colour vision was recorded using Ishihara chart. Routine blood investigations were done. Radiological imaging was done.

Results: Females are affected more commonly compared to males in the study group. The commonest cause for unilateral disc edema is nonarteritic AION and the next common cause is optic neuritis. Compressive disc edema, inflammatory disc edema and neuroretinitis are the other conditions causing unilateral disc edema. In this study 60 % of the persons showed disc pallor on follow up and 40 % of person showed normal fundus. 66.67 % of patients of NAION had disc pallor on follow up. MRI BRAIN in NAION showed small vessel ischemic changes in 6.67% of persons which indicates the ischemic change were also noted in brain.

Conclusion: If a patient with unilateral disc swelling presents to neuroophthalmology clinic, NA-AION and ON should be considered first in the differential diagnosis. Other causes of disc edema should not be missed.

Keywords: Compressive disc edema, Intraocular pressure, Ophthalmology, Optic disc swelling

Introduction

Disc edema is a common manifestation of variety of disorders. The disc edema can be unilateral or bilateral. Unilateral disc edema can be inflammatory, ischemic, compressive or infiltrative. It may also be an eye opener for detection of certain systemic diseases. Hence, it is very essential for an ophthalmologist to clinically evaluate and differentiate the causes of disc edema.¹

The presenting signs and symptoms will be different depending upon the cause of the disc edema and the work up for that also should be individualized based on the history and the examination finding.

The management and prognosis depends upon the etiology of the disc edema.^{2,3}

Optic disc swelling is due to arrest or obstruction of axoplasmic flow at the lamina cribrosa. It may be due to various pathological conditions like ischemia, infiltration, inflammation, compression, metabolic and toxic damage.^{4,5}

Ophthalmoscopically, the early disc edema usually presents as superior and inferior margin blur and the increasing swelling can obscure the blood vessels at the disc margin. Hyperemic disc with absent spontaneous venous pulsation may be seen. In the stage of fully developed disc edema, intra retinal

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hemorrhages, infarcts leading to soft exudate and hard exudates may be seen.⁶⁻⁸

In the long course, after several months, the hemorrhages and hard exudates may resolve and the hyperemia is replaced by milky gray appearance due to gliosis. The presence of optic chiasm, neovascular membrane with subretinal hemorrhages and serous fluid are also not uncommon. The final fate of any optic nerve disease is atrophy. The type of atrophy in any disc edema is secondary with dirty yellow colour disc with ill defined disc margin with surrounding vascular sheathing. Once the atrophy develops, the optic nerve does not swell.^{9,10}

In most cases the vision can be preserved with appropriate and prompt treatment. If the disc edema is left untreated it can lead to permanent and irreversible blindness due to optic atrophy.¹¹ In this study, the clinical profile of each case of unilateral disc edema was analysed in relation to age of presentation, gender, systemic association, risk factor and prognosis.

Materials & Method

The present study was done in the department of ophthalmology, medical college and hospital. The study was done for the period of one year. The ethical committee was informed about the study and the ethical clearance certificate was obtained prior to the start of the study. Both male and females were included in the study.

The age range of the included patients was from 20 – 65 years. The patients with the unilateral disc edema were included in the study. The exclusion criteria for the study as follow: Patient with bilateral presentation and papilledema and patient with age < 20 years.

The patients reported to the ophthalmology department were registered for the study. The patients were informed about the study, and the written informed consent was obtained prior to the start of the study. The patients who did not provide the informed consent were excluded from the study. The included patients were evaluated and followed up during the study period.

The detailed history of the present illness was recorded. Visual acuity was measured using Snellen's acuity chart and converted to logMAR for the purpose of statistical analysis. Slit lamp bio microscopy of anterior segment, fundus with +90D lens was used.

Intraocular pressure was recorded. Direct and Indirect Ophthalmoscopy was done. Colour vision was recorded using Ishihara chart. Routine blood investigations were done. Radiological imaging was done. Follow up was done at regular intervals. Various parameters were checked on follow up to check the improvement in visual activity.

Data collected were entered in Excel spreadsheet and analyzed using STATA statistical software package release 11. We used the two-sided independent-samples t test to compare means across dichotomous variables (i.e. men v. women); the one-way ANOVA test for comparison of means across multilevel variables. Simple calculations like Percentages, Proportions and Mean values were derived. A type I error of 0.05 was considered in all analyses.

Results

Total of 60 cases diagnosed with unilateral disc edema were included in the study with each case of unilateral disc edema were analysed in relation to age of presentation, gender, systemic association, risk factor and prognosis. The mean age of presentation of NAION is 51 years and the mean age of presentation of optic neuritis is 30 years. This indicates the association of systemic disease with NAION as it affects the age group between 40 to 50 years and the association of demyelination with optic neuritis as it affects the age group between 20 to 30 years. In general females are affected more commonly compared to males in the study group.

It is evident from the study, the commonest cause for unilateral disc edema is nonarteritic AION and the next common cause is optic neuritis. Compressive disc edema, inflammatory disc edema and neuroretinitis are the other conditions causing unilateral disc edema. All the cases in our study had unilateral affection of the disease.

In this study, fundus examination of uninvolved eye showed normal fundus in 50% of cases. Other 50% of cases showed some findings which helped in diagnosing the condition. 'At risk' crowded disc was seen in 6.67% of persons, hypertensive and diabetic changes were noted in 10% of cases.

There is no specificity of the eye involved. Both eyes are equally affected in the study group. In this study 60% of the persons showed disc pallor on follow up and 40% of person showed normal fundus. 66.67% of

patients of NAION had disc pallor on follow up. All the patients of optic neuritis had disc pallor on follow up even though the vision was good. Neuroretinitis disc edema and inflammatory disc edema usually resolved without producing any disc pallor.

MRI imaging was needed only in 40 % of the patients. It was 100% useful in compressive neuropathy and also aided in diagnosing optic neuritis in some patients. It also helped in diagnosing longitudinally extensive transverse myelitis which was an important sign in diagnosing neuromyelitis optica. MRI BRAIN in NAION showed small vessel ischemic changes in 6.67% of persons which indicates the ischemic change were also noted in brain.

Table 1: Different causes of unilateral disc edema

Diagnosis	Frequency
NAION	32
INFLAMMATORY NEUROPATHY	6
OPTIC NEURITIS	10
COMPRESSIVE NEUROPATHY	6
NEURORETINITIS	6
TOTAL	60

Table 2: Different fundus findings in uninvolved eye

Other eye fundus	Frequency
GIII HT RETINOPATHY	2
ARTERIOLAR ATTENUATION	12
DM RETINOPATHY	4
HIGH MYOPIC	2
NO VIEW	2
DISC AT RISK	4
ROTH SPOTS	2
PALLOR	2
NORMAL	30
TOTAL	60

TABLE 3: Disc pallor on follow up

Disc pallor	Present	Absent
NEURORETINITIS	0	6
INFLAMMATORY DISC EDEMA	0	6
AION	24	8
COMPRESSIVE OPTIC NEUROPATHY	2	4

Disc pallor	Present	Absent
OPTIC NEURITIS	10	0
Total	36	24

Discussion

Jong Jin Jung, Seung-Hee Baek¹² and et al conducted the study called Analysis of the Causes of Optic Disc Swelling and its result showed that the most common cause with optic disc edema was NAAION and the second most common cause was ON. There was no case of arteritic AION in this study. The NA-AION was diagnosed at an older age in this study and the common type of field defect in NA-AION was an inferior altitudinal defect. Optic neuritis was associated with a better prognosis than NA-AION. The compressive optic neuropathy causing disc edema is only 6.1%. In our study also NAION is the most common cause of unilateral disc edema and the second is optic neuritis.

Preechawat P¹³, Bruce BB, et al studied the characteristics of AION in patients younger than 50 years. They concluded that AION in younger patients is not uncommon and it represents 23% of AION patients. In this study, AION was also common in age group between 40 to 50 years.

MRI imaging was needed only in 40 % of the patients. It was very much useful in compressive neuropathy. MRI Brain in NAION showed small vessel ischemic changes in 6.67% of persons which indicates that the ischemic change were also noted in the brain.¹⁴ In NAION, disc showed sectoral pallor in 100% of patient, disc haemorrhages in 93.75% of patients. Fellow eye fundus of NAION patient showed small crowded disc [disc at risk] in 6.67% of patients.

Fellow eye involvement was seen in 12.5% of patients with NAION. 66.7% of the NAION patients showed disc pallor on follow up and all cases of optic neuritis showed temporal pallor on follow up. The visual prognosis of NAION is very poor even with prednisolone treated group and with only control of systemic factors without oral prednisolone. All cases of optic neuritis showed improvement with intravenous steroids but it did not alter natural course of the disease.

Conclusion

If a patient with unilateral disc swelling presents to neuroophthalmology clinic, NA-AION and ON

should be considered first in the differential diagnosis. Other causes of disc edema should not be missed. A detailed history taking, visual field, color-vision and imaging tests should be performed for each and every case of unilatreal disc edema. Regular follow-up examination would be necessary for all cases to look for visual recovery and recurrence.

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

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A Study of Effectiveness of Videolaryngoscopy and Conventional Laryngoscopy in Adult Patients for Orotracheal Intubation

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Abstract

Aim: Present study was carried out to evaluate and compare the laryngeal view and intubation by direct laryngoscope using macintosh blade with video laryngoscope in adult patients requiring endotracheal intubation.

Material and Methods: This prospective study was carried out at our institute - GUJARAT CANCER SOCIETY MEDICAL COLLEGE, HOSPITAL AND RESEARCH CENTER. Total 100 adult patients for elective surgery under general anaesthesia were included in this study. Patients were randomly divided in two groups. Each group included 50 patients. Group A: Videolaryngoscopy, Group B : Conventional Laryngoscopy. Hemodynamic changes and SpO₂ were noted and recorded during the procedure at various intervals.

Results: Cormack Lehane glottis view is better with videolaryngoscope than conventional Macintosh laryngoscope and is significant statistically. The mean tracheal intubation time was higher, in Group B as compared to Group A. But the differences were statistically not significant. The mean rate of failure to intubate was almost similar among both the groups. The difference was statically not significant. No statistically significant difference was observed in mean arterial BP between the two study groups, at any point time.

Conclusion: video laryngoscope offers a better laryngeal view, minimum external maneuvers, less attempts for intubation and provides better hemodynamic response during laryngoscopy and intubation as compare to direct laryngoscopy with Macintosh blade.

Keywords: Intubation, Laryngoscope, Pulse rate, Videolaryngoscope

Introduction

Airway Management, an essential skill forms the central pillar of the practice of anaesthesiology, resuscitation, critical care and emergency medicine. Maintaining a free airway during general anaesthesia is primarily achieved by cannulation of trachea via orotracheal route, a technique recognised as endotracheal intubation. Intubation isolates the

respiratory tract from digestive tract, allows control of breathing, and facilitates administration of oxygen, anaesthetic gases and drugs. Proper view of glottis is either by direct or indirect laryngoscopy. An ideal laryngoscopy must provide adequate visualisation of glottis to allow correct placement of endotracheal tube with the minimum effort, less elapsed time and minimal potential for injury to the patient.

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Direct laryngoscopy (DL) relies on the formation of a "line-of-sight" between the operator and the laryngeal inlet, success depends on proper head positioning and consistent anatomy. When the above conditions are not met, for example in poor tissue mobility, restricted mouth opening, or large tongue, the failure rate of intubation with conventional direct laryngoscopy increases.^{1,2,3}

The King Vision videolaryngoscope is a fully portable and wireless video laryngoscope with high blade angulation allowing best visualization of larynx indirectly through small portable flat screen monitor. Laryngoscopy and intubation is noxious stimulus which results in sympathetic response leading to hypertension and tachycardia, which can in turn produce adverse cardiovascular events, especially in patients with cardiac comorbidities. The hemodynamic response is due to the oropharyngeal stimulation produced by laryngoscopy and laryngotracheal stimulation due to tube insertion. Videolaryngoscopes do not require the alignment of oral, tracheal and laryngeal axes for glottic visualization and hence may cause less oropharyngeal stimulation and airway trauma.

So present study was carried out to evaluate and compare the laryngeal view and intubation by direct laryngoscope using macintosh blade with video laryngoscope in adult patients requiring endotracheal intubation.

The king Vision videolaryngoscope is a fully portable and wireless video laryngoscope with high blade angulation allowing best visualisation of larynx indirectly.

Material and Methods

This prospective study was carried out at our institute - GUJARAT CANCER SOCIETY MEDICAL COLLEGE, HOSPITAL AND RESEARCH CENTER. Ethical permission was obtained from the ethical committee of GCSMCH & RC. Informed written consent was obtained from each patient and the procedure was explained to the patients.

Total 100 adult patients of either Sex, Age ≥ 18 years, having ASA grade I/II posted for elective surgery under general anaesthesia were included in this study. Patients were randomly divided in two groups. Each group included 50 patients.

Group A : Videolaryngoscopy (King Vision - Channeled Blade)

Group B : Conventional Laryngoscopy (Macintosh Blade)

Inclusion Criteria

- Informed consent of patient.
- Age ≥ 18 years
- Patients scheduled for elective surgeries requiring oral tracheal intubation.
- Mouth opening ≥ 2 or 2 and half fingers.
- Mallam Patti Grade 1 and 2
- ASA grade 1 and 2.

Exclusion Criteria

- Patient refusal
- Emergency surgeries.
- Age ≤ 18 years
- Mallam Patti Grade 3 and 4
- Patient with airway pathology. (Oral, Pharyngeal, Laryngeal Carcinoma)
- Patients with nil mouth opening

Pre Operative Assessment

It was done one day before the surgery. Any significant past, family and personal history were taken. General physical examination was done, vitals and investigations were noted. A meticulous airway assessment was done to exclude patients with difficult airway by giving attention to Inter Incisor gap, Modified Mallampati airway classification, Neck movements, Thyromental distance, Sternomental distance and examination of dentition.

Patients were kept NBM for 6 hours prior to surgery.

Patient preparation

On the day of surgery, the patients were taken to the operating room, 18 G intravenous cannula inserted and I.V. fluid started. Multipara monitor was attached and baseline pulse rate, blood pressure and SpO₂ were recorded. All patients were pre-oxygenated for 3 min before induction.

Premedication: Inj. Ondansetron 4 mg I.V.
Inj. Glycopyrrolate 0.2 mg I.V.
Inj. Fentanyl 2 μ g/kg I.V.

Induction: Inj. Propofol 2 mg/kg I.V.
Inj. Succinylcholine 2 mg/kg I.V.

Intubation

Procedure was performed by a senior anesthetist who has experience of 2 years. Endotracheal tubes; Size 7.0–7.5 mm tracheal tubes for females and size 8.0–8.5mm in males were used.

Group A (n=50): patients were intubated using King Vision video laryngoscope. CHANNELLED BLADE

Group B (n=50): patients were intubated using direct laryngoscope with Macintosh blade.

Procedures of Video Laryngoscopy and Direct laryngoscopy

All patients were kept in supine position with head in neutral position in group A and in sniffing position in group B.

In group A After adequate depth of anaesthesia, King Vision laryngoscope with proper size CHANNELLED blade (no.3/4) premounted with appropriate size slightly lubricated endotracheal tube was introduced in the midline, superior to the tongue and advanced towards the larynx until the epiglottis was visualized. On visualization of the cords, Cormack- Lehane grade (CLG) was noted. Proper size of ET tube was inserted from the angle of the mouth to the trachea.

In group B, direct laryngoscopy was performed with Macintosh blade in a usual way with head in sniffing position. The blade tip is inserted into the vallecula. The Cormack- Lehane grade (CLG) was noted. The maneuvers required facilitating the intubation like external laryngeal manipulation, use of stylet or bougies were noted. After successful intubation, the patients were mechanically ventilated for the surgical procedure and anaesthesia was maintained with sevoflurane in a mixture of nitrous oxide and oxygen in a 1:1 ratio with muscle relaxant as per requirement of the surgery.

Total time taken for intubation:-

During the procedure, time was noted by an assistant from introducing the laryngoscope into the mouth till the appearance of first square wave capnography on EtCO₂ monitor and bilateral chest movement during manual ventilation, this time was considered as the total time taken for intubation.

Monitoring:

- Pulse/min
- Blood pressure in mmHg
- EtCO₂
- ECG monitoring
- SPO₂
- Hemodynamic changes (Pulse rate and blood pressure) and SpO₂ were noted and recorded during the procedure (Laryngoscopy and Intubation) at various intervals.
 - Pre op- Baseline
 - Before laryngoscopy and intubation
 - After laryngoscopy and intubation
 - 0,5,10 ,15 minutes after intubation.

Statistical Analysis

The socio-demographic parameters were compared between the two study groups, using frequencies and percentages for categorical variables, mean and standard deviation for quantitative variables. The statistical significance was assessed by independent sample student t-test. IBM SPSS Version 26 and © 2018 Graph Pad Software was used for statistical analysis.

Results

This clinical study comprised of 100 adult patients. They were divided into two groups. Each group included 50 patients.

Table 1: Demographic Data

VARIABLE	GROUP A	GROUP B	P-VALUE
AGE (YEARS)	42 ± 15.3	43 ± 12.5	0.58
GENDER (M:F)	21:29	26:24	NA
WEIGHT (KG)	58 ± 10.6	56 ± 6.2	0.108
ASA GRADE (I/II)	1.36 ± 0.48	1.36 ± 0.48	0.120
MOUTH OPENING	3.0 ± 0.0	3.0 ± 0.0	1.00
MALLAM PATTI GRADE	1.3 ± 0.46	1.2 ± 0.38	0.008

The predictors of difficult intubation were also

comparable in both groups. Cormack Lehane Grade I and II (A) was found in 99% and 1% respectively of patients in Group A, 72% and 28% respectively of patients with Group B.

Table 2: Total Time Taken For Intubation

VARIABLE	GROUP A	GROUP B	P-VALUE
Time Taken for intubation	25 ± 7.3	35 ± 6.7	0.197
No. of Attempts	1 ± 0.0	1.14 ± 0.35	0.000

The mean tracheal intubation time was higher, in Group B as compared to Group A. But the differences were very minimal and were statistically not significant. All the cases in the Group A were intubated in first attempt, but some of the patients in Group B had required more than 1 attempt, which resulted in higher mean number of attempts.

Table 3: Maneuvers Required Facilitating Intubation

VARIABLE	GROUP A	GROUP B	P-VALUE
BURP Manoeuver	1.28 ± 0.141	1.98 ± 0.45	0.000
Use of BOUGI/ STYLET	1.94 ± 0.240	1.88 ± 0.331	0.030

Table 4: Comparison Of Pulse Rate

VARIABLE	GROUP A	GROUP B	P VALUE
Baseline Pulse Rate	92 ± 13.7	90.5 ± 12.5	0.655
Pulse Rate before intubation	86.9 ± 11.4	87.02 ± 10.6	0.966
Post intubation (0 min.) Pulse Rate	87.14 ± 11.2	88.76 ± 11.04	0.693
Post intubation (after 5 min.) Pulse Rate	83.78 ± 10.5	85.2 ± 9.09	0.805

VARIABLE	GROUP A	GROUP B	P VALUE
Post intubation (after 10 min.) Pulse Rate	82.62 ± 9.9	84.62 ± 8.33	0.641

No statistically significant difference was observed in heart rate between the two study groups, at any point time. No statistically significant difference was observed in mean arterial BP between the two study groups, at any point time.

Table 5: Complications

COMPLICATIONS	GROUP A	GROUP B
SOFT TISSUE INJURY	4	7
TOOTH INJURY	0	0
SORE THROAT	0	0
HOARSNESS OF VOICE	0	0

No significant differences in complications were seen in all two groups.

Discussion

Present study was carried out to evaluate and compare the laryngeal view and intubation by direct laryngoscope using macintosh blade with videolaryngoscope in adult patients requiring endotracheal intubation. Total 100 adult patients of age 18 to 65 years of either sex, ASA grade I/II posted for elective surgery under general anaesthesia were included in this study.

Group A included 21 males and 29 females patients and Group B included 26 males and 24 females. Demographic data were comparable in both groups.

All subjects in Group A showed vivid, wide, magnified, true colour and binocular view of vocal folds without using greater retraction force. In Group B 72% subjects had Cormack Lehane grade 1 view, 38% with grade 2a, laryngeal view. **Jungbauer, M. Schumann, V. Brunkhorst, et al⁶** concluded that Videolaryngoscopy when compared to direct laryngoscopy for difficult intubations provides a significantly better view of the vocal cords, a higher success rate, faster intubations and less need for optimizing maneuvers. **Griesdale DE et al¹¹** concluded that Video laryngoscopy resulted in successful glottic

visualisation in 85% of patients compared to only 30% in direct laryngoscope group.

In our study the mean **tracheal intubation time** (TTI) was 25 seconds in Group A and 35 seconds in Group B. **Akbar SH, Oioi JS et al⁹**, compared the intubation profile and hemodynamic fluctuations between C-MAC video laryngoscope and Macintosh direct laryngoscope with immobilised cervical spine. **Murphy LD, Kovacs GJ, Reardon PM, Law JA et al¹⁴** also found similar findings.

The heart rate in both groups decreased from basal value after premedication with fentanyl and midazolam and lowered further after induction with Propofol. Both groups were comparable and found not significant.

In both groups Systolic, diastolic and mean blood pressure decreased to lower value from basal to premedication and to post induction. After intubation they all increased to basal value from post induction value at PT0 then started declining to remain stable by about 5 minutes after intubation. **Prathima Padavarahalli Thammanna et al¹** found that the hemodynamic responses to laryngoscopy and intubation with King Vision videolaryngoscope were similar when used in normotensive patients with normal airway.¹

4 patients in Group A and 7 patients in Group B had airway trauma. No patients had cuff perforation or hypoxia in both the groups. Our study was conducted in patients with normal airway and hence it cannot be applied to difficult airway management. For this further study is required.

Conclusion

From present study, we concluded that videolaryngoscope offers a better laryngeal view, minimum external maneuvers, less attempts for intubation and provides better hemodynamic response during laryngoscopy and intubation as compare to direct laryngoscopy with Macintosh blade.

Conflict of Interest: none

Source of Support: Nil

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Comparative Analysis to Assess Pregnancy Related Issues among Women over 35 Years of Age

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Abstract

Background and Aim: Advanced maternal age (AMA) is seen by patients and healthcare professionals, to be correlated with poorer outcomes to pregnancies. This is largely because of the higher incidence of chronic medical conditions among older women. The present study has been conducted to reckon the strength of the association between maternal age and obstetric issues pertaining to women.

Material and Methods: The present study was conducted in the Department of Obstetrics and Gynecology, tertiary care institute of India. A total number of patients included in the study were 280 which were divided into two groups based on age of patients. Group A consists of 200 pregnant women aged < 35 years and group B consists of 80 pregnant patients aged ≥35 years. Routine antenatal examination along with some additional lab investigations like KFT; LFT etc. were performed.

Results: The difference in number of cesarean sections, assisted pregnancies and early pregnancy loss between group A and group B was statistically significant. We found a significant difference between group A and group B with respect to early pregnancy loss, C-section, antepartum, intrapartum and postpartum complications ($p < 0.001$).

Conclusion: Advanced maternal age is linked with disastrous pregnancy issues. Without any doubt, extreme maternal age invites a catastrophe of pregnancy related complications that include antenatal, intrapartum and postpartum complications. Natural conception becomes all the more challenging and hence the role assisted pregnancies comes into play.

Key Words: Advanced maternal age, Gynecology, Postpartum Complications, Pregnancy,

Introduction

Maternal age at childbearing has dramatically shifted in the last decades due to a broad range of social and cultural determinants. In Italy the mean age at delivery rose from 25.2 years in 1981 to 31.7 in 2015.^{1,2} This trend toward delayed childbearing is reported worldwide (e.g. USA or China)³⁻⁵, and comes, in parallel, with a decline in pregnancies at a younger age, so that these are increasingly rare in developing countries. The teen birth rate in the USA

has fallen 61% from 1991. Maternal age has become all the more important factor to determine the severity of complications associated with pregnancy. However, there is no universal definition of advanced reproductive age in women, in part because the effects of increasing age occur as a continuum, rather than as a threshold effect. Fertility clearly declines with advancing age, especially after the mid-30s, and women who conceive are at greater risk of pregnancy complications.¹

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The risks related to pregnancy in those over 35 years old, especially primiparity, can be understood from two perspectives: first, the actual medical risks, and second, the acceptability of the risks as defined through social discourse among different groups within society.^{6,7} Medical risks are related to an ageing reproductive system and an ageing body, whereas social discourse prescribes the way in which older pregnant women are regarded as mothers, and when it is “considered” that women “should have” children. It has been said that pregnant women and healthcare providers understand the risks differently: pregnant women evaluate the risks subjectively, through their own experiences, whereas healthcare providers assess the risks in an apparently more objective way.⁶

Advanced maternal age (AMA) is seen by patients and healthcare professionals, to be correlated with poorer outcomes to pregnancies. This is largely because of the higher incidence of chronic medical conditions among older women. Women of AMA are often treated as if they are in need of the level of care necessary for any high-risk pregnancy; and they are treated differently even if there is no scientific basis for different treatment and there are no medical problems evident.⁸

There are multifaceted factors that encourage women to delay pregnancy process which includes financial goals, longer life expectancy, higher education, pursuit of career and sometimes due to miscalculations women halt the pregnancy process and subsequently invite major complications like; chromosomal abnormality, miscarriages, ectopic pregnancies and congenital anomalies, pre-eclampsia, gestational diabetes, intrauterine growth restriction and antepartum hemorrhage.⁹⁻¹³ There are some studies that have explored the association between maternal age and pregnancy outcome. Cesarean sections, instrumental assisted deliveries are more commonly adopted procedures among these women.¹⁴

Material and Methods

The present study was conducted in the Department of Obstetrics and Gynecology, tertiary care institute of India. A total number of patients included in the study were 280 which were divided into two groups based on age of patients. Group A consists of 200 pregnant women aged < 35 years and group B consists of 80 pregnant patients aged ≥35 years. Women who meet inclusion criteria and agreed to willfully participate in

the study were evaluated for different parameters at outpatient department of obstetrics and gynecology. Routine antenatal examination along with some additional lab investigations like KFT; LFT etc. were performed. All women who qualified the inclusion criteria were asked for monthly follow-up till 28 weeks and then fortnightly follow was advised to these patients up to 36 weeks and thereafter weekly follow-up was recommended to them.

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

Table 1, show that there were 200 women aged < 35 years and 80 women aged ≥35 years. The difference in number of cesarean sections, assisted pregnancies and early pregnancy loss between group A and group B was statistically significant. Evidently, out of 200 women in group A, (35%) had cesarean section, (6%) women had early pregnancy loss and (2.5%) had assisted conception. On the other hand, in group B out of 80 patients, (38.7) patients had cesarean section, (16.2%) had early pregnancy loss and (11.2%) women had assisted conception.

We observe that out of 200 women in group A, 74 had antepartum complications, of them (12%) had preterm delivery, (10%) had induced labour, (7.5%) had hypertensive disorder of pregnancy, (7%) had gestational diabetes mellitus and (0.6%) had placenta previa. However, in B out of 80 women, 60 developed antepartum complications, of them (20%) had hypertensive disorder of pregnancy, (23.75%) had preterm delivery, (8.75%) had induced labour, (8.75%) had gestational diabetes mellitus and (1.2%) developed placenta previa. Statistically, found that both groups differ significantly from one another with respect to each and every antepartum, intra and postpartum complication except for induced labour and vaginal trauma.

We observe that both the groups are statistically comparable with respect to NICU admission with a $p=0.15$ which means that the proportion of NICU admissions in both the groups is comparable.

Table 1: Comparison of various parameters

Variables	Group A (200)		Group B (80)		P value
	No	%	No	%	
Assisted conception	5	2.5	9	11.2	0.05*
Early pregnancy loss	12	6	13	16.2	0.001*
Cesarean section	70	35	31	38.7	0.02*

* indicates statistically significance at $p \leq 0.05$

Table 2: Comparison of antepartum, intrapartum and postpartum complications between the groups

Variables	Group A (200)		Group B (80)		P value
	No	%	No	%	
Antepartum complications					
Hypertensive disorder of pregnancy	15	7.5	16	20	0.003*
Gestational diabetes mellitus	14	7	7	8.75	0.05*
Placenta previa	1	0.5	1	1.2	0.003*
Preterm delivery	24	12	19	23.75	0.001*
Induced labour	20	10	7	8.75	0.9
Intrapartum and postpartum complications					
Vaginal trauma	7	3.5	7	8.75	0.25
Postpartum hemorrhage	4	2	11	13.75	0.001*

* indicates statistically significance at $p \leq 0.05$

Discussion

In the Western world, the average age at which first time mothers give birth is continually rising.¹⁵ Complications and risks associated with pregnancy among women of AMA have been addressed in numerous studies from different viewpoints, mostly focusing on the medical risks associated with higher maternal age. The purpose of this research was to profile how women over 35 years and the associated pregnancy-related risks have been described in previous research.

In all developed countries, the deep social and economic transformations of recent decades have led to higher life standards together with a deferment of parenthood.^{2,3,16} This phenomenon is due to multiple determinants: global aging of population with an increasing prevalence of women aged between 35 and 45 years, the change in social customs with a rise in divorces and second marriages, improvements to women's educational and professional outlooks as well as the diffusion of contraception. The availability of contraception has made women protagonists of their childbearing options. Asked to explain the main determinants of their pregnancy plan, a survey group of women mentioned educational and career achievements, financial goals and emotional stability, illustrating how individual readiness seems to be an essential factor in guiding childbearing options.^{16,17}

Out of a total of 280 women patients, 200 were < 35 years and 80 women were ≥ 35 years. So, the classification of patients with respect to age threshold of 35 year was made. The patients were divided in two groups; group A consists of 200 women with age < 35 years and group B consists of 80 women with age ≥ 35 years. The difference in number of cesarean sections, assisted pregnancies and early pregnancy loss between group A and group B was statistically significant. Evidently, out of 200 women in group A, (35%) had cesarean section, (6%) women had early pregnancy loss and (2.5%) had assisted conception. On the other hand, in group B out of 80 patients, (38.7) patients had cesarean section, (16.2%) had early pregnancy loss and (11.2%) women had assisted conception. Contemporary to the research, Pawde et al reported that women with 35 years of age and above had significantly higher rates of assisted conception (12.6%) compared to (3.5%) in women with 35 years old which in consonance to our observation, similarly they reported higher rates of early pregnancy (18.9%) in women with 35 years of age and beyond compared to (10.5%) in women with < 35 years of age.¹⁷ Several authors have reported the similar kind of observations with regard to early pregnancy losses and assisted conceptions.^{16,17}

Several authors have reported the similar kind of observations with regard to early pregnancy losses and assisted conceptions.^{16,17} We analyzed patients for antepartum intra and postpartum complications and observed that 74 had antepartum complications, of them (12%) had preterm delivery, (10%) had induced labour, (7.5%) had hypertensive disorder of

pregnancy, (7%) had gestational diabetes mellitus and (0.6%) had placenta previa. However, in B out of 80 women, 60 developed antepartum complications, of them (20%) had hypertensive disorder of pregnancy, (23.75%) had preterm delivery, (8.75%) had induced labour, (8.75%) had gestational diabetes mellitus and (1.2%) developed placenta previa. In tune with our observations, most of the authors have also reported higher incidence of hypertensive disorders in women aged 35 years and above.^{18,19} Pawde et al also reported significantly higher rates of hypertension (17.54%), preterm delivery (17.5%), gestational diabetes (10.52%) in women aging 35 years or above compared to hypertension (7.23%), preterm delivery (10.3%), gestational diabetes (6.43%) in women less than 35 years of age.¹⁴ Similar to our observations, some authors have also reported significant difference between the two groups with respect to placenta previa, gestational diabetes.^{12,20}

In present study we found that the difference in number of intrapartum and postpartum complications is statistically significant in favor of group A. We observed that out of 200 women in group A, (3.8%) had vaginal trauma and (1.9%) had postpartum hemorrhage. However, in group B, out of 80 women, (9.5%) had vaginal trauma and (12.9%) had postpartum hemorrhage and the difference was significant with respect to postpartum hemorrhage but insignificant with respect to vaginal trauma. Labri et al have also reported a significant difference between the two groups with respect to vaginal trauma and postpartum hemorrhage.²¹ However, Pawde et al reported that (5.26%) of women with 35 years of age and above had intrapartum complications compared to (0.9%) in women with less than 35 years of age, reportedly there was a significant difference in intrapartum complications between the 2 groups, however, they found that both the groups are comparable with respect to postpartum complications.¹⁴

The reason for the insignificance between the groups with respect to NICU admission can be attributed to the management and timely intervention of health care workers.

Conclusion

Advanced maternal age is linked with disastrous pregnancy issues. Without any doubt, extreme maternal age invites a catastrophe of pregnancy related complications that include antenatal, intrapartum and postpartum complications. Natural

conception becomes all the more challenging and hence the role assisted pregnancies comes into play.

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

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Diabetic Retinopathy and Typical Retinitis Pigmentosa

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Abstract

A 39-year-old woman with typical retinitis pigmentosa (RP) for 9 years and a positive family history of night blindness was diagnosed with diabetes mellitus (DM). She developed proliferative diabetic retinopathy (PDR) during the course of disease. She was promptly managed with pan retinal photocoagulation (PRP). PDR developing in a case of typical RP is extremely rare and has not been reported in the literature to date. Recognition of this rare, vision threatening complication, points out a definite need to further look deep into the pathogenesis of diabetic retinopathy.

Keywords: Diabetic, Recognition, Retinal, Retinitis

Introduction

Diabetic retinopathy is an important cause of preventable blindness and retinitis pigmentosa is an ocular condition known to have a protective effect against development of diabetic retinopathy.¹ We describe a case of a 39-year-old woman with typical retinitis pigmentosa who developed proliferative diabetic retinopathy. To the best of our knowledge, this is the first case to be reported of proliferative diabetic retinopathy in a case of typical retinitis pigmentosa.

Presentation

A 39-year-old woman presented with painless progressive loss of vision of 1 year duration, more in the left than the right eye. She had night blindness for 9 years and a significant positive family history of night blindness, with her father and two siblings having similar symptoms. She was a diabetic on treatment with oral hypoglycaemic agents and insulin for 2 years. There was no history of other systemic

illness and family history of systemic diseases was unremarkable.

A detailed ocular examination was performed. Visual acuity was 20/30 in both eyes and intraocular pressure 20 mm Hg by non-contact tonometer. Anterior segment evaluation of both eyes showed early posterior sub capsular cataract (P1-P2 by LOCS III classification). The patient did not have evidence of anterior segment inflammation on slit lamp examination. A detailed fundus examination of both eyes revealed typical bony spicule pigmentation in the mid-peripheral region, arteriolar attenuation and pallor of the disc. In addition, micro aneurysms were seen in both eyes and neovascularisation of the disc was noted in the left eye. There was no evidence of vitreous floaters/opacities, retinal vascular sheathing, retinal holes, tears, retinal telangiectasia or subretinal exudation. A clinical diagnosis of bilateral typical retinitis pigmentosa with mild non-proliferative diabetic retinopathy of the right eye and proliferative diabetic retinopathy of the left eye was made.

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Automated perimetry with a Humphrey field analyser revealed bilateral constriction of visual field, which was correlating with the finding of RP. Fluorescein angiography was carried out, which revealed the presence of multiple point hyper-fluorescent areas in the perifoveal region of both eyes with leak in the late phase and blocked fluorescence caused by the bony spicule pigmentation in the mid-periphery. In addition, there was also, in the left eye, hyper-fluorescence at the disc, which increased in the mid to late phase suggestive of definite neovascularisation at the disc. Fluorescein angiography confirmed the clinical diagnosis of proliferative diabetic retinopathy (PDR) in the left eye with neovascularisation of the disc along with presence of microaneurysms and thickening of the macula not involving the centre, and mild non-proliferative diabetic retinopathy in the right eye.

The systemic investigations revealed an uncontrolled hyperglycaemic status with fasting blood glucose of 240 mg% and glycated hemoglobin 8.4%. The patient's blood urea was 23 mg% and serum creatinine was 0.9 mg%. Her biochemical and haematological investigations were unremarkable except for uncontrolled hyperglycaemia.

The patient was promptly managed with pan retinal photocoagulation (PRP) of the left eye in three sittings, and strict glycaemic control. At the end of 1 year follow-up, the patient had a stable disease in the left eye post PRP. The right eye showed progression of the diabetic retinopathy to proliferative stage, with appearance of neovascularisation, which was confirmed by fluorescein angiography. The patient was managed with PRP of the right eye in three sittings.

After 2 years follow-up, the patient has stable disease in both eyes post PRP with absence of leak in the fluorescein angiography. Visual acuity was maintained at 20/40 in both eyes.

Discussion

Diabetic retinopathy and retinitis pigmentosa are two common conditions not shown to coexist in the same individual. In a large population based study, Chen *et al*² clearly showed that retinitis pigmentosa reduces the risk of proliferative diabetic retinopathy. Tarr *et al*³ have given a detailed description of the various interconnecting pathways and key contributors to the development of diabetic retinopathy. Sternberg *et al*

have shown a negative coincidence of DR and RP. They suggested that attenuation of the blood vessels and the presence of early posterior vitreous detachment prevented the progression to proliferative stage.¹ Arden *et al*, in their detailed survey of patients with DM and RP, showed that there was no evidence of proliferative changes in the retina in patients with RP. They explained that the possible loss of rods decreased the severity of hypoxia and production of vascular endothelial growth factor, thereby preventing the changes of diabetic retinopathy from developing in patients with RP.⁴ Spalton *et al*⁵ explained the role of inflammation due to degeneration of photoreceptors and retinal pigment epithelium in the development of retinal oedema.

There are anecdotal reports of retinal vascular abnormalities previously described in RP patients and include a Coats-type RP, sub retinal exudation, retinal detachment, and neovascularisation of disc and periphery. In all these reported cases, loss of receptor cells, RPE dysfunction, altered metabolic environment of the retinal vasculature and capillary non perfusion were identified as possible causes. These cases were not associated with diabetes mellitus.⁶ Hotta and Hotta⁸ described an isolated case of diabetic macular oedema in an RP patient that was managed with trans-Tenon's retrobulbar triamcinolone infusion.

Our patient was a case of typical retinitis pigmentosa with characteristic fundus appearance. The form of inheritance in this patient is unlikely to be of an X linked recessive nature considering that she was a female. The possibility of autosomal dominant or recessive inheritance remains, although we could not perform genetic tests because of logistic and financial constraints. The case under discussion was a known case of RP with uncontrolled hyperglycaemia. She did not have evidence of anterior segment inflammation on slit-lamp examination. On detailed fundus examination, there was no evidence of vitreous floaters/opacities, retinal vascular sheathing, retinal holes, tears, retinal telangiectasia or subretinal exudation. Her biochemical and haematological investigations were unremarkable except for the uncontrolled hyperglycaemia. The presence of microaneurysms and new disc vessels in addition to presence of uncontrolled DM led us to consider PDR in this case. Arden⁴ suggested that the degree of functional retina at the time of onset of DM could influence the development of DR in cases

of RP, which can be considered in our case as well, considering the age of our patient, the duration of RP and the duration of DM.

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A Study on the Spectrum of Thyroid Abnormalities in Liver Disease and Its Correlation with Liver Function

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Abstract

Introduction: liver diseases are associated with endocrine disturbances and secondary dysfunction of endocrine organ which apparent hormonal imbalance. This study aims to find out the correlation between the levels of FT3, FT4, TSH and severity of liver disease in Chronic Liver Disease patients.

Materials and Method: A total of 100 subjects with Chronic Liver disease satisfying inclusion and exclusion criteria visiting medicine OPD and admitted in IPD of Muzaffarnagar Medical College during the period of 18 months was taken for study which was a Cross Sectional Observational Study. Thyroid function tests which includes FreeT3, FreeT4, TSH was done for all patients and tests such as Anti-TPO antibodies, USG neck, Doppler thyroid, FNAC thyroid was done wherever indicated. The liver function tests including total and direct bilirubin, total protein and albumin, AST and ALT, APTT, PT, INR was done for all patients and USG abdomen and Oesophago-gastro-duodenoscopy was done wherever indicated.

Results: The mean duration of liver disease in our study population was 5.92 ± 4.61 years (range 1-26 years). The mean FT3 level was 2.3059 ± 0.8883 p Mol/L. The mean FT4 level was 1.1689 ± 1.0806 ng/dL. The mean TSH level was 3.3198 ± 1.0173 m IU/mL. The mean total bilirubin was 8.445 ± 4.3438 mg/dL.

Conclusion: Thyroid dysfunction forms important part of spectrum of Chronic liver disease. Patients with liver disease should be evaluated for thyroid dysfunction periodically.

Keywords: Child-Pugh-Turcott score, FT3, FT4, TSH, Chronic liver disease

Introduction

Cirrhosis and chronic liver disease are the leading causes for mortality and morbidity in the whole world^[1]. As a consequence of increasing prevalence of obesity, Non-Alcoholic Fatty Liver Disease

(NAFLD) is the leading cause of chronic liver disease in the western world^[2]. In India, the overall prevalence of Non-Alcoholic Fatty Liver disease is 5-30%^[3]. The functions of liver include 1. Metabolism 2. Biosynthesis 3. Detoxification and excretion 4. Storage.

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Liver diseases are associated with endocrine disturbances and secondary dysfunction of endocrine organ. This results in signs of apparent hormonal imbalance [4,5]. Thyroid hormone is necessary for normal growth, development, energy balance, and metabolism of the individual. It plays a role in determining the height of the individual by determining the skeletal growth [6]. It is also essential for neural tissue growth and development, lung maturation, maintenance of hepatocytes [7], renal tubular cells, cardiovascular function regulation and hemodynamics. The risk of cardiovascular mortality and atrial fibrillation is higher in individuals with subclinical hypo or hyperthyroidism [8]. Thyroid hormones influence hepatic lipid homeostasis through stimulation of free fatty acid delivery to liver and increase in beta oxidation of fatty acid. Through these mechanisms, thyroid hormones affect hepatic fat accumulation which leads to Non-Alcoholic Fatty Liver Disease [9]. Individuals with hypothyroidism are 1.5-2 times more likely to have Chronic Liver Disease [10]. Liver plays an important role in maintaining the level of thyroid hormone. Thyroid gland secretes Thyroxine (T4) and Tri-Iodo Thyronine (T3) with T4 at the rate of 90 microgram/day and T3 at the rate of 6.4 microgram/day. 100% of the total T4 and 20% of the total T3 is secreted by thyroid gland [11]. Liver contributes about 30-40% of peripheral conversion of T4 to T3 [12]. The thyroid hormone is inactivated by D3 deiodinase in liver [13]. 80% of T3 and 97.5% of rT3 is produced by deiodination in peripheral tissue. Liver plays an important role in thyroid hormone metabolism [14,15]. This study aims to find out the correlation between the levels of FT3, FT4, TSH and severity of liver disease in Chronic Liver Disease patients.

Aims and Objectives

AIMS AND OBJECTIVES AIM To evaluate the Thyroid functions in patients with liver disease. **OBJECTIVE** To assess the severity of liver dysfunction in relation with interpretation of thyroid functions

MATERIALS AND METHODS : A total of 100 subjects with Chronic Liver disease satisfying inclusion and exclusion criteria visiting medicine OPD and IPD of MMCH, during the period of 18 months was taken for study.(2020-21) .After clearance from ethical committee ref no MMC/IEC/2020/70 dated 27/01/2020 the research work was started in Muzaffarnagar medical college. Cross Sectional Observational Study in Muzaffarnagar Medical

College . Inclusion criteria: 1. Patients with clinical, biochemical and radiological evidence of Chronic Liver Disease. 2. Patients who himself or his/her relatives gave consent 3. Above 18 years.Exclusion criteria: 1. Patients with diabetes. 2. Pregnant subjects. 3. Patient with prior h/o thyroid disease. 4. Patient receiving drugs that may interfere with thyroid hormone metabolism and function. 5. Patients with any other chronic illness. 6. Below 18 years of age. Sample size calculation- Confidence Interval:95% (Z), Precision of study :15% of P(d) Prevalence(P) : 61% [15] . Formula : $4 \times P(1-P)/d^2$ Sample size :100 . Informed consent was taken from the subjects who were included in the study. Socio- demographic details was recorded. Thyroid function tests which includes FreeT3, FreeT4, TSH was done for all patients and tests such as Anti-TPO antibodies, USG neck, Doppler thyroid, FNAC thyroid was done wherever indicated. The liver function tests was done for all patients and tests such as USG abdomen and Oesophago-gastro-duodenoscopy was done wherever indicated. The relationship between the levels of Free T3, FreeT4, and TSH with severity of liver disease in patients having chronic liver disease was analysed using appropriate statistical tests. Study tools Self-made questionnaire containing questions on socio-demographic details, age, gender, education, socio economic status, age of onset, duration of illness, smoking, alcoholism, exposure to risk factors, family history of thyroid disorders, drug history was sought. All relevant investigations were noted. Child-Pugh-Turkot score to classify the degree of cirrhosis. It ranges from 5 to 15.

Statistical analysis- After completing the data collection, data was entered and analysed using MSEXcel and epi info. Quantitative variables were expressed in mean and standard deviation. Qualitative variables were expressed in fractions, percentage and proportion. The data of the quantitative variables was analysed by using chi-square test and qualitative variables by using appropriate 't' test.

Results

A hospital based cross-sectional study was done on chronic liver disease patients admitted in department of General Medicine in Muzaffarnagar medical college and hospital, Muzaffarnagar.

Mean duration of liver disease The mean duration of liver disease in our study population is 5.92 ± 4.61 years (range 1-26 years). Free T3 The mean FT3

level in patients included in our study is 2.3059 ± 0.8883 p Mol/L (range 0.14-5.7 p Mol/L). Free T4 The mean FT4 level in our patients included in the study is 1.1689 ± 1.0806 ng/dL (range 0.45-12.2 ng/dL). TSH The mean TSH level in the patients included in our study is 3.3198 ± 1.0173 m IU/mL (range 0.4-5.11 m IU/mL). Total bilirubin The mean total bilirubin in the chronic liver disease patients in our study is 8.445 ± 4.3438 mg/dL (range 1.4-20.8) Of the various etiologies studied, alcohol and other hepatotoxic drugs accounts for 81% of liver disease. 19% of liver disease is caused by viral etiology Of the 100 patients, 97 (97%) had signs of liver cell failure. 29% and 19% of the patients had upper GI bleed and hepatic encephalopathy respectively. 59% had hepatosplenomegaly, 53% of our patients had CPT Class C (advanced, decompensated liver disease) and 43% of the patients had CPT Class B (moderate liver disease) and 4% had CPT Class A (well compensated liver disease)

TSH & CPT Class

Among the study population, 22 patients (22%) had increased TSH and 78 had normal TSH (78%). Among the CPT-A patients, 3 had increased TSH (75%) and 1 had normal TSH (25%). Those patients with CPT class B, 35 patients (81.39%) had normal TSH and 8 (18.61%) had increased TSH. In CPT class C patients, 42 patients (79.24%) had normal TSH and 11 (20.76%) had increased TSH. In our patients, none had reduced TSH to suggest hyperthyroidism. CPT class C patients had more prevalent hypothyroidism than CPT-B. P value is found to be 0.0332 and is statistically significant.

FREE T3 AND CPT Class

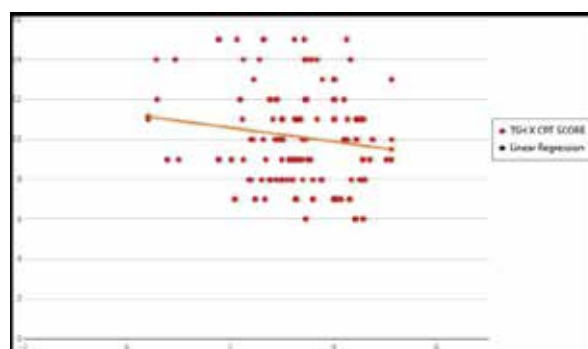
Among the study population, 84 patients (84%) had reduced FT3 and 16 had normal FT3 (16%). Among the CPT-A patients, 1 had reduced FT3 and 3 had normal FT3 (25% and 75% respectively). Those patients with CPT class B, 34 patients (79.06%) had reduced FT3 and 09 (20.94%) had normal FT3. In CPT class C patients, 49 patients (92.45%) had reduced FT3 and 4 (7.55%) had normal FT3. In our patients, none had increased FT3 to suggest hyperthyroidism. More number of CPT class C patients had reduced FT3 than CPT-B patients. P value found to be 0.0008 and is statistically significant

FREE T4 AND CPT Class

Among the study population, 27 patients (27%) had reduced FT4, 69 patients had normal FT4(69%) and 4 had increased FT4 (4%). Among the CPT-A patients, 1 patient (25%) had reduced FT4, 3 (75%) had normal FT4. Those patients with CPT class B, 09 (20.93%) patients had reduced FT4, 31 patients (72.09%) had normal FT4 and 3 (6.98%) had increased FT4. In CPT class C patients, 17 (32.07%) patients had reduced FT4, 35 patients (66.03%) had normal FT4 and 1 (1.9%) had increased FT4. P value is found to be 0.5217 and is statistically insignificant.

Correlation: TSH AND CPT

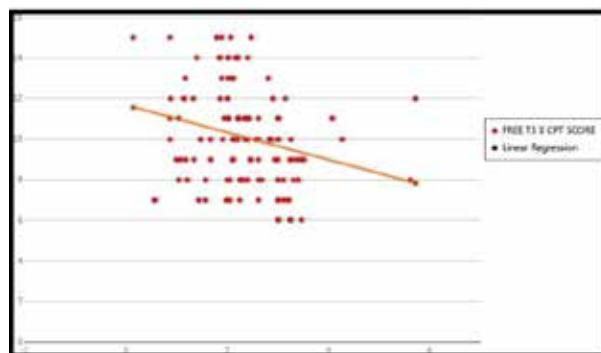
FIG 1



TSH level is found to be negatively correlated with Child-Pugh-Turcott score with correlation co-efficient of -0.062 but it is found to be statistically insignificant with P value 0.119086.

Correlation: FREE T3 AND CPT

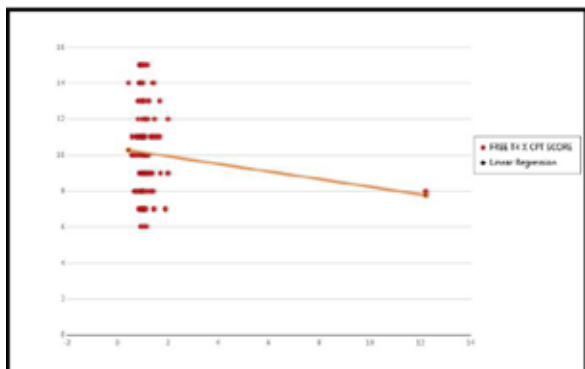
FIG 2



FT3 level is found to be negatively correlated with Child-Pugh-Turcott score with correlation co-efficient of -0.674 and it is found to be statistically significant with P value 0.007797.

Correlation: FREET4 AND CPT

FIG 3



FT4 level is found to be negatively correlated with Child-Pugh-Turcotte score with correlation co-efficient of -0.212 but it is found to be statistically insignificant with P value 0.315042.

Discussion

In our study 100 patients with chronic liver disease were enrolled after getting informed consent from the subjects. Thyroid function tests which include FreeT3, FreeT4, TSH were done for all patients. The liver function tests were done for all. Liver cirrhosis was diagnosed based on standard clinical features. After diagnosis, was classified according to standard Child-Pugh score.

The mean duration of illness in our study population is 5.92 ± 4.61 years (range 1-26 years). The mean FT3 level in patients included in our study is 2.3059 ± 0.8883 p Mol/L (range 0.14-5.7 p Mol/L). The mean FT4 level in our patients included in the study is 1.1689 ± 1.0806 ng/dL (range 0.45-12.2 ng/dL). The mean TSH level in the patients included in our study is 3.3198 ± 1.0173 m IU/mL (range 0.4-5.11 m IU/mL). These results are in consistency with study by Puneekar et al [16]. The mean total bilirubin in the chronic liver disease patients in our study is 8.445 ± 4.3438 mg/dL (range 1.4-20.8 mg/dL). This is in consistent with the study of Bianchi et al [17]. In our study population, patients had exposure to various hepatotoxic factors such as hepatotoxic drugs, alcohol, indigenous medications, viral causes. Of these, the majority includes hepatotoxic drugs, and alcohol. Of the 100 patients, 97 patients (97%) had signs of liver cell failure. 29%). In this study, 22% patients (25 patients) with CLD have hypothyroidism. Among thyroid hormone abnormalities, hypothyroidism was more frequently seen, and hyperthyroidism has also

been reported. This is proposed to be due to varied etiology and severity. This is in consistent with the study by Sandeep Kharb et al [18], K.V.S. Hari Kumar et al [19], G Deepika et al [1]. This is in consistent with Puneekar et al [20], and Joeimon JL et al [21], El-Feki MA et al, Antonelli A et al [22]. In the study by Puneekar et al [20], 20% patients had increased TSH and in the study by Joeimon et al [21], 21.6% patients had increased TSH. But this finding does not correlate with the studies by Patira NK et al [23] and Mobin A et al [24] in which 62%, 2.63% patients had increased TSH. Among the study population, 84 patients (84%) had reduced FT3 and 16 had normal FT3 (16%). This is in correlation with the studies by Puneekar et al [20], and Mobin A et al [24] where 71% and 76.3% of the patients showed reduced FT3 levels respectively. This finding also goes in consistency with D Costa L et al [25], Saleem WM et al [26], Kayacetin E et al [27], El Sawy AA et al [28]. Among the study population, 27 patients (27%) had reduced FT4, 69 patients had normal FT4(69%) and 4 had increased FT4 (4%). This result goes in correlation with Puneekar et al [20] and Kayacetin E et al [27]. This study shows that significant decrease in FT3, insignificant change in FT4 and mild increase in TSH levels. This is in agreement with Hussein Awad Mousa et al [29], who found that a significant decrease level of T3 and an insignificant change in TSH and T4 levels. Takahashi et al [30] concluded that serum Free T3 (FT3) levels reduced in CLD. These findings do not go with the study conducted by G Deepika et al [1] showed that there was a significantly increased TSH and slightly decreased T3 and T4 levels. These findings are not in agreement with Mohamed Abdel-Fattah EIFeki et al [31]. Several lines of evidence suggest a reduced dopaminergic tone as a consequence of the accumulation of false neurotransmitters, which might be responsible for raised basal TSH concentrations, as dopamine has been shown to exert an inhibitory effect in the regulation of TSH secretion [22]. Antonelli, A., et al [22] result is consistent with our study who found that the level of TSH was significantly higher in patients with chronic hepatitis C. In our study, Increase in T4 has been observed in patients with acute and chronic liver disease is due to increase in Thyroxine Binding Globulin levels, which is synthesized as acute phase reactant. It can be stated that in the initial state of acute liver diseases the T4 production increases and subsequently as liver function is worsen it will be reduced due the higher and low concentration of TBG. In our patients, none had reduced TSH to suggest hyperthyroidism. TSH level is found to be

negatively correlated with Child-Pugh-Turcott score with correlation co-efficient of -0.062 but it is found to be statistically insignificant with P value 0.119086. This is not in agreement with Oren R et al ^[32] who found a significant negative correlation was found between thyroid-stimulating hormone blood levels and both functional and synthetic liver function tests. In our patients, none had increased FT3 to suggest hyperthyroidism. P value is found to be 0.0008 and is statistically significant. FT3 level is found to be negatively correlated with Child-Pugh-Turcott score with correlation co-efficient and it is found to be statistically significant with P value 0.007797. This is in agreement with Fariborz Mansour-Ghanaei et al, Patira NK et al reported that there is a negative correlation was found between Child-Pugh scores and serum T3 level. Also concluded that serum T3 concentration is a good index of hepatic function, decreasing by the severity of liver damage. This goes in agreement with Hussein Awad Mousa et al ^[29], M Borzio et al who evaluated thyroid function in 33 patients with liver disease and found that T3, FT3 and T3/thyroxine binding globulin and thyrotropin after thyrotropin releasing hormone were significantly reduced. Takahashi H et al conducted a study on thyroid hormones in different categories of liver disease and concluded that Serum Free T3 level is reduced in CLD. This is in agreement with Sandeep Kharb et al who studied thyroid function in 75 patients with liver disease concluded that there was significantly lower T3 level. This result goes with Sanu A et al who found that serum T3 and FT3 showed an inverse correlation with serum bilirubin and positive correlation with serum albumin.

Limitations of the Study Our study data derived from a small group of patients do not give enough evidence to suggest that the observed endocrinopathies are merely coincidental or due to the underlying cirrhosis. Further large- scale studies with a greater number of patients are required to confirm the findings observed in our study.

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Conclusion

The present study revealed that cirrhotic patients had more prevalent thyroid dysfunction specially hypothyroidism. The liver has important role in thyroid hormone metabolism because it is the manufacturer of protein that bind thyroid

hormone, such as thyroid-binding globulin (TBG), Transthyretin, and albumin. It is also the major site of thyroid hormone peripheral metabolism such as conjugation, biliary excretion, oxidative deamination and the, extra thyroidal deiodination of thyroxine (T4) to tri-iodo-thyronine (T3) and to reverse T3. The thyroid hormone is also important to normal hepatic function and bilirubin metabolism

As liver abnormalities worsen the T3 production from T4 is also reduced. It is believed this reduction of T3 which mainly correspond to even lower basic metabolism rate, can be useful due to preventing energy consumption. Free T3 concentration corresponding with the state of liver disease and it seems the serum T3 concentration directly related to liver abnormalities progress. In conclusion, thyroid dysfunction forms important part of spectrum of Chronic liver disease. Patients with liver disease should be evaluated for thyroid dysfunction periodically

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Functional Outcome of Rotating Platform Versus Fixed Platform of Total Knee Arthroplasty- A Comparative Study

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Abstract

Background: Total knee arthroplasty (TKA) has shown to be a successful and reliable procedure for older, debilitated patients with knee osteoarthritis. TKA's indications were widened to include younger and more active patients after its initial success.

Objectives: To compare the functional outcome of rotating vs fixed platform of total knee arthroplasty

Methods: All patients who are fit to undergo total knee arthroplasty like advanced stages of osteoarthritis and rheumatoid arthritis in age group of 50-70 years . We compared the functional outcome between rotating platform versus fixed platform of Total Knee Arthroplasty. Clinical and radiological follow-up was performed at 1, 3, 6 months and 1year after the operation. Pre-operative and follow-up ratings according to Knee Society Scoring system were obtained for all the patients. In addition, a visual analogue scale was used to specially assess the severity of the pain

Results: In group A and group B there were 6 males (30%) and 14 females (70 %). In both the groups the mean post operative range of movements were significantly improved for the follow-up at every 3months with the mean ROM of 120° achieved at 1year follow-up. The ROM has significantly improved from 90° at 3rd month follow- up to 120° at 1year follow-up. The mean KSS knee and functional score were gradually improved in post operatively in 3rd, 6th and 1year follow-up compared to the pre operative KSS score.

Conclusion: The post-operative range of motion and the Knee Society functional score were similar in both groups. There was no significant statistical difference between the two groups of Total Knee Arthroplasty in terms of post-operative range of motion and functional outcomes.

Keywords: Total knee arthroplasty, KSS score, rotating platform, fixed platform

Introduction

In the last 30 years, total knee arthroplasty (TKA) has shown to be a successful and reliable procedure for older, debilitated patients with knee osteoarthritis.¹

TKA's indications were widened to include younger and more active patients after its initial success. The emergence of mobile-bearing polyethylene surfaces reflects efforts to reduce wear while coping with complicated function and kinematics.²

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The wear of the bearing surface is linked to long-term TKA survival, which has been extensively documented in the orthopaedic literature. TKA wear patterns differ from total hip arthroplasty wear patterns in that delaminating and pitting occur. The shear force causes bigger particles to form. However, significant submicron polyethylene debris is still formed, which can cause osteolysis.³

This can cause the implant to loosen and eventually fail. Engineers and orthopaedic surgeons have long sought a “better” knee design with longer survivorship despite strong long-term survival. The mobile-bearing knee was designed to take advantage of the reduced stress found in conforming designs, minimising polyethylene wear while reducing implant stress and lessening the danger of tibial component loosening.⁴

Furthermore, the mobile design was thought to more nearly resemble natural knee kinematics. However, while selecting the most appropriate implant for his or her patient, the orthopaedic surgeon must be wary of the likelihood of a market push as new and “better” implants are introduced. Total knee arthroplasty (TKA) is a popular procedure for treating severe osteoarthritis of the knee joint.^{5,6}

The objective, on the other hand, was to see if patients who received a rotating platform implant had a better functional result than those who had fixed bearing implants. The goal of this study is to produce an evidence-based evaluation that compares fixed bearing with mobile-bearing TKA in terms of survival and clinical outcomes.

Materials and Methods

Patients were included if they were eligible for treatment with a complete knee replacement system with either fixed or movable bearings and had given written informed consent. After receiving approval from the hospital’s Ethical Committee, the current study will be carried out at Yenepoya medical college hospital. A well-structured and well-prepared case The clinical history, physical examination findings, and investigation findings will all be included on a proforma.

Duration of study: June 2018 to July 2020

Inclusion criteria:

- All patients who are fit to undergo total knee arthroplasty like advanced stages of

osteoarthritis and rheumatoid arthritis in age group of 50-70 years.

Exclusion Criteria:

- Patients with rheumatoid arthritis and patients undergoing revision arthroplasty, requiring tibial component augmentation or a femoral component augmentation or a constrained prosthesis were excluded.

We compared the functional outcome between rotating platform versus fixed platform of Total Knee Arthroplasty. Clinical and radiological follow-up was performed at 1, 3, 6 months and 1 year after the operation. Pre-operative and follow-up ratings according to Knee Society Scoring system were obtained for all the patients. In addition, a visual analogue scale was used to specially assess the severity of the pain

Statistical Analysis: The SPSS 22 software was used for statistical analysis. The data outcome was presented in the form of tables with means and percentages.

Observation and Results

Table 1: Distribution based on Gender and age group

Gender	Group A	Group B
Male	6(30%)	6(30%)
Female	14(70%)	14(70%)
Total	20	20
Age Group		
Mean \pm S.D	63.75 \pm 6.138 yrs	62.75 \pm 7.860 yrs

In group A and group B there were 6 males (30%) and 14 females (70 %).

In group A, The mean age was 63.75 \pm 6.138 years.

In group B, The mean age was 62.75 \pm 7.860 years.

Gender	Group A	Group B
B/L	9(45%)	3(15%)
LT	3(15%)	7(35%)
RT	8(40%)	10(50%)

Table 3: Statistics of group A

		Post_op_rom_3M	Post_6M	Post_op 1 yr	Knee_score_3M	Knee_score_6M	Post_op_knee_1year	Fun_score_3M	Fun_score_6M	Fun_score_1yr
N Valid		20	20	20	20	20	20	20	20	20
Mean	missing	0	0	0	0	0	0	0	0	0
		95.00	108.50	120.50	64.00	69.65	73.90	72.00	84.00	94.50
Median		95.00	110.00	120.00	61.00	69.00	74.00	70.00	85.00	90.00
Minimum		80	100	110	46	54	58	55	70	90
Maximum		110	120	130	77	78	85	80	90	100
Percentiles		90.00	100.00	112.50	59.00	66.00	70.75	70.00	80.00	90.00
	25	95.00	110.00	120.00	61.00	69.00	74.00	70.00	85.00	90.00
	50	100.00	117.50	130.00	70.00	75.00	78.00	80.00	90.00	100.00
IQR	75	10	17.50	17.5	11	9	7.25	10	10	10

In Group A patients, the mean post operative range of movements were significantly improved for the follow-up at every 3months with the mean ROM of 120° achieved at 1year follow-up. The ROM has significantly improved from 90° at 3rd month follow-up to 120° at 1year follow-up. The mean KSS knee and functional score were gradually improved in post operatively in 3rd, 6th and 1year follow-up compared to the pre operative KSS score. The KSS Knee score corresponds to the patient’s objective score and hence there is an improvement in the objective score and patient’s were relieved of symptoms.

Table 4: Statistics of Group B

		Post_op_3M	Post_op_6M	Post_op_1year	Knee_3M	Knee_6M	Knee_1yr	Fun_3M	Fun_6M	Fun_1Yr
N Valid	25	20	20	20	20	20	20	20	20	20
	Missing	0	0	0	0	0	0	0	0	0
Mean	50	97.00	109.50	122.00	60.05	66.25	72.00	73.75	83.25	91.50
		100.00	110.00	120.00	60.00	67.00	71.50	75.00	80.00	90.00
Median		90	100	110	49	50	57	55	70	80
Minimum		110	120	130	69	78	84	80	90	100
		90.00	102.50	120.00	59.00	63.50	69.25	70.00	80.00	90.00
Maximum	75	100.00	110.00	120.00	60.00	67.00	71.50	75.00	80.00	90.00
		100.00	110.00	130.00	64.75	68.00	75.00	80.00	90.00	100.00
IQR		10	7.5	10	5.75	4.5	5.75	10	10	10

In Group B patients, the mean post operative range of movements were significantly improved for the follow-up at every 3months with the mean ROM of 120° achieved at 1year follow-up. The ROM has significantly improved from 97° at 3rd month follow-up to 122° at 1year follow-up. The mean KSS knee and functional score were gradually improved in post operatively in 3rd, 6th and 1year follow-up compared to the pre operative KSS score. The KSS Knee score corresponds to the patient’s objective score and hence there is an improvement in the objective score and patient’s were relieved of symptoms.

Table 5: Statistical analysis of both groups

Test Statistics									
	Post_op_rom_3M	Post_6M	Post_op_1Y	Knee_score_3M	Knee_score_6M	Post_op_knee_1year	Fun_score_3M	Fun_score_6M	Fun_score_1yr
Mann-Whitney U	172.000	183.500	178.500	143.500	138.000	163.000	176.500	187.000	158.000
Wilcoxon W	382.000	393.500	388.500	353.500	348.000	373.000	386.500	397.000	368.000
Z	-.838	-.480	-.630	-1.546	-1.688	-1.007	-.697	-.386	-1.262
Asymp. Sig. (2-tailed)	.402	.631	.528	.122	.091	.314	.486	.699	.207
Exact Sig. [2*(1-tailed Sig.)]	.461 ^b	.659 ^b	.565 ^b	.127 ^b	.096 ^b	.327 ^b	.529 ^b	.738 ^b	.265 ^b

a. Grouping Variable: Groups

b. Not corrected for ties.

Since P value >0.05 for Post op ROM 3M,6M,1Year there is no significant difference between Group A and Group B. P value>0.05 Knee Score 3M,6M,1year there is no significant difference between Group A and Group B.

P value>0.05 Fun Score 3M,6M,1 year there is no significant difference between Group A and Group B.

Discussion

In total knee arthroplasties, both mobile-bearing and fixed-bearing prostheses were compared in terms of performance and survival, with overall revision rates of about 1% per year for both types of implants. In terms of clinical function or longevity, no prior controlled comparison has been able to establish any benefit for a mobile-bearing complete knee prosthesis over a fixed-bearing total knee prosthesis.^{7,8} The goal of this study was to compare the individual performance of fixed-bearing versus mobile-bearing knee replacements in the same clinical context while controlling for characteristics including age, weight, and activity level.

The senior surgeon conducted all of the procedures. Patients were blinded to the kind of implant used in each knee when doing the clinical evaluation. As a result, patient-related bias was reduced. Both arthroplasties yielded similar clinical outcomes. Based on the size of the series, there was no benefit of the mobile bearing knee over the fixed-bearing knee

in terms of overall knee score, postoperative range of motion, or survival rate.

In both groups, 90% had excellent or good outcomes. In both groups, some patients experienced stiffness. Following a fall, one patient had a patellar tendon rupture, which was subsequently repaired. In revolving platforms, no spin off or dislocation has happened.

Despite the fact that their designs are different, Post et al. observed that both mobile-bearing and fixed-bearing implants exhibited comparable kinematic patterns in terms of posterior femoral translation and tibiofemoral rotation in experimental research. They proposed that the movable tibial insert stops moving at <90° degrees of flexion and that the prosthesis thereafter functions effectively as a fixed-bearing implant.⁹

Delpont et al. observed similar findings.¹⁰ The current study's clinical findings are in line with the findings of these experimental trials. Both the fixed-bearing and mobile-bearing groups showed similar postoperative ranges of motion, suggesting that their in vivo kinematics are similar.

With every movable bearing, dislocation is a possible problem. Knee replacement is no exception, and the LCS prosthesis is no exception. In our series, some individuals in both groups had knee stiffness. Following a previous fall, one patient's patellar

tendon ruptured. In rotating platform knees, there is no spin off or dislocation of the knee.

With the figures provided, there was no significant difference in the rates of survival between the two prostheses. Because of the limited number of patients analysed and the short duration of the investigation, this study may suffer from a lack of statistical power. With the figures provided, no advantage of the mobile-bearing design over the fixed-bearing design could be proven.

Conclusion

The post-operative range of motion and the Knee Society functional score were similar in both groups. Because of the short term research of one year, there was no significant statistical difference between the two groups of Total Knee Arthroplasty in terms of post-operative range of motion and functional outcomes. The long-term follow-up will evaluate whether either group has an increased rate of wear or loosening.

Ethical Clearance: The ethical clearance was obtained from the Yenepoya Medical College institutional ethics committee prior to the commencement of the study

Conflict of interest: Nil

Source of Funding: Self

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Socio-Demographic Determinants of Non-Communicable Diseases in Assam, India

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Abstract

Background: Located to the south of the eastern Himalayas along the Brahmaputra and Barak River valleys, Assam is the gateway to north east India. Covering an area of 78,438 km sq., the state is inhabited by a multi-ethnic, multi-linguistic and multi-religious society. In the present study we intend to throw some light on the prevalence of non-communicable diseases (NCDs) in this most important state of north-east.

Method: The main objective was to examine the effect of socio-demographic characteristics, lifestyle behaviour, household status and contextual characteristics among adults (aged 30 and above) of Assam. We used data from Indian Human Development Survey (IHDS II). Logistic regression was applied to attain the study objective.

Conclusion: Age and gender; education, smokeless tobacco consumption were found to be significantly associated with the presence of NCDs. A lot of research has been carried out to understand the prevalence of NCD in India, but the effect of various factors remains somewhat unexplained at the state level. There is need of more in depth studies to solve the ever-growing burden of NCDs at the state level. The present study and its findings could be effectively utilized to consider conducting similar studies for other Indian states as well.

Keywords: logistic regression, NCD, IHDS

Introduction

In the past few years, non-communicable diseases (NCDs) have taken over infectious diseases as the primary cause of death. The growing epidemic of NCDs are now the leading cause of death worldwide affecting the global health scenario and socio-economic development; the worst sufferers being the low and lower middle-income countries, who fail to avail services for timely diagnosis and necessary treatment. In 2016, NCDs were responsible for 41 million of the world's 57 million deaths, which is equivalent to 71% of the total deaths. The main types of NCDs behind these deaths are cardiovascular diseases (such as heart attacks and stroke), cancer, chronic respiratory diseases (such as chronic obstructive pulmonary disease and asthma) and diabetes. According to World Health Organization (WHO), NCDs, also known as chronic diseases, are diseases of long duration and slow progression and the result of a combination of genetic, physiological, environmental and behavioral

factors; the risk factors mainly being behavioral and metabolic. 75% of premature adult death was caused by NCDs which implies that NCDs do not target the older population alone. Also, unlike the common old belief that NCDs is a disease of affluence, it is now emerging both in poorer countries and among the poorer population in richer countries. This rapid rate of change poses a major threat to the world and at the same time demands immediate and effective measure for prevention and control.

India, one of the largest economies of the world also faces the NCD burden. 63% of total deaths in the country in 2016 were attributed to NCDs. The country is presently experiencing a phase of rapid health transition wherein the mounting magnitude of NCDs is gaining prominence with substantial repercussion on health and economic productivity which implies there is an urgent need to prioritize NCD control techniques.(WHO, 2018). The epidemic of NCDs poses devastating health consequences for

individuals, families and communities, and threatens to overwhelm health systems. The socioeconomic costs associated with NCDs make the prevention and control of these diseases' imperative.

A number of studies on NCDs have since been carried out worldwide, the basis of most of which is identification of risk factors-modifiable (or behavioral) and metabolic. Majority of NCDs are due to lifestyle and behavior, and therefore, be prevented to a great extent. The rise of NCDs have been driven by primarily four major risk factors: tobacco use, physical inactivity, the harmful use of alcohol and unhealthy diets. According to WHO, in 2014 there were 346 million smokeless tobacco users – 7% of the world's population. 80% of these users resided in the South-east Asian region, and were at an increased risk of oral cancers.

In India too, researchers have attempted modeling of chronic diseases at various levels. A lot of similar research has been carried out on NCDs for entire India. But when we look into the state scenario, lesser number of studies have been conducted for individual states and for the state of Assam, we came across only very few numbers of such studies. Hence in our study we intend to throw some light on the prevalence of NCDs in this most important state of north-east India. Assam is the second largest northeastern state in terms of area, covering an area of 78,438 km² (30,285 sq miles). The state is bordered by Bhutan and Arunachal Pradesh to the north; Nagaland, Arunachal Pradesh and Manipur to the east; Meghalaya, Tripura, Mizoram, and Bangladesh to the south; and West Bengal to the west. As per the Census 2011, the total population of Assam is 3.12 crores. India's gateway to the northeast, Assam is inhabited by a multi-ethnic, multi-linguistic and multi-religious society. Lowry et al¹ (1996) have opined that the effect of socio-economic and demographic factors on health outcomes particularly prevalence of NCDs may result from a variety of social and individual factors that vary by social class and adoption of lifestyle behavior that are associated with prevalence of NCDs. This is another reason for choosing to study about Assam and investigating the relationship between NCDs and the various variables or factors affecting it.

Literature Review

A number of studies on NCDs have been carried out worldwide, however not much significant research has been done on the state Assam, the gateway to northeast India.

Choudhury et al², 2009, studied the influence of socio economic and demographic factors on the risk of chronic diseases in Guwahati, Assam. The authors carried out logistic regression to examine the relationship between different risk factors and NCDs and hence identified the significant factors affecting the same.

Deka, et al³, 2012 put forward Bayesian approach to outline the probability of an individual being afflicted by chronic disease. The data source used in this study was a primary one collected through a household survey conducted in Guwahati, the state capital as well as largest city of the state of Assam.

Mishra P, Mini GK and Thankappan KR⁴, 2014, carried out a survey to assess the prevalence of NCD risk factors among *Mishing* tribes in Assam using the WHO STEPs approach. A total of 332 individuals of the *Mishing* tribe (men 54%) aged 25-64 year were selected from Tinsukia district by multistage cluster sampling. Using the WHO STEPs approach information was collected on demographics, STEP 1 variables (tobacco, alcohol, physical activity, diet) and measured STEP 2 variables (weight, height, waist circumference and blood pressure). The authors concluded that Tobacco use, alcohol use and unhealthy diet habits were high among men and women in this population and were major NCD risk factors.

Medhi et al⁵, 2015, carried out a cross-sectional study among elderly individuals (≥60 yr) in two randomly selected wards of Dibrugarh urban area of Assam. Pre-tested questionnaire was used to collect data on self-rated health (SRH), sociodemographic and other information. The findings indicated that diabetes was a significant contributor of poor SRH among elderly individuals. The authors emphasized the need for developing urgent strategies for preventing/postponing diabetes in the population in order to improve quality of life at old age.

Singh PK, Singh L, Dubey R et al⁶, 2019, used multilevel logistic regression analysis to examine the effect of individual, household and contextual characteristics on chronic diseases among older Indian adults. The authors highlighted the need to consider more contextual variables to examine chronic health status among the growing older population of India.

Materials and Methods

The study utilized data from the second round of the Indian Human Development Survey (IHDS;2011-12) conducted by the National Council of Applied

Economic Research, New Delhi and University of Maryland. IHDS II is a nationally representative multi-topic survey of 42152 households in 1503 villages and 971 urban neighborhoods across India. We extracted the data for Assam to carry out our analysis. This data set consisted of 4651 individuals. Since the prevalence of chronic disease among individuals below age 30 was insignificant, we carried out the analysis only on those aged above 30. Hence the reduced sample size was 2123, out of which 1094 were males and 1029 females. IHDS asked about the presence of chronic morbidity among all household members. Three set of responses were recorded "yes", "no" and "cured". Our study considered the response 'yes' and 'cured' to define that the member was diagnosed with chronic morbidity or suffering from the disease during the time of the survey.

We carried out logistic regression to examine the relationship between various socio economic, demographic, contextual level variables and different risk factors with chronic diseases. Socio demographic characteristics (age, sex, marital status and education), lifestyle behavior (tobacco and alcohol use) household status (social group, religion) were taken as the independent variables. Each respondents' marital status was categorized as married, widowed/separated/divorced and unmarried. Education was measured as highest level attained-never attended, below primary, below secondary and secondary or higher. The respondents' use of tobacco (smoked cigarette, chewed gutka/tobacco, drink alcohol) was categorized as never, sometimes and daily user. Hindu, Muslim, Christian and others (Jain, Sikh and others) were 4 broad categories of religion and caste groups were categorized into General, OBC, SC, ST and others.

The dependent variable in our analysis is individuals suffering from NCDs (no/yes).

Result and Discussion

Descriptive Statistics

Table 1 shows the sample description of the present study. Our analysis was carried out on 2123 respondents out of which 51.5% were males and 48.5% females. Nearly 48% belonged to the age group 30-44, followed by 35% in the group 45-59 and 17% elderly, i.e., aged 60 and above. Majority of people had attained secondary level education or beyond

(47%). A significant percent had never attended any school (28.5%). 66.5% were Hindus, followed by 31% Muslims, and around 2% belonging to other religions. Nearly 50% respondents belonged to general category, followed by around 17% in OBC and SC category each; 13% belonged to ST category. Overall prevalence of NCDs in state was 4%.

Table 1: ariables in the research

VARIABLES	FREQUENCY	VALID %
SEX		
male	1094	51.5
female	1029	48.5
AGE GROUP		
30-44	1016	47.9
45-59	745	35.1
60 & above	362	17.1
CURRENT MARITAL STATUS		
married	1785	84.1
unmarried	120	5.7
widow/ separated/ divorced	217	10.2
EDUCATION		
never attended	606	28.6
below primary(1-4)	186	8.8
below secondary(5-8)	328	15.5
secondary and above(>=9)	998	47.1
RELIGION		
Hindu	1411	66.5
Muslim	660	31.1
Others	52	2.4
CASTE		
General	1072	51.2
OBC	375	17.9
SC	373	17.8
ST	274	13.1

VARIABLES	FREQUENCY	VALID %
SMOKE CIGARRETE		
Never	257	39.7
Sometimes	298	46.1
Daily	92	14.2
CHEW TOBACCO/ GUTHKA		
Never	255	39.4
Sometimes	263	40.6
Daily	129	19.9
DRINK ALCOHOL		
Never	360	55.6
Sometimes	252	38.9
Daily	35	5.4

Analysis

As per the Classification table (Table 2), the overall correct percentage of 69.3% is quite satisfactory.

Table 2: Classification table

Observed		Predicted		
		NSD		Percentage Correct
		ABSENT	PRESENT	
NCD	ABSENT	416	193	68.3
	PRESENT	3	26	89.7
Overall Percentage				69.3

Hosmer-Lemeshow test of goodness of fit was conducted to check the appropriateness of the model. We obtained a significant value of 0.717 which suggests that the logistic regression model fits the data well.

Table 3: Hosmer Lemeshow test

Chi-square	df	Sig.
5.376	8	.717

We examined the association between various characteristics and chronic illness using logistic regression technique and also computed odds ratio for different categories with corresponding 95% confidence intervals; the results have been presented in the Table 4.

Table 4: Results of Logistic Regression

	B	P-VALUE	ODDS RATIO (OR)	95% C.I. FOR OR	
				LOW-ER	UP-PER
SEX					
MALE	-1.597	.037	.202	.045	.908
FEMALE(R)					
AGE GROUP		.005			
30-44	-2.012	.001	.134	.039	.453
45-59	-.664	.167	.515	.200	1.322
60 & ABOVE(R)					
MARITAL STATUS		.559			
MARRIED	1.291	.281	3.637	.349	37.953
UNMARRIED	-17.019	.998	.000	.000	.
WIDOWED/ SEPARATED/ DIVORCED(R)					
EDUCATION		.034			
NEVER ATTENDED	-1.239	.033	.290	.093	.908
BELOW PRIMARY(1-4)	-.083	.894	.920	.271	3.127
BELOW SECONDARY(5-8)	-2.423	.023	.089	.011	.717
SECONDARY AND ABOVE >=9 (R)					
RELIGION		.894			
HINDU	17.656	.998	46541964.340	.000	.
MUSLIM	17.906	.998	59760549.342	.000	.
OTHERS(R)					
SMOKE CIGARETTES		.334			
NEVER	-.328	.612	.720	.203	2.562
SOMETIMES	.418	.466	1.519	.493	4.681
DAILY(R)					
CHEW TOBACCO		.034			
NEVER	-.106	.851	.899	.297	2.723
SOMETIMES	-1.366	.036	.255	.071	.912
DAILY(R)					
DRINK ALCOHOL		.197			
NEVER	-.005	.997	.995	.107	9.257
SOMETIMES	.855	.449	2.352	.257	21.511
DAILY(R)					
CASTE		.109			
GENERAL	.792	.280	2.208	.524	9.300
OBC	-1.192	.232	.304	.043	2.145
SC	-18.143	.996	.000	.000	.
ST(R)					
CONSTANT	-19.312	.998	.000		

It was seen that there is a significant association between socio-demographic characteristics age, gender and chronic illness. We observed that as compared to females, males have 20% less chance of being afflicted by a chronic morbidity. Similar results were obtained by Patra S, Bhise M⁷ (2016). According to their study, prevalence of NCD was higher among women as compared to men among the Indian states Himachal Pradesh and Uttaranchal; whereas among the union territories Daman and Diu showed the widest gap in the prevalence of NCDs between men and women. Sharma S, Vishwakarma D, et al⁸.(2019) in their study also concluded that there exist marked gender differences in NCD prevalence among the adults in India. In contrast to studies conducted in the past few years, many recent studies claim that women in India possess more burden of NCD compared to men. NCDs affect women inequitably. They have been the leading cause of death among women globally for at least the past three decades and are now responsible for two in every three deaths among women each year. This burden is expected to increase substantially in the coming decades, especially in Low- and Middle-income Countries (WHO).

Individuals below age 60 had less chance of having any chronic illness as compared to those aged 60 and above (OR 0.134). This finding is at par with many similar studies conducted in the past. With the ageing population, the older are likely to face various health conditions and disease risk. According to the Longitudinal Ageing Survey of India also, prevalence of single morbidity and multi-morbidity conditions increases with age. 75% of the elderly people suffer from one or the other chronic disease. It was found that the prevalence of multi-morbidity conditions among the elderly i.e. aged 60 and above was much higher in the states/UTs of Kerala Chandigarh, Lakshadweep, and Andaman & Nicobar Islands.

Lifestyle characteristic (chewing tobacco/gutka) was noted to be significantly associated with the prevalence of NCD. The likelihood of chronic illness was lower among those adults who chewed tobacco/gutka sometimes as compared to those who did so on daily basis. It is worth mentioning that Singh PK, Singh L, Dubey R et al⁶(2019) also obtained similar results while analyzing data for entire India. They concluded from their study that older adults who

never consumed smokeless tobacco stood at 20% fewer chance of having any chronic illness.

We also observed a significant association between education level of an individual and prevalence of NCD. However, it was seen that those who attained education below the secondary level(OR 0.089) had lesser chance of being afflicted as compared to those who were more educated, which is an unexpected and surprising result and needs further in-depth investigation to reveal possible factors responsible for it.

Conclusion

Our present study is an attempt to fill the void that exists when it comes to studying about the prevalence of NCDs in the state of Assam. It provides insight into the association between various socio demographic characteristics, lifestyle behaviors, household status and chronic illness among the adults of Assam. Our findings suggest that characteristics like age, sex, education, smokeless tobacco consumption had significant effect on prevalence of chronic diseases. However, no association was observed between characteristics like marital status, caste, religion, alcohol consumption and presence of non-communicable disease.

Chronic diseases are largely preventable diseases. While age, sex and genetic susceptibility are non-modifiable, many of the risks associated with age and sex are modifiable. Such risks include behavioral factors (e.g., diet, physical inactivity, tobacco consumption); biological factors (e.g., hypertension, overweight etc.) and finally societal factors which include a complex mixture of interacting socio-economic, cultural and other environmental parameters. Thus, prevention and early diagnosis should be the prime concern of the hour, seeking participation from multiple sectors of government, industry, medical field and society.

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Conflict of Interest: No conflict of interest was reported by the authors.

Ethical Clearance: No ethical clearance/approval was needed for this study.

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Hemiarthroplasty in Unstable Intertrochanteric Fractures in Elderly: A Prospective Study

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Abstract

Background: Grossly comminuted intertrochanteric fractures in osteoporotic bones are highly unstable and difficult to treat. Hemiarthroplasty is a popular choice because it provides stability and enables for immediate complete weight bearing.

Objectives: The goal of this trial was to see how effective cemented hemiarthroplasty was at treating proximal femoral fractures in older people with severe osteoporosis.

Methods: Thirty patients who had bipolar hemiarthroplasty for unstable intertrochanteric fractures were studied prospectively. The posterior (Moore's) technique was used to treat all of the patients with cemented bipolar prostheses. The average time of follow-up was 12 months. The modified Harris hip score was used to evaluate the patients.

Results: Abductor weakness was present in 5 of the individuals. At the 12-month follow-up, 21 cases (70%) had bad results, while three cases (10%) had poor results. The average length of stay in the hospital was 10.9 days. Excellent to fair results were observed in 24 patients, as measured by the modified Harris hip score.

Conclusion: In older individuals with significant osteoporosis, the therapy of unstable intertrochanteric fractures differs from the treatment of other proximal femoral fractures. Internal fixation is not as effective as cemented hemiarthroplasty in treating these fractures. This approach has a clear advantage in terms of early full weight bearing and recovery. Hips that have undergone cemented hemiarthroplasty are stable and mobile. Weight bearing can begin earlier than with other treatment approaches, avoiding any recumbency-related problems.

Keywords: Intertrochanteric fracture, primary bipolar hemiarthroplasty, Harris hip score, Moore's technique

Introduction

Intertrochanteric fractures are becoming increasingly prevalent in older people worldwide. Trochanteric fractures are the most frequent proximal femur fractures, typically affecting the elderly and ranking among the most hazardous injuries in the elderly. This is due to individuals living longer lives and osteoporosis.¹

In these people with poor bone quality, fractures are commonly accompanied with issues such as nonunion, metal failure, and femoral head perforation. The majority of fractures are caused by minimal trauma. An intertrochanteric fracture is defined as a fracture that extends from the extracapsular basilar neck area to the lesser trochanter region before the establishment of the medullary canal.²

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Fractures in the posteromedial cortex that have comminution are considered unstable. Internal fixation produces reliable results for treating stable trochanteric fractures. The best way to treat an unstable osteoporotic fracture is still up for debate. In the past, utilising a fixed blade plate and an enders nail to treat unstable fractures resulted in a high rate of cut through and fracture displacement.³

Sliding hip screws were then successfully used, and they have subsequently become the most prevalent means of treating these fractures. Even with this technology, due to uncontrolled telescoping, metal fracture, and screw cut out through the skull, early complete weight bearing mobility of an unstable osteoporotic fracture can produce rotational deformity and limb lengthening.⁴

Early weight bearing following internal fixation of comminuted trochanteric fractures by different methods leads to fixation failure and unsatisfactory outcomes in physically elderly and osteoporotic persons. As a result, a time of restricted movement is indicated for this patient, which might lead to complications such as atelectasis, bed sores, pneumonia, and deep vein thrombosis.⁵

Intramedullary interlocking devices are proving to be more effective in treating unstable fractures. However, the long-term effects of these gadgets have yet to be identified. Endoprosthetic replacements have recently been found to result in early patient mobilisation and long-term success. However, before a judgement can be formed, further prospective randomised studies are required.⁶

As a result, the appropriate treatment technique for an unstable intertrochanteric fracture remains a point of contention. This research looks at the role of primary hemiarthroplasty in the treatment of unstable intertrochanteric fractures in the elderly and physically aged.

Materials and Methods

Study Design: Random Prospective study

Study setting: Department of Orthopaedics, Yenepoya medical college, Mangalore, Karnataka

Study duration: December 2017 to march 2019.

30 elderly and physiologically elderly patients with comminuted trochanteric fractures who met the inclusion criteria were studied prospectively.

Inclusion criteria:

1. Patient above 60 years of age.
2. Elderly patients with non-united trochanteric fractures
3. Patients with trochanteric fractures treated by internal fixation which has gone for failure.

Exclusion criteria:

1. Patient less than 60 years.
2. Polytrauma patients.
3. Compound intertrochanteric fracture

Boyd and Griffin classification was used to classify fractures. The posterior (Moore's) technique was used to treat all of the patients with cemented bipolar prostheses.

Statistical Analysis: The SPSS 22 software was used for statistical analysis. The data outcome was presented in the form of tables with means and percentages.

Observation and Results

Table 1: Distribution based on Gender

Gender	Frequency	Percentage
Male	17	56.66%
Female	13	43.33%

The average age of the patient was 74.4 years [60-90 years]. The study covered both male and female patients. There were 17 males and 13 females among the patients. All of the patients had suffered a fracture as a result of a minor accident.

Table 2: Distribution based on fracture classification

Fracture Classification	Frequency	Percentage
TYPE 1	0	0%
TYPE 2	24	80%
TYPE 3	4	13.33%
TYPE 4	2	6.67%

A total of 14 patients suffered a left-sided fracture. A total of 16 patients suffered from a right-sided fracture.

Boyd and Griffin Type II intertrochanteric fracture was sustained in 24 patients, Boyd and Griffin Type III intertrochanteric fracture was sustained in 4 patients,

and Boyd and Griffin Type IV intertrochanteric fracture was sustained in 2 patients.

Table 3: Distribution based on singh index

Singh index	Frequency	Percentage
Grade 1	2	6.67%
Grade 2	9	30%
Grade 3	14	46.66%
Grade 4	3	10%
Grade 5	2	6.67%
Grade 6	0	0%

The majority of the patients in our study have Grade 3 or less osteoporosis according to Singh's index.

Three patients died within eight months of surgery, out of a total of thirty. The remaining 17 patients were followed up on at six weeks, three months, six months, and twelve months after surgery.

The mean time from injury to surgery was 12 days. All the cases were treated with cemented bipolar prosthesis. Tension band wiring of greater trochanter was done in 3 cases to hold the fragments together. Calcar reconstruction using cement was done in 15 cases.

The mean day of full weight bearing was on the 6th post operative day. Postoperatively two patients had superficial infection which was treated with I.V. antibiotics.

13 patients had shortening of the operated limb, of which 11 had less than 2 cms, so they were given a heel raise. They walked with the help of a cane, 1 patient had shortening more than 2 cm, he had a limp. 5 patients (25%) had abductor weakness at 12 months of following.

Table 4: Distribution based on HARRIS hip score

HARRIS HIP Score	Frequency	Percentage
Excellent	7	23.33%
Good	6	20%
Fair	11	36.66%
Poor	3	10%

The functional results were graded according to Harris Hip Scoring System. In our study, 7 patients had excellent results, 6 patients had good results, 11 patients had fair results, 3 cases had poor result. In our study, 15 cases (70%) had excellent to fair result.

Table 5: Distribution based on Complications

Complications	Frequency	Percentage
Superficial infection	2	6.66%
Abductor weakness	5	16.66%
Limb shortening	13	43.33%
Bed ridden	0	0%

The most common complication in our study is post-operative shortening of the Limb.

Discussion

Internal fixation with a dynamic hip screw is the treatment of choice for stable intertrochanteric fractures. However, the situation is different when it comes to treating an unstable fracture. Internal fixation of unstable fractures has a failure rate of up to 56%. In physiologically normal individuals, early weight bearing following various modalities of internal repair of comminuted trochanteric fractures. In elderly and osteoporotic individuals, fixation failure and unsatisfactory outcomes are prevalent. Because it offers stability and allows for early total weight bearing, hemiarthroplasty is a common operation. The bulk of the problems related with internal fixation are eliminated when prosthetic replacement is used. Hemiarthroplasty was originally only used to treat failed intertrochanteric fracture repairs.

Stern and Goldstein, who used the Leinbach prosthesis to treat 22 intertrochanteric fractures, found that early ambulation and rehabilitation to pre-injury status was a substantial advantage.⁶ Grimsrud et al showed a minimal incidence of complications in 39 patients with unstable intertrochanteric fractures treated with cemented bipolar hip arthroplasty. There were no issues like pressure sores, pneumonia, or deep vein thrombosis in our trial since the majority of our patients were mobile right after surgery.⁷

Kiran kumar et al found that 20% of patients had a shortening of less than 2cm, whereas 10% of cases had a shortening of more than 2cm. Eight of the cases in our research had a shortening of less than two centimetres, whereas one had a shortening of more than two centimetres.⁸

According to our findings, we had good to extraordinary results 75% of the time. As a result, the outcomes of hemiarthroplasty in the treatment of intertrochanteric fractures are highly promising.

Post-operative death rates varied from 5.4 % to 48.8 %. The prosthetic group has a slightly higher mortality

rate than the internal fixation group, according to the majority of comparison studies.^{9,10}

Kesmezacare et al, observed a 48.8% post-op mortality rate in patients treated with endoprosthesis after a mean of 6 months.¹¹ Only two patients out of 37 (5.4 %) died within six months following surgery, according to Sanchetti et al.¹² The most prevalent cause of post-operative death and morbidity, they predicted, is treatment delay.

The mean number of days spent by the patient in the hospital in the postoperative period was 12 days. At the end of 12 months 4 patients walked without any support, 11 patients walked with the help of a cane, 4 patients complained of occasional anterior thigh pain on long distance walking, which was relieved on taking rest and analgesics, 3 patients died due to unrelated causes. There was no incidence of deep vein thrombosis, pneumonia, pressure sores or cardiovascular complication in the early post operative period.

Bipolar Stem was fitted in valgus position in 3 cases, varus position in 2 patient, whereas the position of the stem was centre (normal) in 25 patients. Cement filling was adequate in 22 cases, whereas it is inadequate in 4 case.

There was no prosthetic dislocation, stem loosening, acetabular erosion or periprosthetic fracture after a period of 12 months follow up in our series.

Conclusion

When standard approaches were employed, this therapy resulted in good pain-free mobility, uncomplicated rehabilitation, and a quick return to functional level. The adaptability of the bipolar prosthesis is demonstrated by its ability to function in a variety of settings. This demonstrates the technique's effectiveness. Extended immobilisation, long rehabilitation, significant residual abnormalities, and revision procedures were all minimised with bipolar hemiarthroplasty. In older patients with femur intertrochanteric fractures, the surgery enhanced mobility, hastened recovery to pre-injury levels, increased quality of life, and provided a long-term solution.

Ethical Clearance: The ethical clearance was obtained from the Yenepoya Medical College institutional ethics committee prior to the commencement of the study

Conflict of interest: Nil

Source of Funding: Self

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A Study of Clinical Profile of Patients with Traumatic Cataract

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Abstract

Background: Traumatic cataracts cause a significant amount of vision loss and blindness in the general population, particularly in underdeveloped nations. It's associated with a variety of ocular injuries.

Objectives: To study the clinical profile of traumatic cataract patients.

Methods: A total of 50 patients who satisfied the inclusion criteria were recruited for the study, and a comprehensive history was obtained. A thorough slit lamp examination was performed using a torch light under diffuse lighting.

Results: In majority of the patient's total cataract was done in 86% of the cases. Among the associated ocular damage, corneal injury was seen in 62% of the patients, And associated ocular complication was Lens matter in anterior chamber reported in 22% of the cases, Uveitis in 8% of the cases and Glaucoma was reported in 6% of the cases.

Conclusion: Traumatic cataracts result in considerable vision impairment, psychological distress, and a major financial burden. To avoid vision loss in traumatic cataract patients, a better knowledge of these injuries is required. Appropriate health awareness education, as well as early prevention, is required among the population.

Keywords: Trauma, Cataract, Slit lamp, Glaucoma

Introduction

Ocular trauma is considered one of the most serious public health issues in the globe. It is the world's single most common cause of acquired monocular blindness. Ocular damage causes around 1.6 million individuals to go blind across the world.¹ Ocular trauma is thought to be responsible for around 40% of monocular blindness.² Cataract advancement occurs as a result of trauma. After a variety of ocular insults, including blunt and penetrating trauma, a traumatic cataract can occur. Infrared energy, ionising radiation, and UV radiation are all rare causes of traumatic cataract.³

Domestic injury is the most prevalent type of injury in children, which occurs most frequently while they are playing at home or at school. Young people

are the most prevalent victims of sports and work-related eye injuries, followed by accidents caused by youngsters participating in high-risk sports lacking supervision or protective measures.⁴

Cataracts can be caused by both penetrating and traumatic injuries. The visual prognosis of traumatic cataract is determined by the type of ocular trauma, the level of lenticular involvement, and any ocular structural damage. The time of intervention has been stressed that for a better prognosis, cataract surgery should be performed within a year of the initial procedure in adults and within six months of the initial surgery in children.⁵

Traumatic cataract has a physiological, social, and monetary impact on the quality of life of younger people, thus it's crucial to understand the clinical

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profile for proper treatment. The purpose of this study was to look at the clinical characteristics of individuals who had traumatic cataracts.

Materials and Methods

Type of Study: Retro prospective Cross-sectional study.

Study Setting: Department of Ophthalmology. Sarojini Devi eye hospital

Study Duration: 2 years, 2019 to 2021

Inclusion Criteria:

- Traumatic cataract patients
- Exclusion Criteria:
- Those unwilling to participate in the study.

A total of 50 patients who satisfied the inclusion criteria were recruited for the study, and a comprehensive history was obtained. A thorough slit lamp examination was performed using a torch light under diffuse lighting. Where applicable, intraocular pressure was measured using Goldmann applanation tonometry.

Statistical analysis: The data was analysed using SPSS 22 software and the outcome was presented in the form tables with percentages.

Observation and Results

Table 1: Distribution based on demographics

Gender	No of patients	Percentage
Male	34	68%
Female	16	32%
Age group (years)		
11-20	6	12%
21-30	14	28%
31-40	13	26%
41-50	12	24%
51-60	5	10%

Male predominance was seen with 68% and females were 32%. The male: female ratio was 2.1: 1.

Majority of the patients belonged to the age group of 21 to 30 yrs with 28% followed by 31 to 40 yrs with 26%, 24% belonged to the age group of 41 to 50 yrs age, 12% belonged to the age group of 11 to 20 yrs and the least belonged to the age group of 51 to 60 yrs. The mean age was 34.17 ± 4.37 yrs.

Table 2: Distribution based on type, cause and duration of trauma

Type of trauma	Number of cases	Percentage
Blunt	13	26%
Penetrating	37	74%
Cause of trauma		
Rod/ stick	27	54%
Stone	7	14%
Glass	2	4%
Wired fence	10	20%
Ball	4	8%
Total	50	30
Duration of trauma		
≤ 1 week	2	4%
≤ 1 month	16	32%
≤ 1 year	25	50%
>1 year	7	14%
Total	50	100%

In majority of the cases, it was penetrating trauma reported in 74% of the cases and blunt trauma was seen in 26% of the cases. Most common cause of trauma was due to rod/stick in 54% of the cases, followed by wired fence in 20% of the cases, stones in 14% of the cases, ball in 8% of the cases and glass in 4% of the cases. Majority of the patients around 50% presented within a year after trauma, 32% of the cases presented within a month of trauma, 14% took more than a year after trauma for cataract and only 4% of the cases presented within a week of trauma.

Table 3: Distribution based on type of cataract

Type of cataract	No of patients	Percentage
Total cataract	43	86%
Soft cataract	3	6%
Subcapsular cataract	2	4%
Rosette cataract	2	4%
Total	50	100%

In majority of the patients total cataract was done in 86% of the cases, soft cataract was done in 6% of the cases, subcapsular and rosette cataract was done in 4% of the cases each.

Table 4: Distribution based on associated ocular damage

Associated Ocular Damage	No of patients	Percentage
Corneal injury	31	62%
Iris injury	16	32%
Vitreous haemorrhage	2	4%
Associated Ocular Complication		
Lens matter in anterior chamber	11	22%
Uveitis	4	8%
Glaucoma	3	6%
Total	30	100%

Among the associated ocular damage, corneal injury was seen in 62% of the patients, Iris injury was seen in 32% of the cases, Vitreous haemorrhage was seen in 4% of the cases.

The associated ocular complication was Lens matter in anterior chamber reported in 22% of the cases, Uveitis in 8% of the cases and Glaucoma was reported in 6% of the cases.

Discussion

The most prevalent cause of unilateral cataract is trauma. A primary repair of a corneal, iris, or scleral wound, as well as a comprehensive evaluation of injury to the intraocular structures, may be required at the time of presentation following an eye injury. Prior to surgery, a comprehensive assessment of the nature and degree of the ocular injury, meticulous planning, and counselling are critical to the successful management of these cases.⁶

The incidence of trauma in this study age group was more in the teenage years compared to other studies who reported in children since they were paediatric studies who focussed on the study population while this study had included patients with all age groups. In previous studies, the incidence of traumatic cataract was shown to be higher in the younger age group. Daljit Singh has a similar age demographics.⁷

In this study 54% of the cases had trauma due to stick/ rod. Injury occurred as a result of their regular activities, such as playing with or handling such things at home or in their neighbourhood, which is similar to previous studies by Krishnamachariy M et al⁸ and Memon MN et al reported that 54.7 % and 44 % of patients, respectively, sustained stick injury.⁹

The kind of damage and the form of the cataract were also found to have statistical relevance. In this study, Majority had total cataract surgery, while Shah et al observed soft cataract in the majority of cases.¹⁰

The most common related ocular morbidity was corneal involvement. These findings backed with previous research that found corneal impairment to be the most prevalent related injury. According to Memon et al., 2012, the interval between damage and cataract surgery had no effect on the ultimate visual result of traumatic cataract patients, and that these patients, if treated appropriately, had a satisfactory visual prognosis.

Trauma can be reduced with awareness and caution. Because corneal involvement is one of the most prevalent morbidities associated with traumatic cataract, the need of early reporting and proper follow-up, particularly those suffering from traumatic cataract, must be emphasised.

Conclusion

In India, traumatic cataracts result in considerable vision impairment, psychological distress, and a major financial burden. To avoid vision loss in traumatic cataract patients, a better knowledge of these injuries is required. Appropriate health awareness education, as well as early prevention, is required among the population.

Ethical Clearance: The ethical clearance was obtained from Government Medical College prior to the commencement of the study.

Source of funding: Self

Conflict of Interest: Nil

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Assessment of Various Etiological Factors of Puberty Menorrhagia

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Abstract

Background: Puberty menorrhagia is characterized with lengthy bleeding that occurs between menarche and the age of 19. From menarche to menstruation, it takes 5-8 years for a regular menstrual cycle to develop, and during this time, teenagers may have menstrual irregularities. Puberty menorrhagia poses a significant challenge to the gynecologist when it is associated with serious systemic complications like anemia and hypoproteinemia.

Objectives: To analyze the various causes for puberty menorrhagia

Methods: A total of 82 Adolescent girls attending outpatient department were selected after meeting the inclusion criteria. Informed consent from parents/guardian and consent from patient and consent from adolescent if she is above 18yrs of age. Identification of underlying cause and prevalence rates. Diagnosis will be made based on the investigations.

Results: The mean age 14.92 ± 2.16 . Severe anemia was seen in 41.46% of the cases, moderate anemia was seen in 43.90% of the cases and Mild anemia was seen in 14.63% of the cases. The ultrasound findings were normal in 88% of the cases, PCO was detected in 10% of the cases, Intramural fibroid was seen in 2% of the cases. Anovulatory cycle were seen in 79.26% of the cases, PCOS was the most common etiology in 9.75% of the cases, Hypothyroidism was diagnosed in 8.53% of the cases, Uterine fibroids were diagnosed in 2.43% of the cases.

Conclusion: Puberty menorrhagia is an aggravating condition that can escalate into serious complications and necessitate a blood transfusion. The majority of instances are caused by anovulatory cycles with immature hypothalamo-pituitary-ovarian-endometrial axis. The present child obesity epidemic may exacerbate the symptoms of polycystic ovarian syndrome, emphasizing the necessity of early and accurate diagnosis with a focus on lifestyle change.

Keywords: Anovulatory cycle, PCOS, Anemia, Hypothyroidism

Introduction

Adolescent gynecological issues occupy a unique place in the spectrum of gynecological disorders of all ages. Several researchers have investigated in adolescent gynecological issues, with menstrual abnormalities being the most prevalent. Adolescents with gynecological problems require sensitive intervention because dealing with these concerns can be embarrassing for them and is still considered taboo in our society today.¹ Adolescent girls are a vulnerable demographic, especially in developing nations such as India, where female children are often neglected. In India, adolescents account for about 21.4 %.² Because of the turmoil of adolescence that they confront as a result of the many phases of growth that they go through, the various situations that they encounter, their various demands and difficulties, this age group need specific care.³

Menorrhagia has a substantial impact on teenage quality of life, academic performance and peer relationships. Many teenagers delay consulting a gynecologist, putting them at risk for problems including severe anemia and hypoproteinemia. It is critical to rule out pregnancy in all cases of puberty menorrhagia, particularly incomplete abortion and ectopic pregnancy. Anovulatory cycles, coagulation disorders, platelet function disorders, hypothyroidism, polycystic ovarian syndrome, genital tuberculosis, and pelvic tumors are the most common causes.⁴

Menstruation does not always imply ovulation; in fact, the majority of early menstrual cycles are anovulatory. It may take several years for menstrual cycles to return to normal. Without ovulation, estrogen has an unopposed impact on progesterone, leading in endometrial growth that outgrows its

blood supply and architectural supports, resulting in partial disintegration and irregular shedding. Anemia is a possible side effect of puberty menorrhagia. As a corollary, it is critical to confirm the correct diagnosis before initiating any therapy.⁵

Materials and Methods

Study design: Random Prospective Observational study

Study site: Hospital based Study, Outpatient department of OBG

Study Population: Adolescent girls attending hospital OPD

Inclusion criteria

- All Adolescent girls attending OPD of Gynecology department with complaints of prolonged heavy bleeding

Exclusion criteria

- Adolescent girls with obstetric causes of bleeding
- Adolescent girls with genital structural abnormality

Sample size: 82

Method

Young girls with prolonged heavy bleeding from age of menarche till 19 years of age are recruited after taking informed consent from their parents and If the girl is above 18years of age, consent was taken from her.

Detailed history was taken including, bleeding disorders, drug intake, menstrual, Age of Menarche, Regularity of Cycles in past and present, Duration of Flow, Passage of Clots, No. of Pads Used per day and per cycle, Dysmenorrhea and Last Menstrual Period was noted. Detailed general physical examination was also done

Investigations

- Complete Blood Picture
- Blood Grouping and Typing
- PT,APTT,INR
- Thyroid Assay
- USG of Abdomen and pelvis with Full Bladder if necessary

Adolescent girls attending outpatient department were selected after meeting the inclusion criteria. Informed consent from parents/guardian and consent from patient and consent from adolescent if she is above 18yrs of age. Identification of underlying cause and calculation of prevalence rates. Diagnosis was made based on the investigations.

Statistical Analysis

Statistical analyses were done using SPSS 22 software. Data was presented in the form of mean and percentages.

Observation and Results

A total of 82 patients with Puberty menorrhagia were included for the study.

Table 1: Distribution based on Age group and BMI

Age group (In years)	Frequency	Percentage
11 - 13	22	26.82%
14 - 16	39	47.56%
17 - 19	21	25.60%
BMI		
<18.5	20	24.39%
18.5 - 24.9	51	62.19%
25.0 - 29.9	11	13.41%
Total	82	100%

The majority of the patients around 47.56% belonged to the age group of 14 to 16 yrs., followed by 11 to 13 yrs. age group with 26.82% and 17 to 19 yrs. age group with 25.60%. The mean age 14.92 ± 2.16 .

Around 62% of the patients had a normal BMI, 24.39% were underweight and 13.41% of the patients were overweight. The mean BMI was 20.85 ± 3.36

Table 2: Distribution based on Hemoglobin and TSH levels

Hemoglobin (g/dl)	Frequency	Percentage
<5	34	41.46%
5.0 - 8.0	36	43.90%
8.1 - 10.0	12	14.63%
TSH (mIU/L)		
0.5 to 5.0	74	90.24%
>5.0	8	9.75%

All patients were suffering from anemia. Severe anemia was seen in 41.46% of the cases, moderate anemia was seen in 43.90% of the cases and Mild anemia was seen in 14.63% of the cases. The mean Hemoglobin levels were 5.75 ± 1.55 .

TSH levels were normal in 90.24% of the cases. In 9.75% of the cases the TSH levels were High. In 1 patient TSH levels were >100 . The mean TSH levels were 5.15 ± 5.04 .

Table 3: Distribution based on Prothrombin time, activated partial thromboplastin time and International normalized ratio

Prothrombin Time (in seconds)	Frequency	Percentage
11.0 - 12.5	49	59.75%
>12.5	33	40.24%
Activated partial thromboplastin time (in seconds)		
<25	4	4.87%
25.0 - 35.0	78	95.12%
International normalized ratio (INR)		
0.80 -1.10	64	78.04%
>1.10	18	21.95%

The prothrombin time was normal in 60% of the cases and in the rest 40% of the cases Prothrombin time was high. The mean prothrombin time was 12.24 ± 0.72 .

The aPPT was normal in 95% of the cases and in 5% of the cases it was slightly low 24.3 in 2 cases, 24.6 in 1 case and 22.3 sec in 1 case. The mean aPPT was 28.70 ± 2.13

The International Normalized Ratio(INR) was normal in 78% of the cases. The INR was 1.20 in 22% of the cases. The mean International Normalized Ratio(INR) was 1.00 ± 0.14 .

Table 4: Distribution based on Ultrasound Pelvis findings and Etiology

Ultrasound Pelvis Findings	Frequency	Percentage
Normal	72	87.80%
PCOS	8	9.75%
Intramural Fibroid	2	2.43%
Etiology		
Anovulatory cycle	65	79.26%
Uterine Fibroid	2	2.43%
Hypothyroidism	7	8.53%

Ultrasound Pelvis Findings	Frequency	Percentage
PCOS	8	9.75%
Total	82	100%

PCOS was detected in 10% of the cases, Intramural fibroid was seen in 2% of the cases.

Anovulatory cycle were seen in 79.26% of the cases, PCOS was the most common etiology in 9.75% of the cases, Hypothyroidism was diagnosed in 8.53% of the cases, Uterine fibroids were diagnosed in 2.43% of the cases.

Discussion

Puberty menorrhagia generally described as heavy bleeding in the amount of $>80\text{ml}$ or duration of >7 days between menarche and the age of 19. The onset of puberty and its progression differs from person to person, and is thus largely affected by genetics. Menstruation begins as the hypothalamic-pituitary-ovarian axis matures, which is impacted by genetics, diet, body weight, and the development of the hypothalamic-pituitary-ovarian axis. It might take up to two years for the axis to fully mature. Adolescents frequently appear with menorrhagia during this period. In teenage females, abnormal bleeding accounts for almost half of all gynecological consultations, with symptoms ranging from minor spotting to heavy bleeding.

Girls under the age of 20 make up about a quarter of the population in developing nations. It is typical for individuals to appear with symptoms of menstrual abnormalities at this time. Initially, postmenopausal cycles are anovulatory. Endogenous progesterone cannot counteract the estrogen impact in the absence of ovulation, resulting in endometrial growth and eventually excessive monthly bleeding. As a result, puberty menorrhagia is a very frequent gynecological condition in adolescence, and it can occasionally lead to a life-threatening occurrence.

Immaturity of the hypothalamic-pituitary ovarian axis, which causes anovulation, is the most prevalent cause of abnormal bleeding in teenagers, followed by PCOS, endocrine, or hematological problems, all of which require specific diagnostic tests. The prognosis is better if irregular uterine bleeding occurs after a period of regular menstruation rather than at menarche. Each case must be handled individually, with a comprehensive history, physical examination, baseline workup, and timely hospitalization.

Etiology	Anovulatory cycles	Uterine Fibroid	Hypothyroidism	PCOS
This study	79.26%	2.43%	8.53%	9.75%
Laksmi et al ⁶	61.53%	5.76%	13.46%	19.23%
Gupta D et al ⁷	72.9%	4.3%	10.0%	12.9%
Nusrat et al ⁸	53.33%	-	13.33%	16.66%
Prameela et al ⁹	68.7%	-	18.7%	12.5%
Mandal et al ¹⁰	72%	2.0%	8.5%	10.5%
Ashraf et al ¹¹	69.2%	15.3%	11.5%	15.3%
Koranne et al ¹²	80%	-	5.7%	5.7%

The immaturity of the HPO axis is responsible for 95% of instances of anovulation in teenagers. Despite adequate follicular estrogen levels, these teenagers lack the positive feedback mechanism required to initiate an LH surge and subsequent ovulation. We did not come across any bleeding diathesis during our research. We found a significant relationship between age and final diagnosis ($p=0.001$) in our study, indicating that the final diagnosis is based on the age of the adolescent girls.

Reassurance and treatment for adolescent girls and their parents about menstruation physiology are critical for treating puberty menorrhagia. When patients do not react to routine supportive care, progesterone-only or a combination of hormone therapy with OCP is an essential treatment. A balanced diet, regular follow-up, and iron supplementation are required in all girls having puberty menorrhagia.

Conclusion

Puberty menorrhagia is an aggravating condition that can escalate into serious complications and necessitate a blood transfusion. The most prevalent cause of puberty menorrhagia is immature hypothalamic-pituitary-ovarian axis, which results in anovulation. Around 20% of teenagers have an underlying endocrine or hematological disease that need specific examination and treatment. Anatomical abnormalities such as fibroid or polyp should also be evaluated. Once a diagnosis has been determined, medical or surgical intervention should be provided as needed.

Ethical Clearance: Ethical Clearance was obtained from the institutional ethics committee of Dr. Patnam Mahender Reddy Institute of Medical Sciences prior to the commencement of the study.

Source of Funding: Self

Conflict of interest: Nil

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Healthy Literate Working Dynamic Life Expectancy for India and Some of its Major States

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Abstract

The absence of disease or disability, good level of education and active involvement in society are considered as essential dimensions for a long and fulfilling life. To assess these concepts, we propose a new indicator the Healthy Literate Working Dynamic Life Expectancy that associates health, literacy level and employment status along with the changing mortality scenario in India and some of its major states for the census year 2011 based on the rates of change of probabilities of death over the previous 10 years i.e.2001. Since dynamic life table considers the mortality changes prevailing in a population, therefore it might provide a more realistic and accurate picture of the healthy, literate and working population under consideration. The analysis reveals higher values of healthy literate working dynamic life expectancy at birth for India and all the major states as compared under usual consideration. Further, different inequalities and a number of particular cases are obtained from the above proposed index.

Keywords: Dynamic life expectancy, Health, India, Literacy, Mortality, Working.

Introduction

Over the last Century, India has witnessed a drastic improvement in the overall life expectancy (LE). Several studies in the recent years have pointed out that declining death rates among adults and elders in India have contributed significantly towards improved LE¹. However, a question that could be raised in this context is that whether this increased life expectancy has really improved the quality of life in India. During second half of twentieth century, WHO noted that the fundamental objective of human activity should include both long life as well as good health². Additionally, the scientific literature on health inequalities has repeatedly demonstrated a strong association between lower levels of education and poorer health outcomes³. Further, in terms of employment, those with low literacy skills often have difficulty finding jobs that pay more than a living wage and thus they face difficulties supporting their

families and are more likely to depend on additional means such as social assistance or food stamps⁴. As such, to get proper medical facilities and for acquiring a healthy life, people should be well paid for their work.

Research during the past several studies have shown that literacy, employment and health condition of a person in a society are demographically measured by literate life expectancy⁵, working life expectancy⁶ and disability-free or healthy life expectancy⁷ respectively. Moreover, various previous demographic studies carried out in the areas of health, literacy and working life expectancy⁸⁻¹⁰ are mostly conducted by using the period life table method which assumes that the mortality experience of a population will remain constant. However, Denton and Spencer¹¹ showed an alternative approach of period life table, named as 'dynamic' extension, that contradicts the assumption of constant mortality of period life table

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and unambiguously allow for the likelihood of further changes in mortality rates. Although the requirement of dynamic life table is particularly important for analyzing the changes in mortality rates for India¹²⁻¹³, one can also have a thought to measure the life expectancy under dynamic scenario with addition to the three most important socio demographic factors viz health, literacy and working.

Empirical evidences suggests that health, literacy and working play a significant role in reducing mortality rates, which in turn is associated with an increase in life expectancy¹⁴⁻¹⁷. Hence, if we compute dynamic literate working life expectancy by considering simultaneous changes in mortality, morbidity, literacy and working, then the resultant indicator would expect to give an absurd value, which might not be acceptable in real situation. Consequently, to compute dynamic literate working life expectancy one can consider only the changing mortality scenario prevailing in a population and the current level of health, literacy and working. With this, the paper mainly concentrates on the dynamic extension of period life table and attempts to develop a new indicator viz. healthy literate working dynamic life expectancy (HLWDLE) in order to portray the affects of health, literacy and working on mortality in India.

Objectives

The main objectives as outlined in the present study are:

To develop the formula for Healthy Literate Working Life Expectancy (HLWLE) under dynamic set up of life table and to derive different inequalities and a number of particular cases from the above index.

To apply these indices in India and some of its major states for the census year 2011 based on the rates of change of the probabilities of death over the previous ten years i.e., 2001.

Methods and Materials

Development of a proposed indicator-Healthy Literate Working Dynamic Life Expectancy (HLWDLE):

Let ${}_n P_{hlwx}$ denote the age-specific proportions of healthy, literate as well as working persons simultaneously at age group $[x, x+n)$ respectively

then the expression for healthy literate working life expectancy (HLWLE) as developed by Thakuria¹⁸, which represents the expected number of years remaining healthy as well as literate and working life simultaneously of an individual at age x is given by

$$hlwe_x^0 = \frac{1}{l_x} \sum_x^{\omega} [{}_n P_{hlwx} * {}_n L_x] \tag{3.1}$$

Where ${}_n L_x$ denotes the total number of years lived by a cohort in the age group $[x, x+n)$ and ω represents the highest age category i.e., 80+.

Now, for constructing dynamic life table as per the method given by Denton and Spencer, we need two period life tables for a particular region. The most recent period could be taken as the reference period.

Similarly, the required expression for healthy literate working dynamic life expectancy, denoted by, $hlwe_{xx}^0$ is then derived as follows:

$$hlwe_{xx}^0 = \frac{1}{l_{xx}} \sum_y^{\omega} [{}_n P_{hlwx} * {}_n L_{xy}] \tag{3.2}$$

Where ${}_n L_{xy}$ (the dynamic analogue of L_x column)

stands for the number of person years lived by survivors of the l_{xx} cohort in the interval y to $y+1$, ω

represents the highest age category i.e., 80+ and ${}_n P_{hlwx}$

represents the age-specific proportions of healthy, literate as well as working persons of the reference period. The healthy literate working dynamic life expectancy could then be used to represent the expected number of years lived on an average by a person in a healthy, literate as well as in working state when mortality changes over the years under consideration provided that the current situation of health, literacy and working remains same.

Particular Cases

The proposed indicator is a generalized one in the sense that from equation 3.2, numerous particular cases can be pursued. If the proportion of working persons are not considered in equation (3.2) then we get healthy-literate dynamic life expectancy (HLDLE) at various ages under current health and literacy state but under changing mortality pattern. Again

by ignoring the literate proportions in equation (3.2) gives healthy-working dynamic life expectancy (HWDLE) and by ignoring the healthy proportions we get the literate-working dynamic life expectancy (LWDLE). Likewise, ignoring the proportions of both literacy and working persons in the proposed index, we get healthy dynamic life expectancy (HDLE) at various ages under current health scenario but under changing mortality pattern. In a similar manner, we can obtain literate dynamic life expectancy (LDLE) and working dynamic life expectancy (WDLE). Moreover, if all the three factors health, literacy and working are ignored in equation (3.2), then we get dynamic life expectancy at various ages. Furthermore, if there is no continuation in the rates of change of probabilities of death, then all the above indicators will reduce to ordinary life expectancies. Thus, the above discussion clearly illustrates that the proposed index viz. healthy literate working dynamic life expectancy (HLWDLE) is seemed to be a more generalized one.

Inequalities

One can derive various inequalities as shown below:

$$hlwe_{xx}^0 \leq hle_{xx}^0 \leq he_{xx}^0 \leq e_{xx}^0$$

$$hlwe_{xx}^0 \leq hle_{xx}^0 \leq le_{xx}^0 \leq e_{xx}^0$$

$$hlwe_{xx}^0 \leq hle_{xx}^0 \leq we_{xx}^0 \leq e_{xx}^0$$

$$hlwe_{xx}^0 \leq lwe_{xx}^0 \leq le_{xx}^0 \leq e_{xx}^0$$

$$hlwe_{xx}^0 \leq lwe_{xx}^0 \leq we_{xx}^0 \leq e_{xx}^0$$

$$hlwe_{xx}^0 \leq lwe_{xx}^0 \leq he_{xx}^0 \leq e_{xx}^0$$

$$hlwe_{xx}^0 \leq hwe_{xx}^0 \leq he_{xx}^0 \leq e_{xx}^0$$

$$hlwe_{xx}^0 \leq hwe_{xx}^0 \leq we_{xx}^0 \leq e_{xx}^0$$

$$hlwe_{xx}^0 \leq hwe_{xx}^0 \leq le_{xx}^0 \leq e_{xx}^0$$

Where $he_{xx}^0, le_{xx}^0, we_{xx}^0, hl_{xx}^0, hw_{xx}^0$ and lwe_{xx}^0 represents healthy dynamic life expectancy, literate dynamic life expectancy, working dynamic life expectancy, healthy literate dynamic life expectancy, healthy working dynamic life expectancy and literate working dynamic life expectancy of an individual at age x respectively.

Similarly, if there is no continuation in the rates of change of probabilities of death, then all the above inequalities will reduce to ordinary life expectancies.

An important point to be noted here is that as the quantity of factors implicated in the life expectancy reduces, there is an increase in the corresponding value of the index which is quite obvious.

Application

As stated in the objective, here we tried to estimate healthy literate working dynamic life expectancy (HLWDLE) for India and some of its major states for both sexes for the census year 2011. For this, the age specific proportions of healthy, literate as well as working persons together needs to be combined with the dynamic life table. The Sample Registration System (SRS) based abridged life tables of India and its selected states for the period 2009-2013 and 1999-2003 are considered for the purpose. The required information regarding the literate and working population by age and sex, for India and all the major states, are provided by the population census, which is the main source of demographic data in India. For the factor health, since we do not have morbidity data, as such for the present study, data on disability were taken from the table C20 of the 2011 Census of India. Using the above information, one can thus calculate the healthy proportions, literate proportions and working proportions by age and sex wise respectively. However, Census of India do not provide information on healthy, literate and working persons simultaneously. As such, we have attempted to find the values of the proposed indicator HLWLE by using the random number generation method. In the process, we have also generated very compact and user friendly R programs for calculating the values using the above technique. An interesting point to be noted here is that if we take the product of healthy, literate and working proportions simultaneously i.e by assuming all the three factors as independent, then the values obtained are very near to the values obtained by using the random number generation method¹⁸.

Finally, the age specific proportions of healthy, literate as well as working persons together are calculated for India and 17 of its major states and consequently, healthy literate working dynamic life expectancies are constructed and presented in Table 1 and 2 below for both the sexes for the period 2011 by taking the period 2009-13 (centered at 2011) as reference period and 1999-2003 (centered at 2001)

as the previous period. Various other social indicators, viz, healthy literate dynamic life expectancy, healthy working dynamic life expectancy, literate working dynamic life expectancy, healthy dynamic life expectancy, literate dynamic life expectancy and working dynamic life expectancy are also presented in the same tables. Looking into the constraints of time and space, the estimates are presented only at birth. Moreover, literate and healthy life expectancy is usually calculated at age zero while working life tables are generally constructed from age 15 onwards but in the present study to maintain the uniformity we have calculated all the indicators mentioned above from age zero onwards.

Table 1: Values of HLWDLE at birth and various other indicators along with period and dynamic life expectancy at birth (MALES)

STATES	Period	Dynamic	Dynamic							Period	Dynamic	Difference
	hlwe ₀ ⁰	hlwe ₀₀ ⁰	Difference	hle ₀ ⁰	hwe ₀ ⁰	lwe ₀ ⁰	he ₀ ⁰	le ₀ ⁰	we ₀ ⁰	e ₀ ⁰	e ₀₀ ⁰	
India	29.06	30.96	1.90	46.80	41.79	31.94	68.70	48.27	43.18	65.83	70.90	5.07
Jammu & Kashmir	25.88	26.77	0.89	42.31	40.33	27.89	68.66	44.01	42.27	70.56	71.74	1.18
Himachal Pradesh	35.34	35.36	0.02	51.46	41.62	36.46	67.35	53.04	43.04	68.96	69.57	0.61
Punjab	29.14	29.62	0.48	45.97	39.97	30.54	68.44	47.36	41.26	69.10	70.57	1.47
Haryana	28.36	27.79	-0.57	42.81	34.97	28.57	59.31	43.93	35.99	65.81	60.86	-4.95
Rajasthan	27.48	27.86	0.38	41.02	40.16	28.81	64.35	42.48	41.79	65.37	67.07	1.70
Uttar Pradesh	25.93	25.68	-0.25	38.63	36.79	26.40	59.60	39.65	37.86	62.54	61.17	-1.37
Bihar	25.69	26.97	1.28	40.13	43.50	27.87	68.43	41.40	45.0	67.34	70.58	3.24
Assam	27.49	29.20	1.71	42.37	40.15	29.84	63.25	43.26	41.06	61.94	64.56	2.62
West Bengal	30.7	32.29	1.59	50.47	41.89	33.26	70.95	52.04	43.19	68.46	73.10	4.64
Odisha	28.7	31.51	2.81	48.58	41.39	32.87	69.96	50.93	43.29	63.78	73.45	9.67
Madhya Pradesh	27.23	28.75	1.52	41.61	40.96	29.66	63.89	42.88	42.36	62.29	65.89	3.60
Gujarat	32.12	34.06	1.94	51.07	42.48	34.91	70.29	52.40	43.59	66.02	72.14	6.12
Maharashtra	33.84	37.15	3.31	57.28	44.57	38.53	75.77	59.41	46.28	69.37	78.58	9.21
Andhra Pradesh	24.96	26.49	1.53	42.25	41.01	27.46	69.26	43.79	42.64	65.50	71.96	6.46
Karnataka	30.41	31.78	1.37	47.25	41.95	32.65	67.70	48.53	40.96	66.37	69.53	3.16
Kerala	35.44	37.47	2.03	66.23	39.29	38.66	77.27	68.57	40.56	71.80	79.91	8.11
Tamil Nadu	32.88	34.96	2.08	54.32	43.22	35.72	73.29	55.48	44.19	68.16	74.84	6.68

Table 2: Values of HLWDLE at birth and various other indicators along with period and dynamic life expectancy at birth (FEMALES)

STATES	Period	Dynamic	Difference	Dynamic							Period	Dynamic	Difference
	hlwe ₀ ⁰	hlwe ₀₀ ⁰		hle ₀ ⁰	hwe ₀ ⁰	lwe ₀ ⁰	he ₀ ⁰	le ₀ ⁰	we ₀ ⁰	e ₀ ⁰	e ₀₀ ⁰		
India	9.84	10.36	0.52	35.80	19.97	10.60	73.55	36.68	20.50	69.28	75.74	6.47	
Jammu & Kashmir	6.06	6.12	0.06	27.51	14.87	6.29	71.30	28.34	15.45	73.96	74.52	0.56	
Himachal Pradesh	20.94	21.33	0.39	42.44	33.62	21.77	73.95	43.33	34.61	73.06	76.34	3.28	
Punjab	7.15	7.35	0.20	40.81	12.16	7.51	74.29	41.73	12.46	73.43	76.22	2.79	
Haryana	5.75	5.81	0.06	33.41	10.64	5.93	66.42	34.08	10.88	70.91	68.12	-2.79	
Rajasthan	9.46	9.71	0.25	24.49	27.21	9.92	70.08	25.14	28.15	69.99	73.67	3.68	
Uttar Pradesh	5.10	5.43	0.33	27.29	14.38	5.55	69.40	27.88	14.75	65.25	71.18	5.93	
Bihar	5.69	5.97	0.28	25.20	17.34	6.11	70.71	25.77	17.78	68.02	72.50	4.48	
Assam	8.68	9.29	0.61	35.11	17.31	9.46	70.75	35.84	17.72	65.08	72.67	7.58	
West Bengal	7.80	8.09	0.29	41.63	13.18	8.27	75.17	42.65	13.50	71.56	77.25	5.69	
Odisha	9.81	10.25	0.44	33.75	18.94	10.54	69.43	34.85	19.60	65.88	72.45	6.58	
Madhya Pradesh	10.38	10.92	0.54	29.03	25.61	11.14	69.05	29.66	26.27	65.52	71.02	5.50	

STATES	Period	Dynamic	Difference	Dynamic						Period	Dynamic	Difference
	hlwe ₀ ^d	hlwe ₀₀ ^d		hle ₀₀ ^d	hwe ₀₀ ^d	lwe ₀₀ ^d	he ₀₀ ^d	le ₀₀ ^d	we ₀₀ ^d	e ₀ ^d	e ₀₀ ^d	
Gujarat	9.87	10.09	0.22	39.06	16.75	10.31	71.26	39.92	17.14	70.49	73.02	2.53
Maharashtra	15.31	16.16	0.85	47.12	24.79	16.58	79.84	48.42	25.49	73.42	82.28	8.86
Andhra Pradesh	11.39	11.69	0.30	31.93	25.35	11.99	71.96	32.81	26.12	70.42	74.41	3.99
Karnataka	12.70	12.89	0.19	37.05	22.32	13.15	68.16	37.82	22.80	70.78	69.66	-1.12
Kerala	11.66	12.0	0.34	65.99	13.20	12.29	83.32	68.03	13.53	77.79	86.06	8.27
Tamil Nadu	13.99	14.77	0.78	45.62	24.06	15.01	80.43	46.36	24.47	72.33	81.86	9.53

Results and Discussion

Some Important Observations

1. The highest dynamic HLWLE at birth during a 10-year interval is observed in Kerala for males with 37.47 years and Himachal Pradesh for females with 21.33 years. The same is also true in case of usual consideration.
2. The lowest dynamic HLWLE at birth during a 10-year interval is in Uttar Pradesh for both the sexes with 25.68 years for males and 5.43 years for females.
3. Among all the indicators, the values of healthy literate life expectancy (HLE) at birth are found to be highest for India as well as for all the selected states under study whereas the values of working life are found to be much lower for both the sexes under both the procedures.
4. The working life of Keralian people are found to be much poor as compared to the other states. The gap between LE at birth and WLE at birth under dynamic scenario is found to be 39.35 years in Kerala, the highest gap in comparison to all other states.
5. Meanwhile, Bihar, the state which records quite low values in terms of HLE at birth (68.43 years) and extremely low values in terms of LLE at birth (41.4 years) as compared to Kerala, records second highest in the list after Maharashtra with regard to WLE at birth and HWLE at birth.
6. Further, inspite of low literacy and health status of the females of Rajasthan, Andhra Pradesh and Madhya Pradesh, their working status are found to be extremely good.

Sex Difference:

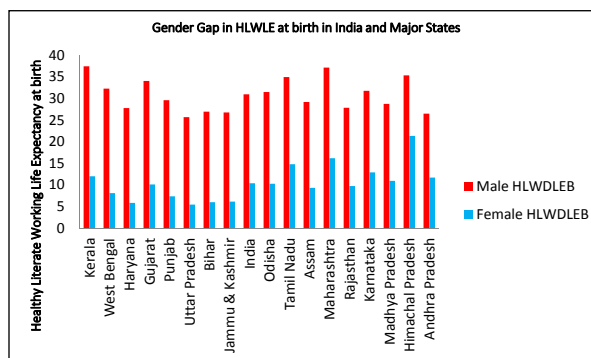


Figure 1: Gender disparity in Healthy Literate Working Dynamic Life Expectancy at birth for India and its major states, 2011.

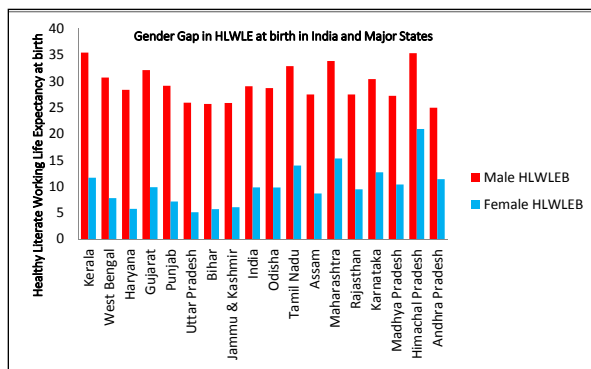


Figure 2: Gender disparity in Healthy Literate Working Life Expectancy at birth for India and its major states, 2011.

Some Important Observations:

1. Among the states under consideration, the highest gap in gender variation with regard to HLWLE at birth is found to be in Kerala under both dynamic and usual consideration with almost 25 years and 24 years respectively.

One of the possible reason for this might be the lower work participation of females compared to males.

2. Subsequently, after Kerala, all other states also exhibits high gender disparity in terms of dynamic HLWLE at birth. A closer inspection reveals that although the gender gap in LLE is found to be high in India as well as across all its major states except Kerala (0.54 years) however, this gap is found to be much more with regard to female work participation in the labour force.

Conclusion

The study puts forward a new and innovative indicator healthy literate working dynamic life expectancy by combining four essential dimensions of life: health, the literacy level and the employment status along with the mortality scenario in India and some of its major states, by incorporating the rates at which the probabilities of death have been changing over the previous years. Due to tremendous improvement in mortality rates during the last decade, the values of dynamic HLWLE at birth for all the major states are more or less higher as compared under usual consideration. The result of this indicator reveals that in most of the states, a higher value of healthy literate working life expectancy (HLWLE) is mainly correlated with longer health, higher literacy and with longer periods of working for both males and females under both dynamic and usual consideration. However, some states viz. Kerala, Bihar, Rajasthan, Andhra Pradesh and Madhya Pradesh are an exception. In spite of showing highest literacy levels in the nation as well as enjoying much more healthier lives, the Kerala state fails to engage its active population in labour force. Meanwhile, despite having very low literacy level and poor health condition, males of Bihar and females of Rajasthan, Andhra Pradesh and Madhya Pradesh showed active involvement in work participation.

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Evaluation of Pradhan Mantri Jan Arogya Yojana (PM-JAY) Utilization in a teaching hospital of Kalaburagi City, Karnataka

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Abstract

Introduction : Ayushman Bharat PM-JAY is the largest health assurance scheme in the world which aims at providing a health cover of Rs.5 lakhs per family per year for secondary and tertiary care hospitalization to over 10.74 crores poor and vulnerable families. A timely assessment at various hospitals will help to evaluate the impact of this public health policy.

Aim : 1. To assess the utilization of **Pradhan Mantri Jan Arogya Yojana (PM-JAY)** insurance scheme in Basaveshwar teaching and General hospital Kalaburagi city, Karnataka. 2. To assess the reasons for rejection of certain claims.

Settings and design: This is an observational study conducted at Basaveshwar teaching and general hospital which is a 800 bed tertiary care empaneled private hospital attached to M R medical college, Kalaburagi.

Methods and material: Duration of study is 10 months (January to October -2021). Data was collected using semi-structured questionnaire from the designated Arogya Karnataka office in the hospital. After the entry of data, the descriptive statistics was presented in frequency tables and graph.

Results: From January to October -2021, 1791 patients claimed the PM-JAY benefits. April being the highest due to second wave of Covid-19, 327 patients claimed PM-JAY insurance. Few claims were rejected for various reasons. NCD burden was seen during the study. **Conclusion:** Creating awareness among the needy population is necessary, modification in the hospital infrastructure claim processing also plays a key role.

Keywords : PM-JAY, Claims, Insurance, Scheme, Benefits

Introduction

The health profile report released by WHO in 2014 states that in India because of high out of pocket expenditure annually about 3.2% Indians fall below the poverty line and also threefourth Indians spending their entire income on health care and purchasing drugs.⁴

High out of pocket expenditure makes health care services inaccessible to significant proportion of Indian households particularly from the low

socioeconomic strata. To address to this growing concern a health initiative by name Pradhan Mantri Jan Ayogya yojana or Ayushman Bharat scheme was launched on 23rd September 2018. Ayushman Bharat is the largest health insurance scheme in the world which aims at providing a health cover of Rs.5 lakhs per family per year for secondary and tertiary care hospitalization to over 10.74 crores poor and vulnerable families that form the bottom 40% of the Indian population.

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Around 1,350 medical and surgical procedure are included under the scheme which is claimed to include almost all secondary and most of the tertiary care procedures. It allows the beneficiaries to avail free services from either public or an empaneled private hospital. All preexisting diseases are also covered, and the hospital is not allowed to charge any fee.⁵

The execution of PMJAY scheme is authorized by the state government. The state is allowed to continue their existing programs parallel to national program or coordinate them with the new scheme. The states can either cover services directly as in Andhra Pradesh or mix the existing scheme of the state with PMJAY as in Tamil Nadu and Gujarat.⁶

In Karnataka PMJAY is merged with Arogya Karnataka scheme which also has Yeshaswini Scheme, Rajiv Arogya Bhagya Scheme, Rashtriya SwasthayaBimaYojana (RSBY) including RSBY for senior citizens, RashtriyaBalaSwasthayaKaryakram (RBSK), MukhyamantriSantwana Harish Scheme, Indira Suraksha Yojane, Cochlear Implant Scheme etc.converged under this new Arogya Karnataka Scheme. The scheme is made available across all the government and empanelled private hospitals. But one of the pre requirements required to avail this service is Arogya Karnataka health card.⁸

Currently 62 lakh families are getting benefitted under this scheme.

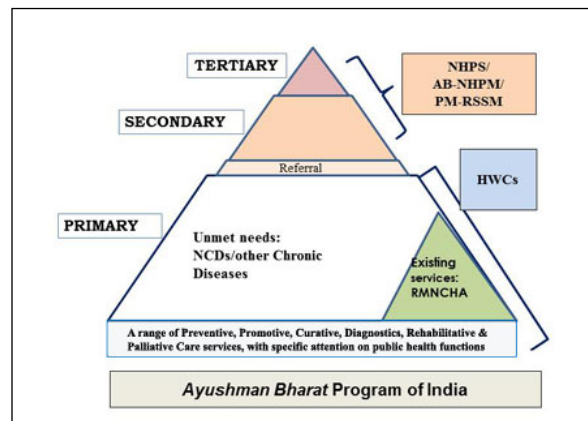
Advantage Of Arogya Karnataka

In an emergency situation, the patients need not wait for the card or the referral by the government hospital doctors. They can get admitted to any private hospital which is empanelled.

Short Coming Of Arogya Karnataka

- Only BPL families are provided with free treatment. APL card holders need to pay 70% of the hospital bills.
- There is no provision for daily expenses.
- Government hospitals are allowed to refer only those patients who can't be treated at the government facility.⁹

Hence a study is done to evaluate the functioning and impact of the public health policy like Ayushman Bharat at the Basaveshwar teaching and general hospital of Kalaburagi City in Karnataka.



Objectives

To assess the functioning and utilization of Pradhan Mantri Jan Arogya Yojana (PM-JAY) insurance scheme in Basaveshwar teaching and general hospital Kalaburagi city, Karnataka.

Methodology

Study Design : Observational Data based study

Sampling Technique - Data was collected using semi-structured questionnaire from the designated Arogya Karnataka office in the hospital. After the entry of data, the descriptive statistics was presented in frequency tables and graph. Analysis is done using Microsoft Excel program.

Place of Study : Basaveshwar teaching and general hospital (800 bed tertiary care empaneled private teaching hospital attached to M R medical college, Kalaburagi, Karnataka)

Duration : 10 months (Jan – October -2021)

Inclusion Criteria : All claims during the study duration

Exclusion Criteria : Rejected claims

Ethical Clearance : The study proposal was approved by the Institutional Ethical Committee of Mahadevappa Rampure Medical College and Hospital. Informed consent was obtained from all the study participants before administering the study questionnaire.

Results

- The data was divided into two quarters January to May and June to October 2021, Second wave of Covid-19 was between March to May 2021 in the City. During

January to May 484 patients claimed the PM-JAY insurance, April being the highest due to second wave of Covid 327 patients claimed PM-JAY insurance.

- Non-Covid insurance claims from month of January to October 2021 were 1437.
- Total Claims from January to October 2021 were 1791 including both Covid and Non-Covid Cases.
- Total Number of Rejected Claims from January-2021 to October-2021 were 72. Reasons for Rejection were - Diseases which could not be treated by the hospital, certain beneficiaries card limit was exhausted due to previous admissions during the same year.
- Another finding was that Non Communicable diseases claims were maximum in the Department of Medicine accounting to 55% of the total Cases which shows the presence of NCD burden among the people from low socioeconomic strata as well.
- Stroke, hypertension, Diabetes, Respiratory illnesses were among the NCDs commonly seen.

A proper coded list as per the Arogya Karnataka guidelines is made by the hospital to categorize the eligibility for these claims. The 100 % Claims package for BPL card holders includes:

- Registration charges.
- Bed charges (General Ward).
- Nursing and Boarding charges.
- Surgeons, Anesthetists, Medical Practitioner,

Consultant fees, etc.

- Anesthesia, Blood Transfusion, Oxygen, O.T. Charges, Cost of Surgical Appliances, etc.
- Medicines and Drugs.
- Cost of Prosthetic Devices, implants.
- Pathology and Radiology tests.
- Food to patient.
- Pre and Post Hospitalization expenses: Expenses incurred for consultation, diagnostic tests and medicines before the admission of the patient in the same hospital, and up to 15 days of the discharge from the hospital.

Table 1. Total number claims from January 2021 - October 2021

PM-JAY Claims	Jan - May (2021)	June - Oct (2021)	Rejected Claims
Non-Covid	484	953	-
Covid	354	0	
Total	838	953	72
Grand Total	Jan-Oct 2021	838 + 953 = 1791	72

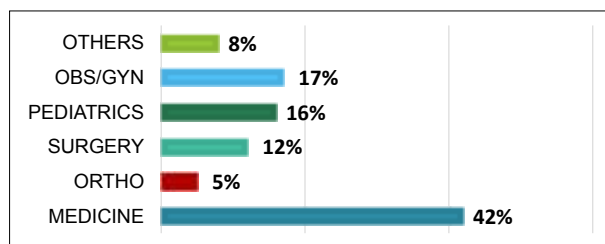


Chart 1. Department wise claims ratio

Table 2. Department wise number of cases who claimed PMJAY insurance scheme

Department	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Total
Medicine	55	58	86	26	39	38	64	83	93	78	620
Covid	04	04	19	327							354
OBG	23	27	17	21	11	28	37	23	28	26	241
Pediatrics	08	15	08	09	01	11	27	40	62	42	223
NeuroSurgery	11	18	13	04		12	19	14	13	14	118
Orthopedics	04	07	05	01		10	16	11	07	14	75
Gen.Surgery	03	04	08	05		07	12	05	09	04	57
Ped.Surgery	02	03	04	02	03		07	07	08	04	40
Plastic Surgery	06	05	03				01	04	03	04	26
ENT		02	02			02	05	01	01	01	14
Burns		01	07			01	02				11
Urology		02	02				02	02			08
Ophthalmology	01	02	01								04
Grand Total	113	144	136	68	54	109	192	190	224	187	1791

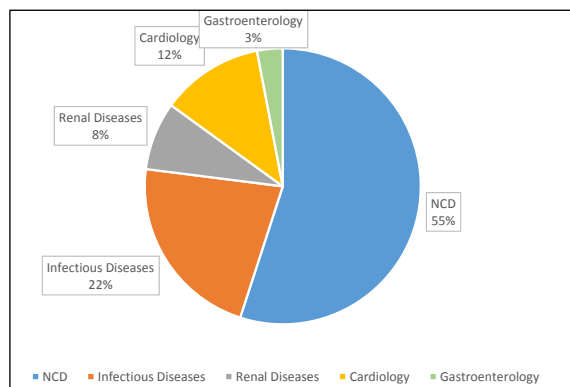


Chart 2. Case distribution in Department of Medicine, Non Communicable diseases accounted to the maximum about 55% of the insurance claims.

Conclusion

The most important benefit of this scheme is that beneficiaries can make use of services anywhere in India. During Covid-19 Pandemic it has been a boon to the underprivileged. Creating awareness in the community is necessary, modification in the hospital infrastructure claim processing also plays a crucial role. The APL card holders can be given some more benefits as healthcare burden is also significant among them. Due to which they ignore certain treatable conditions as they are unable to pay out of pocket expenses for the treatment. At times the State Government does not release the funds on time which causes financial burden on these empaneled private hospitals.

Non communicable diseases are becoming a major health concern among the poor section of the community. India needs a major policy agenda to tackle the escalating burden of Non communicable diseases. Poverty is a strong association to the increasing risk of NCDs like Stroke, Respiratory illnesses, Hypertension and Diabetes to name a few.

A timely assessment at various hospitals and health centers will help to evaluate and assess the impact of such public health policies which help to improve the services and enhance the health care benefits to the marginalized community.

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Declaration of patient consent - The authors certify that they have obtained all appropriate participant consent forms.

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Conflicts of interest - There are no conflicts of interest.

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Comparative Analysis of Optical Coherence Tomographic Study of Macula in Preoperative and Postoperative Diabetic Patients Undergoing Small Incision Cataract Surgery

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Abstract

Background and Aim: Macular oedema (ME) occurs in a variety of pathological conditions and accounts for different degrees of vision loss. Early detection of ME is therefore critical for diagnosis and management. Optical Coherence Tomography (OCT) is particularly useful and accurate for measuring retinal nerve fiber layer (RNFL) thickness and macular thickness. This study is undertaken to evaluate the quantitative changes in macular thickness using spectral domain optical coherence tomography in diabetic patients undergoing cataract surgery pre and post operatively and its relation with diabetic retinopathy.

Material and Methods: Study participants included 100 diabetic patients irrespective of presence or absence of retinopathy who underwent cataract surgery. Each eye underwent fundus examination with indirect ophthalmoscopy and OCT of macula i.e., preoperatively and at postoperatively at day 1, 1 week, 4 weeks and at 12 weeks. Best-corrected visual acuity (BCVA) was recorded at each visit.

Results: Visual acuity improved postoperatively at 4th and 12th week after small incision cataract surgery to 6/12 and 6/9 in majority of the patients. Post operatively 1 month 75% patients achieved vision of 6/6- 6/12. Mean values of central subfield macular thickness at preoperatively was 268.9 μm which increased to 278.2 μm at postoperative day 1, 281.6 μm at postoperative 1 week, 286.1 μm at postoperative 4 weeks and 297.2 μm at postoperative 12 weeks.

Conclusion: There was no difference in median macular thickness between the groups, and no cases in either group had an increase in macular thickness to reach this threshold. diabetic macular edema generally worsens after cataract surgery, and that the worsening of macular edema is more prominent in eyes with DR.

Keywords: Best-corrected visual acuity, Cataract, Macular oedema, Optical Coherence Tomography

Introduction

Cataract is the leading cause of blindness in the world and the most prevalent ocular disease. With the advancement in surgical methods and instrumentation, the visual outcome following cataract surgery has become much better. Phacoemulsification and implantation of a foldable intraocular lens (IOL) is currently the preferred technique of surgery among cataract surgeons.¹ The term cataract refers

to opacity of any part of the crystalline lens which is normally almost completely transparent. Cataract accounts for 47.8% of the world's roughly 37 million blind individuals. Of note, approximately 90% of the contribution of cataract to blindness was seen in developing countries. The visual outcome of cataract surgery depends upon various factors like condition of the cornea, type of cataract, manipulation of iris, presence of pre-existing ocular conditions like chronic uveitis, any associated systemic disease, and

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occurrence of intra-operative complications and also experience of the surgeon.²

Optical Coherence Tomography (OCT) was introduced in 1991 and since then it has become an invaluable tool in the diagnosis and management of different retinal disorders. OCT is a method of analysing the in-vivo retinal architecture. It is particularly useful and accurate for measuring retinal nerve fibre layer (RNFL) thickness and macular thickness.³ OCT uses light reflectance signal from the retina to measure its thickness. Macular oedema (ME) occurs in a variety of pathological conditions and accounts for different degrees of vision loss. Early detection of ME is therefore critical for diagnosis and management. OCT has been routinely used in measuring retinal thickness for the evaluation of ME caused by diseases such as age-related macular degeneration, diabetic retinopathy, central serous retinopathy, hereditary retinal degenerations, retinal vein occlusion, after cataract surgery, epiretinal membrane (ERM) and uveitis.

Cataract surgery is known to cause increased levels of inflammatory mediators. Clinical studies are inconclusive as to the effect of cataract surgery on the onset of diabetic macular oedema (DMO).⁴ Macular oedema (ME) occurs in a variety of pathological conditions and accounts for different degrees of vision loss. Early detection of ME is therefore critical for diagnosis and management. A higher incidence of ME after cataract surgery is reported to occur in eyes with diabetic retinopathy (DR), and worsening of ME often occur after surgery in eyes with pre-operative diabetic macular edema (DME).⁵ In diabetic macular edema (DME), ME is induced by hyperglycemia-induced oxidative stress, deposition of advanced glycation end products (AGES), impaired blood flow, hypoxia, pericyte loss, endothelial cell loss, up regulation of vesicular transport, down regulation of glial cell-derived neurotrophic factor and inflammation. Where as in Pseudophakic cystoids macular edema (PCME), which is thought to be caused by Pro-inflammatory cytokine release.

OCT is a method of analysing the in-vivo retinal architecture. It is particularly useful and accurate for measuring retinal nerve fiber layer (RNFL) thickness and macular thickness. This study is undertaken to evaluate the quantitative changes in macular thickness using spectral domain optical coherence tomography in diabetic patients undergoing cataract

surgery pre and post operatively and its relation with diabetic retinopathy.

Material and Methods

It was a prospective comparative study on 110 patients for the duration of 1 year. Ethical approval was taken from the institutional ethical committee and written informed consent was taken from all the participants.

The exclusion criteria were those with intraocular pressure >21mmHg, previously diagnosed glaucoma, high refractive errors - more than 5D of spherical equivalent refraction or 3D astigmatism, macular diseases and very poor signal strength (<2) of OCT.

All Type 2 diabetic patients irrespective of duration of diabetes of age group 55-75 years with senile immature cataract with varying levels of retinopathy including absence of retinopathy underwent uncomplicated small incision cataract surgery done by an experienced surgeon were included in the study.

Preoperative evaluation

1. Visual acuity testing for distance and near using Snellen's distant chart and near vision chart respectively.
2. Refraction and correction where ever required.
3. External ocular examination
4. Slit lamp bio microscopic examination done with dilated pupil
5. Tonometry using applanation tonometer
6. Lacrimal patency test
7. Keratometry
8. A-scan and Intraocular lens power calculation by SRK-2 formula
9. Fundus examination with indirect ophthalmoscopy with 20D Lens after dilatation.

The level of diabetic retinopathy was recorded as No, mild, moderate, and severe non proliferative; or proliferative, as described in the early treatment diabetic retinopathy study. Other investigations included: RBS, FBS, PPBS, HBA1C. Optical coherence tomography testing was done preoperatively and repeated at the POD day1, POD1 week, and 4th and 12th week postoperative visits. Best-corrected visual acuity (BCVA) was recorded at each visit. Fundus

photographs of retina were taken with CANON CF-1 Digital retinal camera. Optical coherence tomography testing was performed and images were generated with the use of Macular cube 512*128 in 6 mm square grid according to the manufacturer protocol as described in the user's manual. CIRRUS software identifies the Fovea location automatically by looking for the reduced reflectivity below the retina. We can also change the Fovea location manually which will update the data table and the ETDRS grid thickness measurements. Macular Thickness OU Analysis provides interactive scan images, as well as the Fundus image with a scan cube overlay for both eyes together and includes:

1. Colored thickness maps.
2. OCT Fundus image, including the identified fovea location with a red dot.
3. The ETDRS grid maps with normative data.
4. A table containing central subfield thickness, average thickness and volume Measurements for the entire cube taken.

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

Out of 110 patients 7 were lost to follow-up. 3 patients in the DR group had pseudophakic bullous keratopathy, did not appear for examination because of hazy media. Therefore, 100 patients completed the 3 months follow-up and were included for analysis. The mean age of the study population was 65.2 ± 6.4 years. Among the 100 patients 60 patients (60%) were males and 40 (40%) were females. Among the 100 study group patients of type II diabetes mellitus patients, most of the patients are with DM ≤ 5 Years duration of about 67% patients. Mean Age duration of DM is 4.7 ± 2.8 yrs. 54 patients (54%) were systemic hypertensives. Right eye cataract surgery was performed in 49 patients and left eye cataract surgery was performed in 50 patients. No Diabetic retinopathy was detected preoperatively in 44% of diabetic eyes. 31 patients had Mild NPDR, 14 patients had Moderate NPDR comprises 14% of diabetics. Severe NPDR With macular edema in 2 patients and pre op

macular edema is seen in 4 patients. Preoperatively 93% patients had a vision of 6/60 or lesser. Over all visual acuity improved postoperatively at 4th and 12th week after small incision cataract surgery to 6/12 and 6/9 in majority of the patients. Post operatively 1 month 75% patients achieved vision of 6/6- 6/12. By Postoperative 3 months 90% patients achieved a vision of 6/6 - 6/12. Mean central subfield macular thickness on OCT in diabetic patients of all grades of DR is increased with higher statistical significance at 1 and 3 months post operatively compared to 1st week postoperatively. The central subfield means thickness in all patients irrespective of diabetic retinopathy increased $17.4 \mu\text{m}$ and $29 \mu\text{m}$ at 1 month and 3 months follow up. A statistically significant increase could be detected in central subfield macular thickness though the increase was mild. ($P < 0.05$) Mean Pre op CSMT of all patients is $266.8 \pm 17.2 \mu\text{m}$. Mean Central subfield thickness increased to 284.12 ± 41.8 at 1 month and to $297.1 \pm 54.8 \mu\text{m}$ at 3 month follow up with P-value 0.001^* among all the diabetic cases. In this study, level of diabetic retinopathy was associated with increased foveal thickening. The study group with no diabetic retinopathy developed increases in foveal thickening, of $15.3 \mu\text{m}$ and $21.4 \mu\text{m}$ at 4th and 12th week after surgery, respectively. Among patients with no diabetic retinopathy developed thickening from a preoperative mean value of 256.2 ± 12.4 to $278.3 \pm 13.4 \mu\text{m}$ at 3rd month of follow up with a P-value of 0.04^* .

The worse the level of diabetic retinopathy at baseline, the more likely the foveal thickness increased at 4th and 12th week after surgery. The group with mild non proliferative diabetic retinopathy had increase in center point thickness – of $4.5 \mu\text{m}$ and $8.5 \mu\text{m}$ at 4th and 12th week after surgery respectively with low level of significance. But it is not statistically significant in mild and moderate NPDR cases due to small number of patients. The group with moderate non proliferative diabetic retinopathy with macular edema had largest increase in foveal thickness $57.9 \mu\text{m}$ and $137 \mu\text{m}$ at 4th and 12th week after surgery respectively. This increase in foveal thickness was correlated inversely with VA improvement.

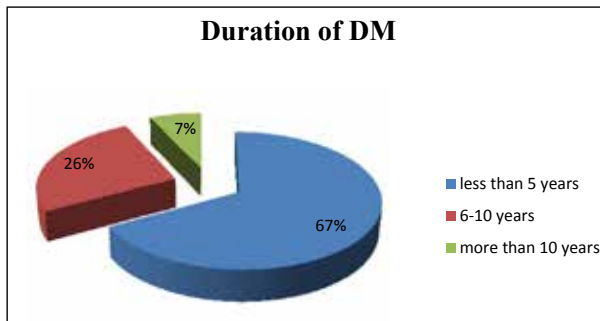
In eyes with preoperative moderate NPDR with macular edema the mean change of central subfield macular thickness was $137 \mu\text{m}$ at 3 months follow up. The patients who developed macular edema had decrease in visual acuity. In eyes with preoperative macular edema the mean change of central subfield

macular thickness was 28 µm at 3 months follow up. Severity of DR was not significantly correlated to ME because of limitation in sample size. No statistical difference in macular thickness was revealed through severity of DR.

Mean values of central subfield macular thickness at preoperatively was 268.9 µm which increased to 278.2 µm at postoperative day 1, 281.6 µm at postoperative 1 week, 286.1 µm at postoperative 4 weeks and 297.2 µm at postoperative 12 weeks. The mean ±SD in microns foveal thickness in all the patients groups are shown in and Table 2.

Table 1: Gender wise Distribution of Study Participants

Gender	Number	Percentage (%)
Male	60	60
Female	40	40
Total	100	100



Graph 1: Distribution of cases according to duration of DM

Table 2: Distribution of OCT according to POD among all cases

Total cases		Mean SD			Mean SD		P value
OCT central sub field thickness	Pre op	268.9	15.4	POD1	278.2	44.6	0.02*
	POD 1	278.2	44.6	POD 1 wk	281.6	39.2	0.12
	POD 1 wk	281.6	39.2	POD 4 wk	286.1	41.9	0.001*
	POD 4 wk	286.1	41.9	POD 12 wk	297.2	56.3	0.005*

* indicates statistically significance at p<0.05

Discussion

CME has been the most common cause of unexpected poor visual acuity after cataract surgery. The incidence increases when the degree of inflammation increases as in cataract surgery complicated with posterior capsule rent. There have been studies comparing macular thickness changes following uneventful

phacoemulsification and phacoemulsification complicated with posterior capsule rent. But there are not many studies comparing these changes following manual SICS which is a commonly performed type of cataract surgery in developing countries like India. The present study compares the macular changes on OCT following uneventful and complicated (with posterior capsule rent) manual small incision cataract surgery.

In this study OCT has been able to demonstrate a moderate correlation between retinal thickness and best corrected visual acuity, and it has been able to demonstrate 3 basic structural changes of the retina, i.e., diffuse retinal swelling, cystoid macular edema, and serous retinal detachment.

Most of the studies in the literature showed⁶⁻⁸ that mean CMT is statistically significant increase at 1 month after cataract surgery, which was maintained after 3 months, pointing out a possible leakage. Also, baseline CMT was thicker in eyes developing PCME, suggesting that increased CMT thickness may be a predisposing factor for Pseudophakic Cystoid Macular Edema (PCME) or the presence of subclinical PCME, which may not be detected by OCT imaging systems. This is witnessed in one of our patients. Inflammatory mediators may increase vascular permeability leading to an increase in macular thickness and cyst formation.⁹⁻¹¹ Now a day’s use of SD-OCT provides quicker, more objective, and noninvasive assessments of retinal thickness compared to FA. Compared to time domain OCT, SD-OCT offers more accurate measurements, higher repeatability, and a lower rate of errors and falsenegatives. Duker et al. showed that SD-OCT has enabled ophthalmologists to visualize and monitor the vitreomacular interface with better accuracy and repeatability.¹²

Hayashi et al. have shown that the foveal thickness and macular volume in diabetic patients increases after small incision cataract surgery in eyes both with and without DR: the percent increase from baseline was greatest at 3 months after surgery, and then decreased gradually. Furthermore, the increase in foveal thickness was greater in eyes with DR than in eyes without DR. These results indicate that, on average, diabetic macular oedema worsens after cataract surgery, and the worsening is more pronounced in eyes with DR.¹³

This study showed similar significant correlation between levels of retinopathy, foveal thickness.

Alastair K Denniston, Usha Chakravarthy et al¹⁴ reported that rate of developing treatment-requiring DMO increases sharply in the year after cataract surgery for all grades of retinopathy, peaking in the 3–6 months' postoperative period.

In the present study the measurements on the day of surgery and first and third postoperative week were compared, the release of inflammatory mediators inducing disturbed blood retinal barrier permeability with vessel leakage are factors that could affect the thickness measurements. These factors are highly individual to the patient. Upto 3-5 weeks post surgery these factors can play a role in the OCT measurements.^{3,4} There is improvement in visual acuity after 1 and 3 months postoperatively in patient with no DR than those with DR. this finding is consistent with the fact of deficient blood retinal barrier function in those patients with more advanced vascular changes resulting from DR.¹⁴ Many previous studies¹⁵ showed the high risk of developing macular edema in patients with diabetic retinopathy but most of the studies included the patients with preoperative high macular thickness like ours.

Conclusion

There was no difference in median macular thickness between the groups, and no cases in either group had an increase in macular thickness to reach this threshold. diabetic macular edema generally worsens after cataract surgery, and that the worsening of macular edema is more prominent in eyes with DR. and the change in patients without diabetic retinopathy is subclinical without affecting the visual acuity. To provide patients with DR the benefits of cataract surgery and avoiding the progression of macular edema it is advised that all patients with DR should be evaluated with OCT, particularly in the early postoperative period to detect macular changes, so that early diagnosis timely adequate management can be ensured. All diabetic patients need close observation for at least 6 months following surgery to intervene with laser photocoagulation and anti VEGF as and when required to prevent visual loss from diabetic maculopathy and other consequences of diabetic retinopathy.

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Correlation of D-Dimer Level with Severity of Pneumonia, Hospital Stay and Mortality in Case of Covid-19 Infection: A Retrospective Study an a Tertiary Care Hospital.

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Abstract

Introduction: Worldwide there was a pandemic of novel corona virus infection in which one of the major concern was the risk of thrombosis and the mortality associated with it.

Aim: In this study our aim was to observe the changes in D-dimer levels during disease progression and its correlations with severity of Pneumonia, duration of hospital stay and mortality of COVID-19 patients.

Materials & Methods: In this study we reported the clinical, radiological and pathological laboratory results of 432 cases of confirmed COVID-19 infection. In these patients their clinical presentation, concentration of D-dimer, coagulation parameters, CBC, severity of Pneumonia on HRCT, hospital stay and higher mortality were retrospectively analyzed.

Result: All the statistical variables were expressed in % and compared with χ^2 test. Out of the 432 cases in 45 cases (10.41%) the D-dimer values were $>2.4\mu\text{g/ml}$ and in 15 cases the value were very high (3.47%). When correlated these patients found to have severe degree of pneumonia, longer hospital stay and higher mortality rate in comparison to patients with D-dimer level of $<2.4\mu\text{g/ml}$.

Conclusion: D-dimer level could be used as an early marker for the clinical classification, risk stratification and improved management of COVID-19 patients.

Keywords: COVID-19, D-dimer, pneumonia, hospital mortality.

Introduction

Worldwide there was a pandemic of a novel member of human corona virus which is newly identified in Wuhan, China. It is officially named as severe acute respiratory Syndrome corona virus -2 (SARS-CoV-2) by International Committee on taxonomy of viruses, ICTV.¹⁻³ SARS-CoV-2 belongs to the beta-corona virus 2 and is a new strain of RNA Virus. Recently the disease caused by SARS-CoV-2 is named as

COVID-19 (Corona Virus disease 2019) by World Health Organization(WHO).

It is typically spread via respiratory droplets and during close contact. The main clinical manifestation is lung injury.^{4,5} COVID-19 is usually characterized by symptoms of fever, dry cough and dyspnoea similar to the other two diseases caused by Corona viruses, severe acute respiratory syndrome(SARS) and Middle East Respiratory Syndrome, MERS.^{6,7}

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Most of the patients have a favourable prognosis but some rapidly progress to severe and critical cases with respiratory distress syndrome, coagulation dysfunction, multi-organ failure etc. ^{8,9} The reported overall case fatality rate (CFR) for COVID-19 by now was 2.3% but in cases of aged individuals (70-79 years) had an 8% CFR and in cases of aged 80 years and older had a 14.8% CFR. ¹⁰ It has been reported that about 50% of the patients had increased D-dimer levels and abnormal D-dimer levels are associated with poor prognosis. ^{4,9} It has been reported that markedly elevated D-dimer levels were observed in non-survivors. ¹¹

One of the key issues in this outbreak of COVID-19 infection is very high number of patients presenting to hospitals and health centres leading to overwhelming of human & mechanistic capacity available specially the need for critical care support. For this reason risk stratification of the COVID-19 patients is absolutely helpful for better management of patients. ^{9,4} Therefore early and effective predictors of clinical outcomes are urgently needed for risk stratification.

Aim

The aim of our study was to compare the D-dimer level with that of the severity of Pneumonia, with inflammatory and coagulation markers and duration of hospital stay along with mortality in COVID-19 patients.

Materials and Methods

Study design

This is a retrospective study done in a tertiary care hospital (CMSDH, Kolkata) of West Bengal.

Duration

The study was conducted from 30th June 2020 to 30th June 2021.

Participants

Inclusion Criteria - The patients having a positive result of SARS-CoV2 by RT-PCR are included in the study.

Exclusion Criteria - Patients with absent/negative SARS-CoV-2 RT-PCR test are excluded from the study.

The study was approved by the Institutional Ethics

committee (IEC) of our institute. In this retrospective study the data collected involves no potential harm to the patients and there was no link between the researcher and the patients.

Clinical Classification of the patients :

All the COVID-19 patients are clinically categorized into four groups, mild, moderate, severe and critical.

- 1) **Mild cases** - Mild clinical symptoms of fever with no features of Pneumonia in imaging.
- 2) **Moderate cases** - Fever, respiratory symptoms like cough and there is features of Pneumonia in imaging and Spo2 more than equality 90% in room air.
- 3) **Severe cases** - They have severe respiratory distress, RR > 30 breaths/min, the oxygen saturation is < 90% at resting state in room air and on imaging >50% lesion in the lung.
- 4) **Critical cases** - These patients have any of the following.

Respiratory failure with requirement of mechanical ventilation,

or shock or multi-organ failure that require monitoring in the CCU.

The outcome of illness were divided into four categories -

1. Hospital discharge.
2. Improved
3. Exacerbation.
4. Death.

Laboratory investigation

Laboratory interventions were done at the following point of time and the data were analysed.

First - Within 24 hours of admission into the General Covid Ward the following assays were done. Blood samples were collected for - CBC, D-dimer, PT/APTT.

Routine biochemical tests were sent to the Central Laboratory of our hospital.

ECG and HRCT of thorax were simultaneously done.

Second - After initial evaluation then all the Blood tests and HRCT repeated after 5-6 days and again

evaluated for the outcome as follows -

1. Hospital discharge.
2. Improved.
3. Exacerbation.
4. Death.

Out of these only in improved cases the laboratory assay repeated while they continued to stay at the general Covid ward.

The third laboratory assay:

It is done in CCU segment of our hospital. The laboratory assay includes those patients which are very critical at the initial time of assay and immediately shifted to CCU and also those patients which were exacerbated in the general Covid ward and then shifted to CCU.

The following parameters were evaluated.

1. **CBC** (Complete blood count) done from peripheral venous blood by automated cell counter 5 part (Sysmex Xs-800i) and were studied for increased leukocyte counts as a surrogate marker of Pneumonia.
2. **Inflammatory markers** (IL6 &hs-CRP) were analyzed by full auto biochemistry analyzer ERBAXL 640, Germany.
hs-CRP (N-range) 0.5 to 10 mg/L.
3. **D-dimer levels & coagulation parameters** (PT-INR, APTT) were estimated by fully automated coagulation analyzer STA satellite Max, stago, France by utilizing CL89050422.
4. **HRCT** Routinely in all COVID-19 patients HRCT of thorax were done to assess the severity of involvement of lungs by organizing Pneumonia and fibrosis. Reporting were done basing on the CT severity score. (CT-SS).

Left lobe and right lobe of lungs were divided into 10 segments each. Basing on the severity of Pneumonia in each segment scoring were done, as follows

Score 0 (No involvement of the parenchyma), Score 1 (< 50% of parenchymal involvement) and Score 2 (> 50% of parenchymal involvement).

Lowest Score - 0

Highest Score - 40

-> All the data were retrospectively analyzed from the records in the Radio-diagnosis department of our hospital.

-> Categorization of covid Pneumonia basing on CTSS were as follows Mild (Score < 7 or = 7), Moderate (Score 8- 17) and Severe (> 18 or = 18).

Results

All the categorical variables were expressed as number(%) and compared by x2 test.

We used IBM SPSS software version 20.0 for statistical analysis.

P values <0.0001 were considered statistically significant Association of D-dimer level with severity of Covid Pneumonia on HRCT of thorax were studied.

D-dimer levels were correlated with hospital stay and mortality.

D-dimer levels also correlated with the levels of inflammatory markers and coagulation parameters.

Table 1: Basic clinical parameters of Covid-19 patients at the time of admission

n= 432

(A) AGE & SEX		
Age(In years)	Male	Female
>80	06 (2.4%)	02 (1.1%)
60-80	136 (53.9%)	100 (55.5%)
40 -59	90 (35.7%)	74 (41.1%)
20-39	18 (7.1%)	06 (3.3%)
(B) Clinical Presentation	Number Of Cases	%
Fever	402	93
Cough	380	87
Shortness Of Breath	350	81
Myalgia	180	41
Diarrhea	54	12
Joint Pain	38	8.7

Table-2 : D -dimer level, CT- severity Score and Categories of patients (WHO guidelines) at the time of Admission.

n=432

D-dimer level	Number of cases	%
0.4-1 µg/ml	234	54.1%
1-2.4 µg/ml	138	31.9%
>2.4 µg/ml	45	10.41%
Very high level	15	3.47%
CT Severity Score		
CT severity score	No of cases	%
< or =7 (Mild)	238	55.09%
8-17(Moderate)	136	31.48%
> or = 18 (Severe)	58	13.42%
Categories of Patients (WHO guidelines) according to severity		
Mild	240	55.55%
Moderate	132	30.55%
Severe	42	9.72 %
Critical	18	4.16 %

Table-3: Comparison of D-dimer level with severity of Pneumonia by HRCT.

n=432

D-dimer level	CT severity score	P. value
(Cut off value 2.4µg/ml.)	<7, 8-17, > or= 18	
< 2.4 µg/ml.(n=373)	238, 132, 2	< 0.0001
> 2.4 µg/ml.(n=59)	1 3 56	< 0.0001

Table 4: Comparison of D-dimer value with Inflammatory markers, coagulation parameters , hospital stay and mortality

D dimer value			
	< 2.4 ug / ml	>2.4 ug/ ml	P value
A. Inflammatory Marker			
i. hs-CRP			
<20.44 ug / ml	368	02	<0.0001
>or = 20.44 ug/ml	4	58	<0.0001
ii. IL-6			
>37.65pg/ml	372	60	<0.0001

D dimer value			
	< 2.4 ug / ml	>2.4 ug/ ml	P value
B. Coagulation Parameter			
PT-INR(>20secs)/ (>1.2)	362	72	<0.0001
Hospital Stay			
>4 weeks	10	59	<0.0001
<4 weeks	362	1	<0.0001
Non survivor (Mortality)	1	24	<0.0001

Discussion

Covid-19 is an acute infections disease caused by a novel member of human Corona Virus (SARS-Cov-2).

Clinically the patient presents with fever mild or severe in few cases.^{8,2,3}

In contrary in severe cases the disease progress very rapidly and patient develops septic shock, multi organ failure and die.^{12,13,14,15}

An important observation is that in many of the severe, critical and deceased patients have significant coagulation abnormalities.^{4,5,8,9}

In our study the primary observation was associated of higher D-dimer value with that of severity of Pneumonia and with mortality rate.

D-dimer elevation is one of the commonest laboratory findings noted in Covid-19 patients requiring hepatization.

Guan and colleagues found the non-survivors had a significantly higher D-dimer (Median : 2.12 µg/ml) than that of survivors (Median : 0.61 µg/ml) (9). Ming T et al observed markedly elevated D-dimer in deaths with Covid-19(16). Huang and colleagues showed D-dimer levels on admission were higher in patients needing critical care support.

Now coming to the mechanism of elevation of D-dimer level in Covid-19 patients.

First- Virus (SARS- CoV-19) infection leads to aggressive pro-inflammatory response and insignificant anti-inflammatory response¹⁷ which might induce endothelial dysfunction resulting in excess thrombin generation.¹⁸

Second-Hypoxia induced by severe Covid-19 infection stimulate thrombosis through hypoxia-inducible transcription factor dependent signaling pathway and increasing blood viscosity.^{19,20}

Third-Hospitalized patients having elder age, underlying co-morbidity conditions, long term bed rest and invasive treatment etc. All are associated with increased risk for thrombosis or hyper-coagulation.^{21,22,23}

Fourth-Some patients develop sepsis-induced coagulopathy like DIC.^{11,24}

In our study it was found that patient who had higher D-dimer levels at the time of admission (cut off value > 2.4 µg/ml) had severe Pneumonia as correlated with CT severity score. In addition the result of this study also showed that patients with higher D-dimer levels had a significant higher value of other inflammatory markers and markers for increased risk of thrombosis.

Out of 432 cases in total 60 cases D-dimer level were elevated. (45 cases with D-dimer >2.4 µg/ml and 15 cases with very high level of D-dimer >20 µg/ml). A total of 25 deaths occurred all of which had a higher D-dimer level at the time of admission.

Another interesting observation was that patients with moderate clinical presentation but having higher D-dimer level had higher duration of hospital stay in comparison to the patients having low D-dimer level with same clinical presentation.

Conclusion

The results of this study showed that elevated D-dimer level at the time of admission could effectively predict the severity of Pneumonia and mortality in patients with Covid-19 infection.

To conclude D-dimer level could be used as an early marker for the clinical classification and improved management of Covid-19 patients.

Conflict of interest

None.

Contribution from the author:

All authors have equal contribution for the paper.

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A Study on Adherence of Anti-Glaucoma Medications in Adults – An Observational Hospital based Study

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Abstract

Introduction: Glaucoma is chronic progressive optic neuropathy which causes irreversible visual field loss. Antiglaucoma medication is the mainstay of treatment due to recent advances in the field. Due to increased life expectancy and availability of newer investigation technology for early diagnosis of glaucoma, duration of treatment is long. Strict adherence is required to prevent progression.

Aim: We aim to assess factors affecting adherence in a tertiary care setting.

Materials and Methods: 40 diagnosed cases of glaucoma, who were using on medication at least for 6 months, were enrolled in the study after proper consent. All patients were asked about nature of drug intake based on standardized questionnaire. Data were analysed using epi-info7 software.

Results: 40% study population were non adherent; it was comparable in males and females ($p=0.5$). The factors like age, sex, number of drugs didn't show statistically significant association. Only parameter with significant association is higher educational level ($p=0.004$).

Conclusion: Drug adherence is a complex process; various factors need to be considered before prescribing medication. In case of chronic, progressive, blinding disease like glaucoma, educating patient about need to strict drug dosing, possible side effects, cost-effectivity and regular follow up is required.

Keywords: drug adherence and compliance, antiglaucoma medication, predictors of adherence

Introduction

Glaucoma is defined as a group of multifactorial ocular neurodegenerative disease, aetiology united by a clinically characteristic optic neuropathy with potentially progressive changes at optic nerve head, thinning of neuro-retinal rim with enlargement of optic cup, corresponding pattern visual field defect, may not be detected in perimetry in early stage; while visual acuity may be spared initially, progression may

lead to complete visual loss, the constellation of features is diagnostic.¹ It is estimated that over 60 million people are affected, 8.4 of these population are blind. The global incidence is projected to be 111.8 million by 2040.² In India, it contributes to 0.6 million disability-adjusted life years (DALYs) or 1.96% of the overall burden of diseases.³

Adherence has been defined as “the extent to which a person’s behaviour, taking medication,

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following a diet, and/or executing lifestyle changes, corresponds with agreed recommendations from a health care provider.”⁴ Compliance is defined as “the extent to which the patient’s behaviour matches the prescriber’s recommendations”.⁵ Magnitude of non-compliance of AGM is high ranging from 20-75%.⁶

Average literacy rate of Purulia in 2011 were 64.48% against the national average of 77.7%. There is no study done to assess adherence in this population to our knowledge. Primary objective is to assess adherence pattern of AGM by interviewer’s method in glaucoma patients of district in literate population and secondary objective is to identify any correlation between factors and adherence.

Materials and Methods

Study was conducted on all patients with primary and secondary glaucoma attending the department of Ophthalmology at Deben Mahata Government Medical College, Purulia over the period of six months. A total of 40 patients were included in the study who underwent ocular examination with primary investigations and structured interview. The study was conducted after institutional ethics committee (IEC) for review and approval. It was cross sectional observational, single centre, hospital-based study. At the beginning of the study, a total of 40 consecutive adult patients of both the sexes, who have been diagnosed with glaucoma and fulfilling the selection criteria will be recruited for this study. It is a single day cross sectional study.

Inclusion Criteria

1. Diagnosed and confirmed cases of Primary or Secondary Glaucoma in either or both the eyes who have been prescribed anti-glaucoma medications for at minimum period of 6 months and attending Ophthalmology OPD
2. Age limit: 21 to 65 years
3. Voluntary participation

Exclusion Criteria

1. Prior surgical intervention
2. Patients with diagnosed demetia
3. Patients who were seriously ill and unable to comprehend the study questionnaire (current acute complications of any disease)
1. Those who had a disturbance of consciousness (Glasgow coma score lower than 15) and cognitive impairment

2. Patients with mental illness

All patients had been enquired about history, detailed eye examination and their relevant findings with structured interview. Informed consent will be obtained for those screened patients willing to participate in this study. Ophthalmological parameters to be studied are routine eye examination, visual acuity with illuminated Snellen’s chart, applanation tonometry, direct ophthalmoscopy, fundus examination, perimetry.

Only the diagnosed cases of glaucoma who were on antiglaucoma medications for at least 6 months were included in study. Treatment naïve patients or who failed to show previous prescriptions were excluded from the study.

Study Technique

Adult patients with primary and secondary glaucoma were enrolled in the study. Complete ocular examination as per proforma and relevant structured interview with the help of the following questionnaires will be done for every patient who will participate in this study:

General Medication Adherence Scale

The scale has 11 questions with 4 possible answers. It has three components. Component 1 is adherence pattern based on the behaviour of patient (question 1-5). Component 2 measures adherence of patient based on their comorbidity and number of pills or pill burden (question 6-9). Third component focuses or assesses adherence pattern depending on cost (question 10-11). Each item further carries individual score ranging from 0 to 3. Answer option 1 (always), 2 (mostly), 3 (sometimes), 4 (never) is given score of 0, 1, 2, 3 respectively. Maximum score is 33. Summation of individual items will provide adherence score of each patient. Cumulative adherence score is classified as high (30-33), good (27-29), partial (17-26), low (11-16) and poor (<10). This scoring methodology have been previously defined by Naqvi and colleagues.^{7,8} For statistical analysis we have grouped patients in 2 groups. Group 1 has patients with high and good adherence (score ≥ 27), they are termed as adherent. Group 2 is termed as non-adherent, has patients with partial, low and poor adherence (< 27).

We have taken educational qualification, number of drugs and classification of glaucoma into consideration for each patient. Educational qualification of the patients was divided into 3

standards. Basic or primary (class1-5), intermediate (class 5-8) or higher (Class 8 onwards). Number of drugs 1 or more were noted.

All the data were recorded and calculated using epi-info7 software. [Epi Info™ 7.2.4.0; Division of Health Informatics & Surveillance (DHIS), Centre for Surveillance, Epidemiology & Laboratory Services (CSELS) Centre for Disease Control & Prevention. USA]. For statistical significance of this study, p value is <0.05.

Results

We had total of 40 patients, 24 male and 16 female patients. Group 1 or adherent group (good adherence and more) had 24 patients; group 2/ non-adherent group has 16 patients. The average adherence score of the study is 60%. (Table 1, image 1).

Age of the patients ranged from 36 to 76years. Average age was 56.8(± 10.2) years and median 58years. 16 subjects were more than 60years old.

In our study, 11 out of 16 (31.2%) female patients were adherent whereas 13 out of 24 (45.8%) male patients were adherent. The difference was however, not statistically significant $p=0.512$ (>0.05) (Table 1).

We had classified into three subgroups; mild, moderate and severe glaucoma depending on visual field loss (mean deviation or MD values) (table 2). Mild glaucoma is a visual field defect corresponding to a mean deviation (MD) of -6 dB or better, moderate disease is a disease with MD between -6 and -12dB, and severe disease is a disease with MD of -12dB or worse.²¹ For each patient, we determined POAG severity for the worse eye (the more negative MD), the better eye (the more positive MD). We had 12 patients with mild, 12 moderate and 16 with severe glaucoma. Mean MD value of group 1/ adherent is -7.4 with mean age of 53.75 years. Mean MD value of patients with adherence value of group 2/ non-adherent is -9.4 with age of 58.8 years. Patients with younger age and less severe disease seem to have better compliance. The difference is not significant, p values are .42 and .12 for MD and age respectively (>0.05) (Table 3).

In our study, 22 patients were put on single drug, 11 patients on two drugs and 7 patients on 3 drugs (table 4). In this study there was no difference between single and multiple drugs ($p\text{-value}=0.53$, >0.05). It appears that with multiple drugs adherence is poor but it is not statistically significant. A study with

larger population can show statistically significant result.

In our study, 11 patients with basic education had score of less than 27; 2 patients with intermediate education and 11 patients with higher education had score of more 27 (image 2). This difference was statistically significant. Comparing basic and others, $p\text{-value}=0.004$, while all those with basic education had poor adherence, 56% among those with better education had better adherence. Higher education level of patients is critical for better adherence.

Discussion

Adherence is an active process, where appropriate treatment is decided after a proper and detailed interaction with patient. The said patient is under no compulsion to accept that particular treatment, thereby not to be held solely responsible for non-adherence.⁹

Compliance, on the other hand, is a passive process, it focusses on medication-taking behaviour. It may be problematic for the patients as it narrates a process where autonomy of the patient is not considered. This may hamper therapeutic benefits as it doesn't take into account patient's general awareness of the disease, socio-demographic background, efficacy, tolerability and adverse effects of medications, need to follow up, or lack of insight due to psychosocial abnormalities, abnormal mood states like depression, or personality traits etc.¹⁰

In our study overall non-adherence is 40%. It is similar to study done in Southern India, where it was 53.6%.¹¹ In other studies, non-adherence ranged from 20 to 75 %, though the evaluation methods were not standardized.⁶

In our study, male adherence was better 45.8% as compared to 31.2% in females, difference is not statistically significant. It is comparable to study in Egypt where though females showed higher tendency for adherence, after multivariate analysis difference was not significant.¹¹

In our study, patients with younger age and less severe disease seem to have better adherence, though not statistically significant. Adherence in older patients may be less due to lot of other factors such as lack of family support or appointed care giver, decreased vision, lack of dexterity, coordination, comprehension, or memory.¹² These factors are; however, this was not included in the questionnaire.

It appears that with multiple drugs adherence is poor as compared to single drug. This agrees with previous studies.^{11,12} Though our study only showed a tendency but it is not statistically significant. A study with larger population can show statistically significant result.

In Our study, all patients with basic education were non-adherent. 56% of patients with better education were adherent to medication. Difference of adherence on the basis of educational qualification were significant (p=0.004). Educated patients tend to be more informed, knowledge about glaucoma, thereby increasing more aware the disease and need to adhere to treatment regime. It is also found increasing knowledge and awareness about the disease increases adherence.¹¹⁻¹³

Our findings also corroborated with Egypt base study where gender, dose related problems, medication side effects, and systemic comorbidity did not have a significant association with adherence; strong association is found with better education, awareness about the disease.^{11,12}

Conclusion

Adherence to ocular hypotensive medications is a critical part of secondary prevention of visual impairment from glaucoma. Regardless of the definition, glaucoma patients attain the full benefits of AGM only when they use them every day. Although there are studies in the literature pertaining to adherence and outcome of medical management of glaucoma in different geographical locations, still there is paucity of results with subjects of low economic status. Various factors such as age, sex, severity of disease, number of pills, complexity of doses, cost effectiveness should be considered before prescribing the drugs. Patients should be made aware of slow, progressive, blinding nature of the disease and need for strict drug adherence and follow up. Active interaction with patients for reason for non-adherence, steps to improve it need to be discussed to reduce the ultimate disease burden.

Table 1: Gender distribution of sample with adherence score

Sex	Score<27	Score >27	Total
Female	11(68.8%)	5(31.2%)	16

Male	13(54.2%)	11(45.8%)	24
Total	24	16	40
p=0.512 (>0.05)			

Table 2: Classification of Glaucoma patients

MD value (worst eye)	F	M	Grand Total
MD >(-)6.00	5	7	12
MD between (-) 6 to (-)12	6	6	12
MD <(-)12	5	11	16
Grand Total	16	24	40

Table 3: Distribution of disease by severity of disease (degree of visual field defect) and corresponding adherence score

Score groups		Mean MD	Max MD	Score	Age(Y)
<27 Group 2/ non-adherent	Mean	-9.41	-12.42	20	58.88
	N	24	24	24	24
	Std. Deviation	7.87	9.36	4.72	8.29
	Median	-7.2	-9.85	20	58.50
	Minimum	-24.51	-27.77	11	45
	Maximum	-.32	-1.35	26	76
≥27, Group 1/ adherent	Mean	-7.49	-9.87	28.63	53.75
	N	16	16	16	16
	Std. Deviation	6.33	6.71	1.54	11.95
	Median	-6.27	-9.18	28	55
	Minimum	-24.73	-24.73	27	36
	Maximum	-.47	-1.16	32	73
Total	Mean	-8.64	-11.4	23.45	56.82
	N	40	40	40	40
	Std. Deviation	7.27	8.39	5.69	10.09
	Median	-6.48	-9.36	26	58
	Minimum	-24.73	-27.77	11	36
	Maximum	-.32	-1.16	32	76
	p-value	0.42	0.35		0.12

Table 4: Adherence score depending on number of drugs used

Number of drugs	Score <27	Score >27	Total	OR	CI (lower-upper)
1	12	10	22	1	Reference
2	6	5	11	1	0.23-4.27
3	6	1	7	0.2	0.02-1.95
	24(60)	16(40%)	40		

p-value = 0.53. between single drug and multiple drugs
p value= 0.2, when compared 2 drugs vs 3 drugs.

Conflict of interest - None

Source of Funding - Not required

13. Ethical clearance taken from institutional ethical committee

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Legends

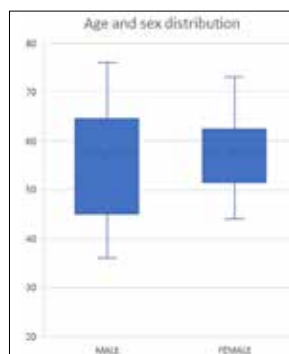


Image 1: Age and sex distribution of sample population

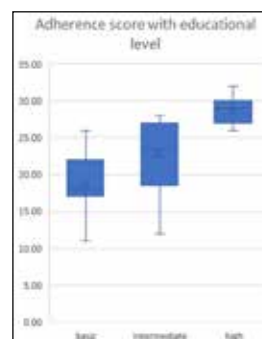


Image 2: Adherence score with different levels of education

Scoping Review on Brain Mapping Leadership and Talent Engagement

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Abstract

Brain mapping performance (BMP) is an innovative assessment designed by psychosocial occupational therapists to create talent engagement across lifespan. However, work readiness seems to be challenging assessment for anyone who has not been accepted on why and how to develop their upskilling. This preliminary study aimed to examine the validity and reliability of the BMP assessment. Six case studies were voluntarily participated as talented leaders of one corporate. Four associations of soft skills were outcomes, i.e., creativity, flexibility, empathy, and leadership, in the consecutive assessment of resting and voice-recording. This special formulation displays healthy brain performance, significantly associated in between empathy and leadership ($Sr = 0.880-0.943$); creativity and flexibility ($Sr = 0.886$); eustress engagement and growth mindset ($Sr = 0.943$); flexibility and positive thinking ($Sr = 0.926$). The BMP can individually explain how well of intrinsic brain capacity for leadership talent. This is a transformative strategy to optimize human-centered performances.

Keywords: Human resources, Interdisciplinary, Deep learning, Leadership, Mirror neurons morality

Introduction

The need for change is continued by looking at a descriptive score of the Southeast Asia employee engagement that resulted from 2014-2016 that 70% were not engaged and only 19% were engaged.¹ As we have been facing the pandemic COVID-19 till now, deep experiential learning is the most challenging skill for becoming a leadership talent related new normal of the humanized learning organization. As seen by a few change makers per each corporate, a unique non-standardized work enables talent engagement for moral purpose as well as human-centered performance.¹ This is congruent with what human-centric autonomy brings stronger well-being at work by learning to be more flexible and empathy in a big theme for 2022 Human Resources or HR transformation.² Especially for Learning

and Development (L&D) leaders, three issues must be determined: academic capability building, technological tools integrated growth mindset and soft skills with powerful sustainability of empathetic listening.²

When we focus on optimizing sports performance under stressful situations, mental toughness is a major key to well-being. Successful performance is addressed underlying feedback mechanisms for the motivational role to optimize motor skill learning. Prior to mental health assessment, the cognitive-behavioral rationale is to promote not only sports performance but also education, business, or health contexts. As known the Chinese concept of Jingjie, this spiritual thought aims to become conscientious, selfless, responsible, and beloved in dealing with mental health challenges. In this

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new normal era, several fields of mental skills training have been moving through the 21st century of effective strategies.³ As seen, many workforce employees are impacted by accumulating stressful situations; their leaders could respond with openness, support, and compassion. However, soft skills are considered using the neuroscience approach to understand personal and professional life in relation to being a better performer and wellness. Indeed, 21st-century leadership is formulated into nine styles.⁵

Therefore, neuroscience may advocate for a better integration of people from big talent to competencies training of a resonant leadership based on the personal needs as if they gain an optimal working environment that fit their tangible and non-tangible rewards circuit of the brain.⁴ Previous research often used Electroencephalograph (EEG) to find peak-performance training ranges of the cerebral functions.⁶ Specifically, those employees regain their adequate evidence-based brain performance at the optimal strategy of self-conscious elaborated emotional intelligence, positive thinking, and mindfulness through the organizational development process to expand their knowledge, qualifications, and capacities.⁴

Especially for the neuroscience approach, multisensory cues in the human brain-behavior teach us about other internal mental intentions and states of other person, allowing us to forecast a Brain Mapping Performance (BMP) in a given setting of Mirror Neurons Morality (MNM) which provides an internal experience of activities of another person's action observed as cognitive empathy.⁸⁻¹⁰ This imitation permits us to infer the underlying desires, emotions, and beliefs.^{11, 12} The MNM are located in frontal regions (F3 and F7), temporal regions (T3), and parietal regions (C3, C4, and Cz).^{13, 14} So that the MNM, through feeling, sensing, and empathizing with what people perform rather than hands-on instructions, is called vicarious learning or intentional understanding represented and activated in three brain locations; C3, C4, and Cz.¹⁵

The element of empathy in the engagement index (EI) is cognitive or intentional understanding, represented in three mirror neuron brain locations the frontal regions of two mirror neuron brain locations (F3 and F7) and one mirror neuron brain location in the temporal region (T3)¹⁶ which is connected a learning process, called vicarious learning, involves feeling, sensing, and empathizing with what people

perform rather than hands-on instructions.¹⁵ Vicarious learning can be derived from indirect sources such as listening to your voices thinking with imagination.¹⁵ The vicarious learning process is represented in the parietal regions (C3, C4, and Cz).¹⁵⁻¹⁷ Also, the World Health Organization has emphasized that the more learning from the meaningful activities, the more leadership engagement enables healthy aging or a process of optimizing functional abilities.

This concept will be promoted toward 2030, strengthening an intrinsic capacity of the individual autonomy to learn with freedom, dignity, integrity, and independence and to maintain relationships in environmental well-being. However, the BMP has been preliminarily assessed in a group of executive managers in order to validate a cut-off scoring and to differentiate two consecutive sessions: resting and voice recording. This study hopes to gain a knowledge translation of healthy workplace-related intrinsic brain capacity assessment to be started at one corporate social responsibility (CSR) in Thailand.

Methods

Participants

The total voluntary participants in this study were six case studies selected through purposive sampling. They all were executive managers working in the same company with non-identified confidentiality. All participants wore an Emotive EPOC helmet for the EEG measures while resting (thought) in a comfortable seat with opened eyes and recording (action and time) for their three pitches of voice: high, medium, and low on the same statement.

A recording platform called the 4voices app was freely used for anyone who was interested in improving self-positive thinking. The participants would select one purposeful category in regard to the thematic statement out of four: healthy, happiness, worthy, and mindfulness. A criteria scoring was at 20% per one component of voice.

EEG Data Analysis

The EEG is a non-invasive recording technique that can measure electrical neural currents at the scalp level. The neural oscillations have different frequency bands including the EEG oscillations allow identification of the mu rhythm (8–13 Hz) with the MNM.^{18, 19} The raw data from F3, F7, T3, C3, C4, Cz represented the location of the MNM.^{18, 20} For this experiment, the brain wave frequency of alpha, beta,

and theta was selected and used for EI by applying the EEG variable according to the international 10-20 method.

The Quantitative Electroencephalogram (QEEG) is used to create brain mapping using the EEG data that associated with creativity, flexibility, empathy, and leadership.^{1,2} Previous comparative case studies in the Psychosocial Occupational Therapy Clinic have been validated in terms of the following calculations in the total score of 100%, respectively: Creativity = $\text{Theta} \times 0.7$, $\text{Alpha} \times 0.5$, $\text{Beta} \times 0.5$ (Fp2, F8, Fz, T4 /P4); Flexibility = $\text{Theta} \times 0.7$, Alpha , $\text{HBeta} \times 0.7$ (Fp1, Fp2, Fz, F4/T4); Empathy = $\text{Delta} \times 0.7$, Alpha , $\text{HBeta} \times 0.7$ (F7, F8, T5, T6/T4); Leadership = Theta , Alpha , Beta (Fp1, Fp2, T3, T4/F4).

EI is calculated by using alpha, beta, and theta of brain wave activities: $\beta / (\alpha + \theta)$ which directly related to human task engagement, relaxation, and information processing.^{21, 22} According to the EEG, variables were computed at the maximal EI of 6.00²³ converted into 100% so that an increase in the EI index reflected an increase in the degree of engagement.¹⁹ The EI has provided a comprehensive understanding of 'participants' behavior regarding eustress and compassion engagement while resting and recording the 4voices application. A summation of eustress (C3, C4, Cz, F3, F7, T3) and compassion (Fp1, Fp2, F7, F8, P3, T4, T5) engagement enables a growth mindset (100% full score) based on previous trials integrated with three theoretical models.²⁴⁻²⁶

Finally, all data has statistically been tested at the 95% confidence interval, i.e., normal distribution with non-parametric K-S calculation, the median calculation for a cut-off score, parallel-form reliability and predictive validity in between resting and voice recording

and concurrent validity of 4voices app. Spearman's correlation (Sr) would be interpreted at 0.30-0.39 moderate relationship, 0.40-0.69 strong relationship, and ≥ 0.70 very strong relationship.²⁷

Results

Normal distribution ($n = 6$, $p > 0.05$) was found in all variables except the empathetic thought ($p = 0.04$). Median was computed in averaged from 4 variables (creativity, flexibility, empathy, and leadership) at 66.61 (thought) and 64.71 (action). Spearman's correlation found very strong relationship between positive thinking (via 4Voices app) and flexible thought ($Sr = 0.926$, $p = 0.008$). So that the cut-off score of the BMP and 4Voices app to distinguish the intrinsic brain capacity assessment seemed to be 60%, as shown in Figure 1.

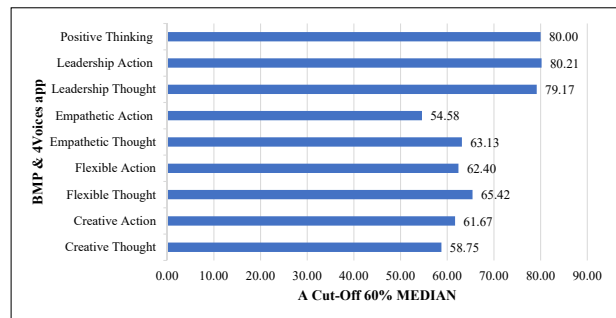


Figure 1: Median accounted for the BMP and 4Voices of positive thinking (n = 6)

Interestingly, resting and voice recording correlations indicated for parallel-form reliability from 0.829 to 0.943 or very strong relationships (Table 1). In regard to predictive validity, all variables were significantly different ($p = 0.028$) using Wilcoxon signed-rank test except for a comparison of empathetic thought and action ($p = 0.463$).

Table 1: Comparison of mean & Standard Deviation (SD) in paired resting (thought) and 4Voices recording (action)

Case No.	Creative thought	Creative action	Flexible thought	Flexible action	Empathetic thought	Empathetic action	Leadership thought	Leadership action
Case A	63.96	62.50	65.83	65.63	70.21	58.13	89.58	85.42
Case B	60.63	59.38	67.92	56.67	66.46	51.04	77.08	75.00
Case C	54.58	66.67	61.46	67.92	58.54	59.17	75.00	85.42
Case D	53.54	30.21	55.63	31.25	59.79	30.42	72.92	35.42
Case E	56.88	60.83	65.00	59.17	54.17	50.21	81.25	66.67
Case F	63.13	63.75	72.92	72.71	68.54	63.96	89.98	85.42
Mean	58.78	57.22	64.79	58.89	62.95	52.15	80.97	72.22
SD	4.42	13.47	5.87	14.74	6.37	11.85	7.36	19.57
p-value	0.028		0.028		0.463		0.028	

As seen in Table 2, only 11 out of 64 were selected as very strong correlations among the BMP variables. Three outcomes were computed in order to understand how mental health wellbeing will have been engaged, including eustress EI, compassion EI, and both summation into a growth mindset. Regarding the median of participants, 11.18 for eustress EI; 11.47 for compassion EI; and 22.15 for growth mindset. Also, there was a very strong correlation between eustress EI and growth mindset (Sr = 0.943). Neither eustress

nor compassion EI was correlated with any of the BMP variables. There was no significant difference between eustress and compassion EI using Wilcoxon signed-rank test (n = 6, p = 0.753). Moreover, concurrent validity of 4voices app and the BMP significantly showed very strong relationships: tone of voice and flexible thought (Sr = 0.828, p = 0.042); rhythmic voice and empathetic thought & action (Sr = 0.828, p = 0.042); positive thinking and flexible thinking (Sr = 0.926, p = 0.008).

Table 2: Very strong ‘Spearman’s correlation(Sr)oftheBMP at 95% confidential interval and non-significant (NS)

BMP	Creative thought	Flexible thought	Empathetic thought	Leadership thought	Creative action	Flexible action	Empathetic action	Leadership action
Creative action	0.829	0.829	NS	NS	-	NS	NS	NS
Flexible action	0.886	NS	NS	NS	NS	-	NS	NS
Empathetic Action	NS	NS	0.943	0.943	NS	NS	-	NS
Leadership Action	NS	NS	0.880	0.941	NS	NS	0.880	-
Leadership Thought	NS	NS	0.886	-	NS	NS	0.943	0.941

Discussion

The BMP has been successfully assessed in the case studies positioning as executive managers similar to the previous classification as an important tool of occupational therapy.⁷Significant validation and reliability were demonstrated in two consecutive sessions: resting and voice recording. This study has interestingly gained practical solutions of healthy workplace-related intrinsic brain capacity assessment with acknowledgment to this CSR in Thailand. Similarly, this BMP used EEG cortical asymmetry for understanding six brain locations of human empathy, which were F3, Fz, F4, C3, Cz, C4. To extend the findings, the six participants activated the MNM while recording both EEG signals and 4voices app then only one case could maintain empathetic action at the 60% cut-off score.

Consequently, five cases could maintain 1-4 components of intrinsic brain capacity (thought) to 1-3 components of functional brain ability (action), especially for one case with accelerated or talented BMP. This objective assessment enables an interesting evidence-based practice according to the World Health Organization’s concept of healthy aging and well-being environment.¹⁷However, the

BMP resulted in one case that needs to be approached for mental skills training³since three components of intrinsic brain capacity and four components of functional brain ability components were below 60%. In addition to determining cognitive strengths and weaknesses, the BMP reflects everyone to be connected by demonstrating a unique set of mental aptitudes concerning below- or above-average verbal abilities linked into real-world functioning with practical solutions, e.g., which types of memory to be learnable part in hippocampal circuits, how emotion regulation to be trainable part in prefrontal subcortical networks.^{6, 7, 11, 28}

This current study also gains a lesson learned on how to L&D leaders which are agreed to three issues of self-determination in academic capability building¹⁴⁻¹⁷, technological tools integrated growth mindset^{1, 20}, and soft skills², however, those employees who are executive managers supported to take risks as well as challenges by thinking laterally and creatively in various settings of social life and human resources development upon an organized, professional context. As an interdisciplinary field of research of BMP, utilization of neuro-techniques could support human resources management

towards a supportive action of personal life balance and organizational well-being. From the results, no significant correlation was found in compassion EI and any variable, meaning there was no situation to express emotional empathy composed of compassion to respond to another person's suffering.²⁸ However, cognitive empathy refers to an individual's ability to recognize and comprehend others' emotions, as shown in the correlation between eustress EI and growth mindset.

Interestingly, cognitive empathy is developed to recognize the emotional states of others to process their own emotions and behaviors²⁸ in which the BMP enables an explainable four soft skills processing associated with the MNM^{12, 18, 19} resulting from thought (resting state) to action (4 voices recording). Finally, the new knowledgeable pathway of the MNM includes multiple relationships of flexible action and creative thought and action.

Limitation and Recommendation

Although optimization is essentially concerned with both motor and mental skills training, however, the soft skills might have been unlocked by exploring in depths of our nervous system-related leadership performance. Implementing the neuroscience assessment tools is innovatively expected to inspire all employees for a feeling of accomplishment at their learning organizations.³ Consequently, three common factors might affect self-determination related alignment of mind, brain, and working behavior that fluctuating environmental exposure of either positive or negative engagement, and a strong emotional situation linked cognitive distortion or individual 'beliefs' bias.⁴ A sample size of data collection will be further considered in order to reframe the BMP optimization according to new normal strategies of human-centered performance and talent engagement by learning to be more creative, flexible, empathy, and leadership^{1, 2}, leading to logical and realistic sustainability¹.

Conclusion

The BMP in the combination of resting and 4Voices recording highlights an important principle applied in what human-centric autonomy brings stronger well-being at work and in which the human resource transformation could have made a collaborative assessment and accomplishment in conjunction with interdisciplinary evolution of the L & D leadership.

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Declaration of Interest Statement

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Ethical Clearance

Ethical clearance is not required.

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Study of Diabetic Peripheral Neuropathy in Adults of Telangana

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Abstract

Background: Diabetic peripheral neuropathy (DPN) predisposes to foot ulceration and gangrene. It has been reported that prevalence of DPN is lower in Indians relative to Caucasians. Studies among recent onset patients with type 2 diabetes mellitus (Type2-M) are very few. We studied the prevalence and risk factors of DPN in patients with newly diagnosed Type2DM.

Methods: We prospectively studied 80 consecutive patients over age 30 with a duration of diabetes ≤ 1 year. Every patient underwent a clinical and biochemical evaluation and was screened for DPN using TCSS scale (Toronto clinical scoring system) and Leeds Assessment of Neuropathic Symptoms and Signs (LANSS) pain scale.

Results: The cases had a mean age of 60.28 years and duration of symptoms of DM is < 1 year prior to presentation. The overall prevalence of DPN was 12.5%. The prevalence of DPN showed an increasing trend with FBS (trend chi-square = 3.517, $P = 0.0304$). A logistic regression analysis showed that DPN was independently associated with Fasting Blood Sugar ($P = 0.0304$), Body mass index ($P = 0.0389$), HbA1c ($P = 0.0451$), family history ($P = 0.0426$) and physical activity ($P = 0.0219$) but not with age, sex and education.

Conclusions: Our study showed high prevalence of PN in recently diagnosed patients with Type2DM, which was independently associated with age and duration of symptoms of diabetes prior to the diagnosis. FBS, HbA1c, BMI, were found to be risk factors for prevalence of Diabetic Neuropathy.

Keywords: Diabetic Peripheral Neuropathy, Newly Diagnosed, Type 2 Diabetes Mellitus, Telangana

Introduction

India has one of the highest prevalence of type 2 diabetes mellitus (Type2DM) in the world ⁽¹⁾. It is estimated that by the year 2030 there are will be nearly 80 million Indians with Type2DM in the country ⁽²⁾ ⁽³⁾. The disease constitutes a substantial burden for both the patient and health care system, mainly due to macrovascular and microvascular complications. ^{(1),(2)}In contrast to patients in industrialized countries, Indians with Type2DM have an earlier age at onset of the disease and fewer resources for achieving optimal metabolic control, potentially predisposing higher prevalence of complications ⁽⁴⁾.

The prevalence of diabetic peripheral neuropathy (DPN) varies greatly in different studies, ranging from 8% to 59% ⁽⁵⁾⁽⁶⁾. DPN significantly increases

the risk of complications such as foot infections, deformities, gangrene, and amputations.⁽⁷⁾In India, the adverse effects of peripheral neuropathy (PN) are compounded by poor foot hygiene, improper foot wear, and frequent bare foot walking. In such circumstances, complications of foot infections and gangrene are a common cause of hospital admissions ⁽⁸⁾.

Type2 DM is characterized by a long asymptomatic phase (ranging from 4 to 7 years) between the actual onset of hyperglycemia and clinical diagnosis which may explain the relatively high prevalence of microvascular complications in newly diagnosed patients with Type2 DM? The prevalence of DPN at diagnosis of Type2DM ranges from 10% to 48%, depending upon the population studied and method used to evaluate neuropathy. In view of the poor

awareness and lack of regular screening programs, the initial presentation to the physician is frequently delayed. This may predispose to an increased rate of microvascular complications at onset. Ethnic differences in the prevalence of various diabetes-related complications have also been documented ⁽⁹⁾.

There is a paucity of reports on DPN in Indians. In a study comparing European and south Asian subjects with Type state 2DM in United Kingdom; the prevalence was lower in the latter. However, in surveys in Indian patients, the prevalence has ranged from 26% to 31%. In these studies, no controls were studied. Since PN is present in a significant proportion of healthy individuals, especially among the elderly, this fact needs to be taken into account before ascribing the PN to hyperglycemia.

Its end-stage complications such as foot ulceration and amputation are associated with substantial health care costs, socioeconomic consequences including loss of work time and reduced quality of life.^[11]

Material and Methods

80 (Eighty) Adult patients regularly visiting to TRR Institute of Medical Sciences and Hospital, Inole, Patancheru (Mandal), Sangareddy (District), Telangana state - 502319 were studied.

Inclusion Criteria: included age ≥ 35 years, Patients willing to co-operate, Patients detected with Type 2 DM recently (within 1 YEAR) and Patients with FBS- > 120 mg/dl, HbA1c- $> 6.5\%$. Patients diagnosed with DM for more than 1 year,

Exclusion Criteria: Patients with preexisting complication like Diabetic foot, Patients with Type 1 DM, Patients with Gestational Diabetes Mellitus, patients with acute illness or chronic diseases such as leprosy, those with disability and patients taking medications known to impair nerve function were excluded from the study.

- Screening for peripheral neuropathy and case definition of diabetic neuropathy
 - a. Tests were performed in a random sequence among different patients. Patients were screened for DPN using TCSS scale (Toronto clinical scoring system). This scale was used to assess for the presence of painful Peripheral Neuropathy. In short, for TCSS,

symptoms like pain, tingling, numbness, weakness, ataxia, upper limb symptoms as symptom score, knee reflex and ankle reflex as reflex score and pin prick, temperature, light touch, vibration sense, position sense as sensory score were taken into account. Scoring was based on symptoms, reflexes, sensory tests. Depending upon the abnormalities, a point of 0 or 1 was given. Score of 0-5= no peripheral neuropathy; 6-8= mild PN; 9-11= moderate PN; 12-19= severe. The TCSS have been previously been validated against electro-diagnostic studies.^[10]

- b. Leeds Assessment of Neuropathic Symptoms and Signs (LANSS) pain scale was used to assess the severity and pain score of the subjects. This pain scale can help to determine whether the nerves that are carrying the pain signals are working normally or not. Scoring was given. Total score (maximum 24) If score < 12 , neuropathic mechanisms are unlikely to be contributing to the patient's pain and If score ≥ 12 , neuropathic mechanisms are likely to be contributing to the patient's pain.

Duration of study was from April 2020 to May 2022

Statistical Analysis: Continuous data have been expressed as mean \pm SD and 95% confidence interval (CI) were determined for the variables. The Student's *t*-test was used for comparison of continuous variables if found to be normally distributed while chi-square test was used to compare categorical variables. Variables associated with PN were tested using univariate logistic regression analysis. Variables shown to have a significant association by this analysis were tested by multivariate logistic regression to determine the variables independently associated with PN. A *P* value < 0.05 was considered significant. Statistical analyses were performed using the SPSS software package (version 15.0; SPSS Inc., Chicago, IL, USA).

Observation and Results:

Table No: 1 - Anthropometric Measurement details

A-	Age - 16 (40%) Males and 12 (30%) females were below 60 years and 24 (60%) males and 28 (70%) females were 60 years.
B-	H bA1c- 8 (20%) males and 14 (35 %) females had less than 10 % HbA1c value. 32 (80%) males 26 and 26 (65%) females had more than 10% Hba1c value.
C-	FBS (mg/dl) - 24 (60%) males and 22 (55%) females had less than 200 MG/dl FBS was observed but in 16 (40%) males and 18 (45%) females had more than 200 mg /dl FBS. P-value was 0.030, and chi-square value 3.517.
D-	PLBS (mg/dl) -16 (40%) males and 12 (30%) females had less than 250 mg/dl value. In 24 (60%) males and 28 (70%) females more than 250 mg/dl PLBS value.
E-	RBS (mg/dl) - in 6 (15%) males , 10 (25%) females had less than 180 mg/dl RBS but in 34 (85%) males , and 30 (75%) females had more than 180 mg/dl RBS in (mg/dl) values.

Table No : 2 - Statistical analysis in Diabetic Neuropathy Patients

A-	Age- Complications were Observed in 9 Patients were between 40 - 60 years and complications were also observed in 15 patients above 60 years value was 0.4796 and Chi-square value was 0.003.
B-	Sex - In males 14 had complications in females 10 had complications the P-value was 0.1646, Chi square value was 0.952.
C-	FBS (mg/dl) 10 complicated patients had less than 200 FBS and 14 patients with complications had more than 200 FBS.
D-	HbA1c - Three Complicated patients had HbA1c ratio was between 6.5 - 10, 21 patients with complications had more than 10 HbA1c P-value was 0.0451 ,Chi-square was 2.869.
E-	BMI (Kg/M ²) - in 5 patients with complications and less than 30 BMI in 19 patients with complications had more than 30 BMI . P-value was 0.0389 , Chi-square value was 3.111.
F-	Family History - Total 17 patients with complications had family history P-value was 0.04 - 6, Chi- square value was 2.963.

Discussion

The patients newly detected with DM belonged to age group above 30. HbA1c % of most of the patients on recruitment was above 10%. FBS levels of most patients were less than 200 mg/dl. PLBS of most of the patients was seen to be higher than 250 mg/dl. RBS of most of the patients was seen to be above 180mg/dl.

We detected a high frequency of DPN in newly diagnosed patients with Type-2 DM. DPN was independently associated with increasing age and duration of symptoms of diabetes prior to diagnosis. In various Caucasian populations, the prevalence of DPN in newly diagnosed Type-2 DM varies widely from 10% to 48%. This may be due to different methodologies employed for detection of neuropathy as well as variability inpatient ages and time lapsed before diagnosis. However, ethnic differences in DPN may also be relevant ⁽¹²⁾. Interestingly, it has been previously reported that both DPN and foot ulcers are lower in Indians compared with European Caucasians.

In the current study, Prevalence of Diabetic Neuropathy is 30%. Two earlier studies in Indians have reported on the prevalence of DPN in newly diagnosed TYPE- 2 DM of 19.5% and 29.0%. In the latter study, the prevalence of DPN was measured by NSS and NDS in 100 newly diagnosed TYPE-2 DM ⁽¹³⁾. In a community-based study from Chennai, south India, it was measured the prevalence of DPN using VPT by biothesiometer. The prevalence in newly diagnosed patients was 19.5% and 27.8% in those with known diabetes (14). However, the frequency of DPN in the subjects without diabetes was not studied.

Prevalence of mild neuropathy was found to be 15%, moderate Neuropathy was found to be 8.75% and severe Neuropathy was found to be 6.25% based on the TCSS and LANSS criteria. High FBS (>200mg/dl), HbA1c (>10%), BMI (>30 kg/m²), were found to be risk factors for prevalence of Diabetic Neuropathy (Table -1).

Since PN is found in a proportion of healthy individuals, especially in the elderly, comparison with a matched control group is essential. We noted PN in 30% of age-and sex-matched control subjects, which increased with advancing age. This fact should be taken into account when assessing PN in patients with diabetes.

Monofilament sensation is a measure of protective sensations in the foot and is strongly associated with

risk of foot ulceration ⁽¹⁵⁾. The prevalence of impaired monofilament sensation was 6%, considerably lower than that of DPN. This low frequency may be reflective of the fact that the 10-g (5.07) monofilament testing is appropriate for the clinical assessment of risk for foot ulceration ⁽¹⁶⁾, but not a sensitive means to detect prevalence of neuropathy. In the latter case, a monofilament of 1g or less may be more appropriate.

Previous studies have identified several risk factors for DPN such as age, poor glycemic control, increasing duration of diabetes, gender, height, body mass index, retinopathy, hypertension, smoking, and alcohol consumption ⁽¹⁷⁾. In the current study, FBS, HbA1c, BMI, family history and physical activity were significant risk factors for Diabetic Peripheral Neuropathy. The prevalence of DPN showed an increasing trend with FBS (trend chi-square= 3.517, $P = 0.0304$). A logistic regression analysis showed that DPN was independently associated with Fasting Blood Sugar ($P = 0.0304$), Body mass index ($P= 0.0389$), HbA1c ($P = 0.0451$), family history ($P= 0.0426$) and physical activity ($P= 0.0219$) (Table 2). Since elderly patients have other risk factors for foot ulcerations, such as vision abnormalities and vascular involvement, neuropathy screening assumes an even greater importance in this age group.

The use of both qualitative and quantitative mode of assessment of neuropathy was performed. It has a few limitations; it was clinic based and may not reflect the actual prevalence of DPN in the community. We did not investigate metabolic causes of PN other than diabetes.

Summary and Conclusion

In summary, we detected a high prevalence of PN in recently diagnosed patients with Type 2 DM. The neuropathy was independently associated with age and duration of symptoms of diabetes prior to the diagnosis. Screening for DPN using simple clinical

examination is cost-effective means to prevent foot ulceration and infections in Indian patients with Type 2 DM. The present study demands further Pathophysiological, Nutritional and genetic study because exact pathogenesis of DPN is still unclear.

Limitation of study

Due to Tertiary location of Studied Centre and Small number of patients and lack of latest Technologies, We have limited findings and results

- The present research work is Approved by Ethical committee of TRRIMS Inole, Patancheru (Mandal), Sangareddy (district), Telangana state - 502319.
- No Conflict of Interest
- No Funding

Table 1: Anthropometric Measurement Details

PARAMETER		MALES (N =40)	FEMALES (N = 40)
AGE	< 60 years	16 (40 %)	12 (30 %)
	> 60 years	24 (60 %)	28 (70 %)
HbA1C (%)	< 10 %	8 (20 %)	14 (35 %)
	> 10 %	32 (80 %)	26 (65 %)
FBS (mg/dl)	< 200 mg/dl	24 (60 %)	22 (55 %)
	> 200 mg/dl	16 (40 %)	18 (45 %)
PLBS (mg/dl)	< 250 mg/dl	16 (40 %)	12 (30 %)
	> 250 mg/dl	24 (60 %)	28 (70%)
RBS (mg/dl)	< 180 mg/dl	6 (15 %)	10 (25 %)
	> 180 mg/dl	34 (85 %)	30 (75 %)

HbA1c : Haemoglobin Adult Glycosylated

FBS : Fasting Blood sugar

PLBS : Post Lunch Blood sugar

RBS : Random blood sugar

Table 2: Statistical Values In Case of Diabetic Neuropathy

RISK FACTOR		COMPLICATION		P-VALUE	CHI-SQUARE VALUE
		YES	NO		
AGE (years)	40-60	9	19	0.4796	0.003
	> 60	15	37		
SEX	MALE	14	26	0.1646	0.952
	FEMALE	10	30		
FBS (mg/dl)	< 200	10	36	0.0304	3.517
	> 200	14	20		

RISK FACTOR		COMPLICATION		P-VALUE	CHI-SQUARE VALUE
		YES	NO		
HbA1c (%)	6.5 – 10	3	19	0.0451	2.869
	> 10	21	37		
BMI Kg/m ²	≤ 30	5	25	0.0389	3.111
	> 30	19	31		
FAMILY HISTORY	PRESENT	17	28	0.0426	2.963

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Study of Evaluation of Maternal Side Effects and Neonatal Outcome after Treatment with Nifedipine at Tertiary Care Hospital

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Abstract

Introduction: Compared to beta- agonists, nifedipine is associated with improvement in neonatal outcome. Nifedipine is significantly more successful in prolonging pregnancy beyond 48 hours and effective in delaying upto 7 days.

Methodology: The present study was conducted in the department of obstetrics and gynaecology of Rural Medical College, Loni, The present work comprises of 135 cases between 28 to 37 weeks of gestational age having premature labour pains that were admitted in antenatal ward or labour room.

Results: Distribution of cases according to NICU admission of preterm baby. For observation total 9 cases were kept in NICU, 3 cases were admitted in NICU for jaundice, at 1 was admitted for birth asphyxia.

Conclusion: This study on tocolytic effect of nifedipine in preterm labour shows, nifedipine has good tocolytic action on arresting preterm labour with minimal side effects.

Keywords: Preterm labour, neonatal morbidity, nifedipine

Introduction

Compared to beta- agonists, nifedipine is associated with improvement in neonatal outcome. Nifedipine is significantly more successful in prolonging pregnancy beyond 48 hours and effective in delaying upto 7 days. Recent studies have suggested that calcium channel blockers specifically nifedipine is considered relatively safe for use in pregnancy.^{1,2}

Some authors have proposed that nifedipine, could be used as first line tocolytic agent. The most recent substantial update of the Conchrane review regarding calcium channel blockers for acute tocolysis in preterm labour included 12 randomised control trials (10 using nifedipine) involving 1029 patients.³ This review concluded that, when

compared with any other tocolytic agent (mainly beta-mimetic), calcium channel blockers (mainly nifedipine) reduce the risk of delivery within 7 days of initiation of treatment and delivery before 34 weeks of gestation with improvement in some clinically important neonatal outcomes such as respiratory distress syndrome, intraventricular haemorrhage, necrotizing enterocolitis and neonatal jaundice.^{4,5} A study on tocolysis and preterm labour showed that there appears to be a place for short-term tocolysis to gain time so that corticosteroids can be administered to enhance fetal lung maturation and reviewed the effectiveness and complications of different tocolytic agents. The rationale of this study is to demonstrate the efficacy and safety of nifedipine as a tocolytic agent in preterm labour.^{6,7,8}

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Material and methods

The present study was conducted in the department of obstetrics and gynaecology of Rural Medical College, Loni, The present work comprises of 135 cases between 28 to 37 weeks of gestational age having premature labour pains that were admitted in antenatal ward or labour room. The study was approved by the IEC. The sample size was estimated with the help of expert using online sample size estimation calculator.

Inclusion criteria:

- Gestational age between 28 weeks to 37 weeks
- Presence of regular uterine contractions 4 in 20 minutes or 8 in period of one hour
- Cervical dilatation > 1 cm
- Primigravida as well as multigravida
- Exclusion criteria:
- Systemic diseases like diabetes mellitus, cardiac disease, liver or renal disease, hypotension
- Obstetric complication like hypertensive disorder of pregnancy, antepartum haemorrhage, PROM
- Multifetal gestation
- Foetal complications like chorioamnionitis, congenital malformations, IUGR, fetal distress, intrauterine death.

Pregnant women presenting with preterm labour and those fulfilling inclusion and exclusion criteria will be admitted. A detailed history, complete physical examination and routine investigations, obstetric ultrasound will be done for all patients. All women will be screened for urinary tract infections/bacterial vaginosis with mid-stream clean catch urine sample & a high vaginal swab respectively and antibiotic treatment will be instituted.

Results

Table 1: Distribution of Cases as Per Nicu Admission of Newborn

	Frequency	Percent
birth asphyxia	1	0.7
Jaundice	3	2.2
No	122	90.4
Observation	9	6.6
Total	135	100.0

Table 2: Distribution of Cases as Per Preterm/Term Delivery.

	Frequency	Percent
late preterm	17	12.6
preterm	26	19.3
term	92	68.1
Total	135	100.0

Table 3: Distribution of Cases As Per Apgar Score

	Frequency	Percent
APGAR 1 min		
6	15	11.1
7	120	88.9
Mean ± SD	6.88±0.31	
APGAR 5 min		
8	20	14.8
9	115	85.2
Mean ± SD	8.85±0.35	

The above table shows distribution of cases according to APGAR at 5 min and 10 minutes.

Table 4: Distribution Of Cases As Per Nicu Admission Of Newborn

	Frequency	Percent
birth asphyxia	1	0.7
Jaundice	3	2.2
No	122	90.4
Observation	9	6.6
Total	135	100.0

The above table shows distribution of cases according to NICU admission of preterm baby. For observation total 9 cases were kept in NICU, 3 cases were admitted in NICU for jaundice, at 1 was admitted for birth asphyxia.

Discussion

Babies born preterm have an increased risk of morbidity, some are directly related to immaturity, as with hyaline membrane disease due to lack of pulmonary surfactant, and retinopathy of prematurity due to the excessive use of oxygen. Preterm birth may also be a marker for other problems that produce disease such as fetal infections and systemic inflammation, which are associated with intracranial hemorrhage, cerebral palsy, cerebral white matter

damage, and chronic lung disease which include bronchopulmonary dysplasia⁹.

In present study, side effects noted are distributed as, 3 % had headache, 20.3% had hypotension and 18 % had tachycardia, while 3% nausea, Similarly the study conducted by Gulati A¹⁰ depicted 4 % had headache, 24 % had hypotension, 76 % had tachycardia, and 4% had nausea, and 4 % flushing.

In present study 17.8% of the cases had birth weight between 1 kg to 2 kg, while 82.2 % had between 2 kg to 3 kg.

Similarly in study conducted by Dhawle et al¹⁵¹ 60.5 % had birth weight upto 2.5 kg. In our study, 0.7 % had birth asphyxia, 2.2 % had jaundice and 6.6 % were admitted in NICU for observation. In study conducted by Dhawle et al¹¹ 11. 6 % had birth asphyxia, 48.8 % had neonatal jaundice and 11.6 % were admitted in NICU care.

In present study, 99.3 % vaginal delivery followed by 0.7% with LSCS, as obstetric complications in like pre-eclampsia, heart disease, PROM are in exclusion criteria, which resulted in less number of cesarean section. In study conducted by Hangekar, mode of delivery only 2 cases (5.26%) underwent cesarean section whereas rest delivered vaginally.^{12,13}

Conclusion: This study on tocolytic effect of nifedipine in preterm labour shows, nifedipine has good tocolytic action on arresting preterm labour with minimal side effects.

Ethical clearance:

For present study ethical clearance was obtained from our IEC , Pravara Institute of Medical Sciences (DU) Loni .

Source of support: Nil

Conflict of interest: Nil

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Fungal Infections of Paranasal Sinuses: Sequelae to 2020 Pandemic

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Abstract

Background: In recent decades, the prevalence of fungal sinus infection has increased. It's plausible that this is related to increased awareness, antibiotic usage, and the use of immunosuppressive drugs. Furthermore, much has been written on the involvement of fungus as a causative organism.

Objectives: To identify fungal pathogens and correlate laboratory findings with clinical findings.

Materials and Methods: Patients with AIFR following recent COVID-19 infection were included. After performing potassium hydroxide (KOH) wet mounts, post-operative material was collected and cultured on two tubes of Sabouraud dextrose agar (SDA) and stored at 25°C and 37°C for isolation and identification.

Results: Out of 329 diabetic individuals with AIFS following COVID-19 infection, 51% exhibited mucopurulent discharge and 75.6% had unilateral involvement. Only 57.4% of KOH mount samples were positive for fungal components, however 76.3% of SDA samples exhibited positive growth, with 62% Mucorales, 8% Aspergillus, and 6% Candida species.

Conclusion: Mucor mycosis can develop in COVID-19 patients, particularly those with diabetes, a high and imprudent use of corticosteroids, and invasive ventilation. KOH test resulted in a preliminary diagnosis, whereas Culture remains the gold standard for identification.

Keywords: Invasive fungal sinusitis, Mucor mycosis, COVID-19, Diabetes mellitus

Introduction

The severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) induced coronavirus illness (COVID-19) was originally detected in Wuhan, China. Until now, there has been no full research on COVID-19 sequelae.¹ The COVID-19 pandemic has been associated with otorhinolaryngological symptoms such as anosmia in the early stages to late-stage mucor mycosis presenting as invasive fungal sinusitis.² The hyphal invasion and symptoms take around 4 weeks to appear and be detected. Invasive fungal diseases are infections that can be fatal in immunocompromised persons.³ They are also

known as Mucor mycosis infection, is caused due to decreased CD4+ and CD8+ lymphocytes associated with uncontrolled diabetes, immunosuppression, acquired immunodeficiency syndrome (AIDS), and underlying malignancies. Patients in critical care for influenza and respiratory virus infections, particularly Covid-pneumonia, have been shown to have a higher risk of acquiring invasive pulmonary fungal infections, most likely due to their reduced immunological competence.⁴

In recent decades, the prevalence of fungal sinus infection has increased. This might be related to antibiotic and immunosuppressant drug abuse.

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Furthermore, the involvement of fungus as a causative organism in chronic rhinosinusitis is well established.⁵

In moderate to severe cases with decompensated pulmonary functions and the use of immunosuppressive medicine for management increase disease severity. Without early identification and treatment, the condition may progress rapidly, with reported fatality rates of 50 to 80 % due to intra-orbital and cerebral complications.⁶ Despite prompt treatment, mortality rates were steadily rising due to the disease's rapid progression.

Materials and Methods

Study Design: Prospective Cross sectional study

Study Setting: Government ENT Hospital, Koti, Hyderabad

Study Duration: November 2021 to March 2022

Sample size: 329 patients

Three-month research was undertaken on 329 individuals who had clinical signs of fungal infections after recovering from COVID 19 infection.

Inclusion Criteria

1. Patients with fungal sinusitis who have been admitted to the hospital for treatment.
2. Diabetes mellitus patients
3. Patients with suspected fungal sinusitis.

Exclusion Criteria

1. Vaccinated against Covid-19.
2. Patients who have had no present or previous Covid-19 infection.
3. Patients who are not diabetic.
4. Patients unwilling to provide consent.

A comprehensive history was gathered from individuals who had a clinical suspicion of paranasal sinus fungal infection. Material was collected in sterile normal saline and sterile screw-capped and leak-proof universal containers after surgery (small or large surgical intervention). All samples were first inspected microscopically using potassium hydroxide (KOH) wet mounts, then cultured on two tubes of Sabouraud dextrose agar (SDA) and maintained at temperatures of 25°C and 37°C, respectively. The culture slants were incubated for 48 hours and then monitored for growth every day for up to 5

days. If colony growth happened within 5 days, the morphology of the colony was observed. For morphological identification, the fungal growth was stained with Lactophenol cotton blue (LCB). Safety precautions were used throughout the collecting and processing of materials. Gloves, N95, surgical mask, plastic apron, and PPE Kit were provided to operating employees. Before and after the procedure, the work station was thoroughly disinfected with glutaraldehyde.

Statistical Analysis: The SPSS 22 software was used for statistical analysis. The outcomes was presented in the form of means and percentages.

Observation and Results

Table 1: Distribution based on Gender and Side of involvement

Gender	Frequency	Percentage
Male	260	79%
Female	69	21%
Side of involvement		
Unilateral	251	76%
Bilateral	78	24%
Clinical features		
Mucopurulent discharge	168	51%
Nasal Obstruction	106	32%
Facial puffiness	70	21%
Headache	65	20%
Facial pain	52	16%
Polypoid disease	46	14%
Postnasal discharge	33	10%

329 diabetic individuals with COVID-19 infection presented with AIFS (acute invasive fungal rhinosinusitis) – all of them had had COVID-19 infection therapy during the previous 10 days. Males predominated in the presenting pattern, with a mean age of 49 years.

A total of 53.1% (175) of 329 diabetic individuals with acute invasive fungal sinusitis got steroids, whereas 46.8% (154) did not. In our study, we observed that 38% (125) of individuals who got steroids required oxygen assistance, whereas 15%

(50) did not. The use of a ventilator was required by 3% of those on steroids (ten). Patients who did not get steroids were administered oxygen assistance in 30.3 % (100), 16.4 % (54) did not require oxygen, and 0.6 % (2) were intubated. Mucopurulent discharge with black particles (51 %), nasal obstruction (32 %), facial puffiness (21 %), headache (20 %), facial discomfort (16 %), polypoid illness (14 %), and post nasal discharge (10 %) were the most prevalent symptoms. Black staining and eschar development had occurred in 44% of the people. 75.6 % had unilateral involvement, whereas 24% had bilateral involvement.

Orbital complications occurred in 23 patients (7%), the symptoms being, swelling of eye (3.34%), watering from eye (1.8%), ptosis (0.9%), pain in involved eye (0.9%), orbital exenterating in 2 patients (0.6%) and blurring of vision in 1 patient. Palatal complication observed in 8 patients (2.4%), the symptoms such as tooth ache (1.2%), swelling on hard palate (0.6%) and erosion of hard palate (0.3%).

Table 2: Percentage of samples identified in 10% KOH mount and fungal culture

Samples identified with method	Positive	Negative
10% KOH	57.40%	42.50%
Fungal Culture	76.20%	23.70%

In 10% KOH, 57.40% of the samples were positive and with fungal culture 76.20% were positive.

Table 3: Findings on KOH mount examination

KOH mount findings	Frequency	Percentage
Ribbon Shaped hyphae; broad, aseptate and hyaline	89	47.00%
Septate hyphae with branching at acute angle	13	7.00%
Budding yeast cells	7	4.00%
No fungal elements	80	42.50%

In 189 samples (57.4%) of which 47% showed ribbon shaped hyaline, broad aseptate and hyaline; 7% septate hyphae with branching at acute angles; 4% showed budding yeast cells.

10% KOH mount examination was negative for fungal elements in 140 (42.5%) samples of patients

Table 4: culture and morphological identification by LPCB

Culture and morphological identification by LPCB	Number of samples (n=251)	Percentage
Mucorales	156	62%
Aspergillus Sp	20	8%
Candida Sp	16	6%
No growth	59	24%

Out of 329 samples, 251 (76.3%) showed fungal growth on SDA with LPCB showing 62% Mucorales, 8% Aspergillus species, 6% Candida species.

Table 5: Distribution based on various methods used

Methods	Number of samples	Percentage
Both KOH and culture positive	140	42.5 %
KOH positive and culture negative	49	14.9%
KOH negative and culture positive	111	33.7%
Both KOH and culture negative	29	8.8%

In 78 (23.7%) there was no fungal growth on SDA. In this study, both KOH and Culture were positive in 140 patients (42.5%) while KOH negative and culture positive in 111 (33.7%), KOH positive and Culture negative in 49 (14.9%) and both were negative in 29 (8.8%).

Discussion

Covid-19 infection, which is caused by the new SARS-CoV-2, has been associated with broad array of symptoms, ranging from moderate cough to life-threatening pneumonia.⁶ As we understand more about this novel disease, a plethora of symptoms and complications have been documented, and new ones are emerging and being reported almost every day.⁷ Mucor mycosis is a fungus infection of the Mucorales family that affects diabetics with impaired immune systems. The most prevalent symptom is rhino orbital infection, which is a rare ailment.⁸ In 2019, few cases of Mucor mycosis were reported.⁹ The significant increase in Mucor mycosis cases during COVID-19's

second wave implies a strong correlation between COVID-19 and Mucor mycosis.¹⁰

Patients who require critical care due to Covid-19 pneumonia have risk factors and underlying conditions that make them susceptible to invasive fungal infections. A prominent predisposing condition for acute invasive fungal rhinosinusitis is uncontrolled diabetes mellitus, particularly diabetic ketoacidosis.

Song et al. studied the correlation between Covid-19 and invasive fungal sinusitis, reporting that a high number of individuals who have been exposed to Covid-19 or have recovered from it are at an elevated risk of acquiring invasive fungal infections.¹¹

Uncontrolled diabetes and abuse of steroids are two of the most common causes of disease aggravation, and both must be addressed. If infected, seek surgical intervention and intravenous antifungal therapy as soon as possible, as post-coronavirus fungal infection can have a favorable prognosis and a less fulminant disease course.

Conclusion

Mucor mycosis can arise in COVID-19 patients, particularly those with diabetes, an increased and imprudent use of corticosteroids, and invasive ventilation. Mucor mycosis should be suspected in diabetic patients who have had COVID. KOH-examination resulted in a preliminary diagnosis and helped define surgical margins for an invasive fungal infection. During the pandemic, early identification of fungal etiological agents using culture and LPCB benefited in prompt Mucor mycosis treatment.

Ethical Clearance: Ethical Clearance was obtained from the institutional ethics committee prior to the commencement of the study.

Conflict of Interest: Nil

Source of Funding: Self

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Study of the Future of those Recovered from COVID-19 from Treatment centers in Guinea from March 2020 to January 2021

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Abstract

SARS-CoV-2 appeared in December 2019 in Wuhan, China. The Guinean Government has taken important measures since the notification of the first case on March 12, 2020, in particular the follow-up of the recovered. The objective of this study was to describe the health and socio-economic problems faced by those who recovered from COVID-19 in Guinea. This was a descriptive cross-sectional study by simple random sampling in the five communes of Conakry and the regions of Kindia, Labé, and Kankan. Up to 330 COVID-19 survivors responded to the survey, 99% of whom were from the urban area. The male gender represented 70.3%, and the 19-38 age group was the most represented (61.82%). Pupils, students/teachers, health personnel, and academics respectively represented 10.91%, 17.58%, and 62.73%. In this study, 70% were married against 28.18% single, and 8.79% moved after leaving the CTEPI. There is a statically significant link between stigma and job loss with a p-value of 0.002. Stigma was strongly associated with community residence, change in income, and post Covid-19 stress ($P < 0.05$). The cured people who live in the communes of Ratoma, Matam, and Matoto are more in the process of being stigmatized than the others, with respectively 27.6%, 23.4%, and 19.1% ($p = 0.001$). These results show the need to support COVID-19 survivors from health, psychological and socio-economic perspectives.

Keywords: Cured, COVID-19, Guinea, stigmatization, psychological, socio-economic perspectives.

Introduction

The first cases of the new coronavirus responsible for the Covid-19 pandemic were notified in December 2019 in the city of Wuhan, China. Since then, Sars-cov-2 (new coronavirus) has continued to spread around the world and more than 200 countries are affected ^(1,2). Covid-19 has the usual manifestations of a simple respiratory infection or pneumonia, including fever, cough, shortness of breath, difficulty breathing, and in severe cases, severe acute respiratory syndrome, kidney failure see death (2). Constituting a serious threat to public health and safety, the WHO declared on January 30, 2020, covid-19 as a public health emergency of international concern. On March 11, 2020 the WHO characterized COVID-19 as a pandemic ^(3,4).

The World Health Organization, due to the emergency, has developed guidelines and enacted measures for states to prevent the spread of the virus. Public health interventions have been introduced globally ⁽⁵⁾.

Countries that had invested in preparedness for past health emergencies such as Ebola virus disease with the adoption of a multisectoral community approach (community engagement, infection prevention and control), would be able to limit the spread disease ⁽⁶⁾.

After 6 months of response to the pandemic, several countries are experiencing a marked slowdown in the spread of COVID-19 and some of them are even considering relaxing the containment rules decreed for several weeks ^(7,8).

As of July 22, 2020, the WHO reports 14,765,256 confirmed cases worldwide with 612,054 (4.14%) deaths and 8,656,734 recoveries, i.e. more than half. In China, 86,226 people have been confirmed with 4,655 deaths, i.e. a lethality of 5.4% ⁽⁹⁾.

In Africa, lethality has remained generally low since the start of the pandemic, 10,157 out of 623,851 confirmed cases as of July 22, 2020, i.e. 1.6% lethality.

South Africa and Egypt are the most affected with 381,798 and 89,078 cases respectively (1.4 and 5% lethality) ⁽¹⁰⁾.

Guinea notified its first case of COVID 19 on March 12, 2020. Faced with this situation, the Guinean government has taken important measures, in particular the compulsory wearing of a mask, partial confinement, the closure of borders, the state of health emergency to contain the impact of the pandemic at the health, social, economic and financial level ⁽¹¹⁾. As of July 19, 2020, Guinea has recorded 6,590 confirmed cases with 40 hospital deaths (ANSS, Sitrep N°108 Covid-19, Guinea Ref).

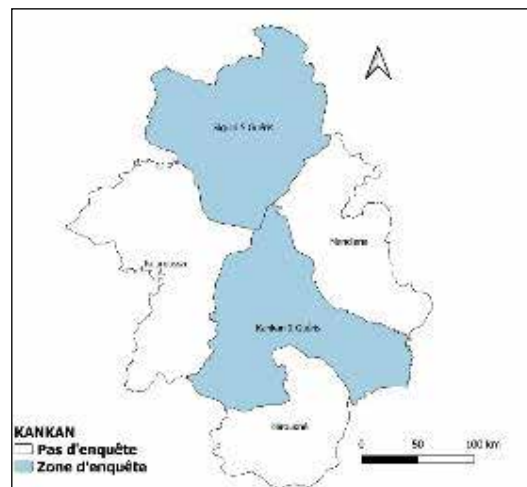
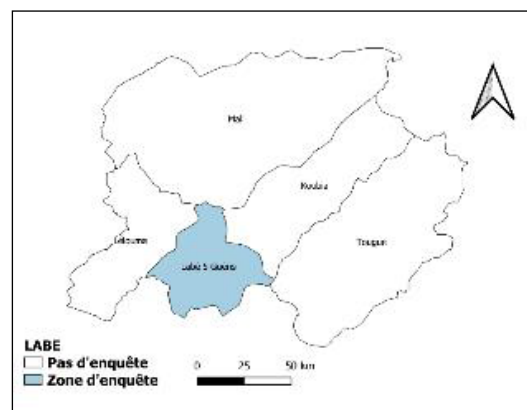
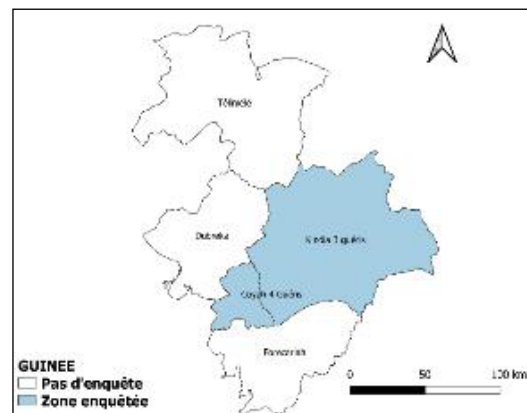
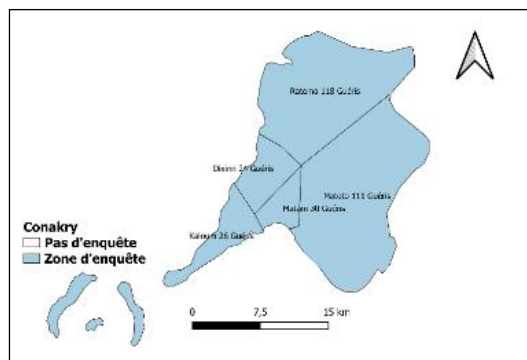
According to the Guinean experience on the experience of Ebola survivors, a number of problems emerged that this group faced: Stigma, discrimination, household dislocation (divorce, separation with children), pressure to change home, job loss, isolation, suicide among some.

In view of the experience of Ebola, the large number of recoveries from COVID-19 and the need to understand their current situation, the Ministry of Health in collaboration with its partners is concerned about the future of recoveries from COVID-19. It is within this framework that the present research project entitled "Study of the future of those who have recovered from COVID -19" is part of this project. So, what would be the fate of those who have recovered from COVID -19 in the administrative areas of Conakry, Kankan, Labe and Kindia?

General objective: To describe the experience of people recovered from COVID-19 in the 5 communes of Conakry and the regions of Kankan, Labé, and Kindia.

Specific objectives: To describe the community's attitude towards people who recovered from COVID-19 and identify the health and socio-economic problems they face.

Methodology



Population: The people that recovered from COVID-19 recorded in the areas used as the study setting. Type and duration of study: this was a descriptive, quantitative and qualitative cross-sectional study from January 29 to February 09, 2021, with a 2-day pre-survey phase.

Inclusion criteria: Anyone recovered from COVID-19 resides in the areas that served as the study setting.

Exclusion criteria: children under 18 and people with mental disorders were excluded.

Variables: The study variables were socio-demographic characteristics (age, sex, residence, occupation, marital status, and level of education), medical history, knowledge of COVID-19, the attitude of neighbors towards it, and the way of life of the recovered person before and after his contamination.

Data collection: Data collection was done using Kobo Collect administered directly to the cured by 20 investigators supported by six (6) supervisors.

Sampling: We carried out random and simple sampling. We used the following formula to calculate

the minimum sample size: $n = Z^2 \times P \times (1-P) / d^2$ (Z = is the confidence level of the study, p = is the proportion of cured in the population of confirmed Covid-19, d = is the margin of error of the study).

With a confidence level of 95%, a margin of error $\alpha = 5\%$, and the value of Z is equal to 1.96. The proportion of those cured in the 12,484 confirmed cases of Covid-19 as of November 10, 2020 was estimated at 87%, with 10,857 cured.

However, this estimate suffers from a bias, as more than 30% of confirmed cases had not been taken care of at a Covid-19 treatment center, so their status remained unknown. For these reasons, we applied the principle of $p = 50\%$. The sample size was estimated to be 384 recovered.

To compensate for non-respondents, we adjusted the size by 5%, or 403. The Randomizer software was used to draw the numbers in the base of the cured according to the size of the sample. Excel and STATA were used. Comparisons were made using Pearson's Fischer and Chi-square tests (95% CI) and $p < 0.05$. The study was approved by the ethics committee (N: 141/ CNERS/20).

Results

A total of 330 COVID-19 survivors responded to the survey or 85% of the expected sample size.

Table I : Factors associated with the stigma of COVID-19 survivors, March 2020-January 2021.

Variables	Stigma		Total	P-value
	Yes	No		
Sex				0.500
• M	35 (74,5%)	197 (69,6%)	232	
• F	12 (25,5%)	86 (30,4%)	98	
Age (year)				0.325
• 19-29	18 (38,2)	85 (30%)	103	
• 30-39	11 (23,4)	98 (34,6)	109	
• 40-49	11 (23,4)	49 (17,3)	60	
• 50 et plus	7 (14,8)	51	58	
Marital status				0.164
• Married	28 (59,57%)	203 (71,73%)	231	
• Single	18 (38,3%)	75 (26,5%)	93	
• Divorced	1 (2,13%)	5 (1,77%)	6	
Level of education				0.220
• Out of school / primary	2 (4,25%)	33 (11,67%)	35	
• Secondary / vocational and	11 (23,4%)	77 (27,2%)	88	
• University and more	34	173	207	

Variables	Stigma		Total	P-value
	Yes	No		
Occupation				0.333
• Pupil / Student / Teachers	7	29		
• Personal health	8	50		
• Workers	5	64		
• Defense and security	4	20		
• Other officials	23	120		

Concerning this study, there is a predominance of males as 232 are male against 98 females-

Among COVID-19 survivors' occupations, 64 are workers in different sectors, and 50 are health agents.

Regarding the level of education, 23.4% were limited to the secondary and professional level, and 4% had never been to school.

Table II: Distribution according to the characteristics of those recovered from Covid-19 in the region's March 2020-January 2021.

Variables	Numbers	Frequency (%)
Move		
Yes	29	8,79
No	301	91,21
Survivors with a job before COVID-19	N=310	
Yes	230	74,19
No	80	25,81
Survivors who lost their jobs after Covid-19	n=230	
Yes	18	7,83
No	212	92,17
Return to work after illness	n=212	
Yes	208	98,11
No	4	1,89
Survivors who agreed to share information about their status	N=330	
Yes	182	55,15
No	148	44,85
Survivors showing signs of stress	N=330	
Yes	27	8,18
No	303	91,82

The table shows that more than 90% of those discharged from the TC-IP did not change their residence after discharge and only 7.83% of them lost their jobs.

Concerning the returning to work after leaving the TC-IP, 98.11% of those who had recovered returned to work immediately after their recovery.

Regarding sharing information about their covid-19 status, 55.15% said they had shared their recovered status with their colleagues and neighbors without hesitation.

Table III: Distribution of respondents according to the perception and attitude of the COVID-19 entourage, March 2020-January 2021

Characteristics	Number	Percentage
Perception of family		
No change; it was like before	88	26,67%
Good perception, welcoming, friendly and pleasant	191	57,88%
Bad perception, mistrust, stigma	14	4,24%
Undetermined, the whole family was positive, I live alone, no one was informed	37	11,21%
Attitude of the entourage		
No change; it was like before	109	33,03%
Good perception, welcoming, sympathetic and pleasant	133	40,30%
Bad perception, mistrust, stigma	53	16,06%
Undetermined, the whole family was positive, I live alone, no one was informed	35	10,61%

Regarding the attitude of the family towards those whom COVID-19 has cured, 57.88% stated that they were well received on their arrival - on the other hand, 4.24% said that they were badly received and sometimes they were meme ignored by members of their own family.

Table IV: Factors associated with the stigma of COVID-19 survivors March 2020-January 2021

Variables	Stigma		Total	P-value
	Oui	Non		
Other districts				0.001
Dixinn	3 (6,4%)	21 (7,4%)	21	
Kaloum	5 (10,6%)	21 (7,4%)	26	
Matam	11 (23,4%)	19 (6,7%)	30	
Matoto	9 (19,1%)	102 (36%)	111	
Ratoma	13 (27,6%)	107 (37,8%)	120	
Other districts	6 (12,8%)	13 (4,6%)	19	
Income change				0.003
Yes	14 (33,3%)	40 (14,9%)	54	
No	28 (66,7%)	228 (85,1%)	256	
Stress				0.000
Yes	15 (31,9%)	12 (4,2%)	27	
No	32 (68,1%)	271 (95,8%)	303	

There were statically significant relationships between the place of residence, variation in financial earning, stresses, and stigma among Ebola recoveries ($P \leq 0.05$).

Discussion

As soon as the first case of COVID-19 was notified on March 12, 2020, the National Health Security Agency activated its response plan. This plan did not take into account certain concerns, in particular those recovered from COVID-19.

This survey showed the need for support for survivors on the health, psychological, social, and economic levels. After experiencing the grim realities of CTePi, these healed people were still victims of some issues such as stigma, stress, job loss, and

declining income. Almost half of the survivors, 148 (45%) out of 330 recovered did not want their status to be known to others.

Among them, 62.73% were university students; 70% of survivors were married against 28.18% were single; 99% of respondents lived in urban areas. Males accounted for 70.3% of cases, and the 19-38 age group was the most represented at 61.82%. The average age of participants was 37.5 years, with extremes of 19 and 76 years.

Among those who recovered from stress, 19% were those who had lost their jobs. And those who had lost their jobs were more stressed than the other survivors who did not lose their jobs. This relationship is statistically significant $P = 0.045$. Although we only covered 330 people, this size is representative. Among the 330 surveyed, 33% declared having been the victim of stigma. 21% lost their jobs; 4.2% experienced stigmatization from their families and friends. More than 16% are badly perceived when they return to their respective communities. There is a statically significant association between stigma and job loss with a $P = 0.002$; 33% of respondents said they had not noticed a change in behavior towards them; 63.63% of these stigmatized people lost their jobs ($P = 0.007$). Community residence, change in income, and COVID-19 post-stress are factors associated with stigma ($p = 0.003$).

The cured living in the communes of Ratoma, Matam, and Matoto are more stigmatized than the others, respectively 27.6%, 23.4%, and 19.1% ($p = 0.001$). There is not a statistically significant relationship between gender, age, marital status, level of education, occupation, and the occurrence of stigma among those recovered from COVID-19.

Conclusion

Our study shows that there is a need for psychological and socio-economic support in addition to the medical follow-up the recovered from treatment centers. After their journey in the CTePi, the cured suffer from the stigma, stress, and loss of income.

Ethical clearance : Taken from AFRO Ethics Review committee, September, 18th 2020 (a copy will be attached).

Source of funding : The study was carried out with funding from the WHO.

Conflict of interest : There is not conflict interest .

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Comparison of Causes of Infective and Non-Infective Epistaxis in the Kolhan Belt Population of Jharkhand

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Abstract

Background: Epistaxis is the commonest otorhinolaryngological emergency affecting 60 % of population in their life time. If un-treated may affect hemodynamic status.

Method: 92 Epistaxial patients of different age groups were treated conservatively after routine blood examination and serum electrolyte, Urea, S. Creatinine, Urine routine examination, Blood group, Coagulation profile, CT scan was done in selected patients to rule out neoplasm of the nose, PNS and nasopharynx. Moreover chest-x-ray, ECG was performed for fitness procedure required for general anaesthesia.

Results: In clinical manifestations of infective and non-infective epistaxis 32 (34.7%) were idiopathic, 19 (20.6%) were due to trauma, 14 (15.2%) rhinitis, 15 (16.3%) HTN/Atherosclerosis, 2 (2.17%) due to tumours, 2 (2.17%) Iatrogenic, 3 (3.26%) foreign body, 2 (2.17%) blood dyscrasia, 1 (1.08%) congenital heart disease, 2 (2.17%) during pregnancy, 30 (32.1%) were non-infective, 62 (67.3%) were infective epistaxial. Out of 92 patients 36 (39.1%) had non-infective bleeding sites and 56 (60.8%) had infective bleeding sites. Out of 6 (6.52%), 5 (5.43%) complications were observed in non-infective epistaxis.

Conclusion: Though epistaxis is idiopathic it is classified as local or systemic but it is difficult to classify. Hence 80-90% were idiopathic (non-infective) Majority of the epistaxis were managed with conservative (non-surgical) treatment such as nasal packing and local cauterization. It is safe and cost effective surgery will be the last resort to cure epistaxis.

Keywords: Infective, Idiopathic, Rhinoscopy, nasal endoscopy, Abgel, Ribbon/gauze

Introduction

Epistaxis or nasal bleeding is recognised as one of the most common otorhinolaryngological emergencies globally and presents a challenge in tertiary care hospitals where facilities for caring these patients are limited. Epistaxis is a problem frequently encountered in general practice and may present as an emergency as a chronic problem of recurrent bleeds or may be a symptom of a generalised disorder. It affects the hemodynamic status as well as psychological aspects of the patients and family members causing anxiety.

Epistaxis is estimated to occur in 60% worldwide during their life time and approximately 6% of those with nose bleeds seek medical treatment ⁽¹⁾. The prevalence increases in children less than 10 years of age and then rises again after the age of 40 years ⁽²⁾. Generally males are affected more than females until the age of 50 but after 50 no difference between sexes are reported ⁽³⁾.

The aetiology of epistaxis can be broadly divided into local or systemic (infective or non-infective), although even this distinction is difficult to make and

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the term "idiopathic epistaxis" is ultimately used in about 80 to 90% of the cases⁽⁴⁾. Hence attempt is made to evaluate the causes of infective and non-infective. Epistaxis so that present study can be a guide line to ENT surgeon who deals with Epistaxis in different age groups and both sexes.

Material and Method

90 patients aged between 10 to 58 years regularly visiting to ENT department of MGM Medical College hospital Jamshedpur-831018 were studied.

Inclusive Criteria: All the patients presented the Epistaxis were selected for study.

Exclusion Criteria: Patients undergone recent sinusoidal surgery, any bleeding diathesis or patients with earlier intervention on bleeding site were excluded from study.

Method: Every patient underwent routine investigation such as CBC, Hb% level, platelet count, RBS, Serum electrolyte, urea, creatinine, Urine routine, examination and blood grouping.

Coagulation profile such as prothrombin time activated plasma thromboplastin time; bleeding and clotting time was ruled out. CT scan was done in selected cases to rule out neoplasm of the nose and para-nasal sinuses and the naso-pharynx. Moreover chest-x-ray, ECG, and stereological test was performed for the fitness procedure require general anaesthesia, that is convention posterior nasal packing and surgical methods to control epistaxis.

Intravenous line was established in all patients with side bear canula. Initially the patients were evaluated with anterior rhinoscopy to identify the site of bleeding. Patients who were brought to emergency room with complaint of recurrent episodes of excessive bleeding, underwent nasal endoscopic examination to search the site of bleeding which might have located more posteriorly.

Treatment of patients with epistaxis included conservative or non-surgical treatment and surgical or interventional treatment. Non-surgical treatment included application of topical vasoconstriction such as oxymetazoline and xylometazoline nasal drop, chemical and electric cauterization of the bleeder and anterior and posterior nasal packing, surgical methods were endoscopic cauterization of the bleeder and SPA (sphenopalatine Artery) ligation. All the patients were initially treated conservatively and surgical

treatment was considered only when conservative method failed to control the epistaxis of the patients with bleeding disorders packed with absorbable gelatine sponge (Abgel). The rest of the patients received conventional anterior nasal packing with ribbon gauze posterior nasal packing was considered in the case of re-bleed in a patient also had anterior nasal pack in site surgical methods were last resorts to control bleeding in patients who had recurrent bleed or whose bleeding could not be controlled with those non-intentional methods.

Duration of study was October-2021 to April-2022.

Statistical analysis: Various studies of infective and non-infective Epistaxis were done and classified with percentage. The statistical analysis was carried out in SPSS software. The ratio of the male and female was 2:1.

Observation and Results

Table-1: Study of causes of infective and Non-infective epistaxis - 32 (34.7%) were Idiopathic (Non-infective), 19 (20.6%) trauma, 14 (15.2%) Rhinitis (Inflammation), 15 (16.3%) HTN / atherosclerosis, 2 (2.17%) Iatrogenic, 3 (3.26%) foreign body, 2 (2.7%) Blood dyscrasia, Glanzmanns thromboasthetic Haemophilia, 1 (1.08%) congenital heart disease, 2 (2.17%) pregnancy.

Table-2: Comparative study of modalities in Epistaxis, out of 11 (11.9%), 5 (5.43%) were infective, 6 (6.52%) were kept under observation, out of 37 (40.2%), 24 (26.08%) of infective, 13 (14%) were non-infective treated with light packing with gauzy antiseptic antibiotic local haemostatic. Out of 15 (16.3%) patients 7 (7.60%) infective, 8 (8.69%) non-infective treated with local trichloro acetic acid, Out of 13 (14.1%) 10 (10.8%) infective, 3 (3.26%) non-infective treated with anterior nasal packing, 4 (4.34%) of infective were treated with posterior nasal packing, 6 (6.25%) had endoscopic cutter. Out of a 11 (11.9%) 6 (6.25%) had infective and 5 (5.43%) non-infective combined procedure, 30 (32.1%) patients were non-infective, 62 (67.3%) were infected epistaxis patients.

Table-3: Comparison of bleeding sites in both infective and non-infective epistaxis out of 38 (41.3%) 24 (26.1%) infective, 14 (15.2%) had anterior septum, out of 14 (15.2%) 9 (9.7%) infective, 5 (5.4%) non-infective had posterior septal bleeding site. Out of 12 (13%), 7 (7.6%) infective, 5 (5.4%) non-infective had lateral wall (inferior turbinate) was bleeding site.

Out of 24 (26%), 13 (13.6%) infective, 11 (11.9%) non-infective had anterior floor was bleeding site. Out of 4 (4.3%), 1 (1.08%) infective, 3 (3.2%) non-infective had posterior floor was bleeding site, Out of 92, 36 (39.1%) non-infective, 56 (60.8%) infective patients bleeding.

Table-4: Comparison of frequency of complications in both infective and non-infective patient had hypovolemic shock, 3 (3.26%) non-infective had recurrent epistaxis, 1 (1.08%) non-infective had toxic shock, 1 (1.08%) non-infective had facial oedema. Out of 6 (6.25%) 5 (5.43%) complications were observed in non-infective patients.

Discussion

In the present comparative study of infective and non-infective (idiopathic) Epistaxis. Clinical manifestations were 32 (34.7%) were Idiopathic (non-infective), 19 (20.6%) were due to trauma, 14 (15.2%) were due to rhinitis, 15 (16.3%) were due to Hyper tension / atherosclerosis, 2 (2.17%) were due to tumours, 2 (2.17%) Iatrogenic, 3 (3.26%) were due to foreign body, 2 (2.17%) were due to blood dyscrasia haemophilia, 1 (1.08%) due to congenital heart anomalies, 2 (2.17%) during pregnancy (Table-1). 30 (32.1%) Epistaxis patients were non-infective (Idiopathic), 62 (67.3%) were due to infection (Table-2). Out of 92 (100%), 36 (39.1%) epistaxis had non-infective bleeding and 56 (60.8%) had infective bleeding (Table-3). Out of six (6) frequency of complication patients 5 (5.41%) were non-infective (Idiopathic) (Table-4). These findings are more or less in agreement with previous studies (5)(6)(7).

Prevalence of epistaxis among the children aged between 3 and 6 years of age was observed. Few children were due to traumatic and few children using anticoagulants, some of the adults or children had Diabetes mellitus Hypertension (8). Trauma being the major cause of epistaxis varied from minor injury such as digital trauma to varying degrees of nasal injury from road traffic injury, HTN (hypertension) is the third commonest cause of epistaxis due to poor blood pressure control. It is also reported that, epistaxis is the one of the geriatric problem in older than 40 (forty) years of age (9). Hence it is confirmed that, In old age there is lesser degree of immunity leads to cardiovascular diseases like HTN / Atherosclerosis, type-II DM could be the major cause of epistaxis in old age above 40 years. Hence epistaxis above 40 years can be classified or considered as

infective epistaxis because in old age minor traumatic injury to nose result into sever degree of epistaxis. This epistaxis may be the diagnostic value of cerebrovascular cardio vascular derangements. It is noted that epistaxis present in HTN patients is not controlled by anti-HTN drugs hence there was recurrence of epistaxis in HTN patients (10) or the HTN patients with epistaxis might have essential hypertension. Under such scenario it is difficult to classify the infective or non-infective (Idiopathic) epistaxis.

Managements epistaxis is well summarised by taking preventive measures including face mask with shield gowns, hair coverage and double-gloving.

The use of antimicrobial prophylaxis in the presence of nasal packing for the treatment epistaxis remains controversial as it may lead to increased risk for sinusitis and toxic shock syndrome. Blood soaked pack and raw mucosal surface are good media for bacterial multiplication resulting in infection including sinusitis and some time toxic shock syndrome (11). The mortality rates associated with epistaxis were severe head injuries cardiac arrest associated tension pneumothorax and nasopharyngeal cancer.

Summary and Conclusion

Present comparison of causes of between infective and non-infective epistaxis, 32 (34%) of Idiopathic (non-infective) epistaxis and remaining 60 (65.2%) appears to be infective though the aetiology was not clearly understood. Majority of epistaxis is managed with conservative methods and surgery remains to be the last resort to treat epistaxis. The Present studies demands further inventional study of embryological genetic, nutritional, patho-physiological studies because exact the factors and mechanism of epistaxis is still unclear.

Limitation of study - Due to tertiary location of present institution, small number of patients and lack of latest technologies we have limited results.

This research paper was approved by Ethical committee of MGM Medical College Jamshedpur-831018.

No Conflict of interest

No Funding

Table 1: Clinical manifestation of Infective and Non-infective of Epistaxis

Causes of Epistaxis	No. of Patients (92)	Percentage (%)
Idiopathic (Non-infective)	32	34.7
Trauma	19	20.6
Rhinitis (Inflmmative)	14	15.2
HTN/Atherosclerosis	15	16.3
Tumours	2	2.17
Iatrogenic	2	2.17
Foreign Body	3	3.26
Blood Dyscrasis (Dlanzmanns) Thromophilia Haemophilia	2	2.17
Congenital heart disease	1	1.08
Pregnancy	2	2.17

Table 2: Comparative study of Modalities in Epistaxis

Treatment Modalities	Infective		Non Infective		Total
	No. of patients	%	No. of patients	%	No. of patients with percentage
Observation	5	5.43	6	6.52	11 (11.9%)
Light packing with gauzy antiseptic antibiotic / local haemostatic	24	26.08	13	14.1	37 (40.2%)
Local trichlora acetic acid	7	7.60	8	8.69	15 (16.3%)
Anterior Nasal packing	10	10.8	3	3.26	13 (14.1%)
Posterior Nasal packing	4	4.34	--	--	4 (4.34%)
Endoscopic cuttery	6	6.52	--	--	6 (6.52%)
Combined procedure	6	6.52	5	5.43	11 (11.9%)
Surgical intervention	0	0	0	0	--

30 (32.1%) Epistaxis patients were non-infective, 62 (67.3%) patients were infected Epistaxis

Table 3: Comparison of bleeding sites in both infective and non-infective Epistaxis

Site of bleeding	Infective		Non-Infective		Total number of patients with percentage
Septum					
A. Anterior	24	26.1	14	15.2	38 (41.3%)
B. Posterior	9	9.7	5	5.4	14 (15.2%)
Lateral wall (Inferior turbinate / Middle turbinate / Middle Meatus	7	7.6	5	5.4	12 (13%)
Floor					
A. Anterior	13	13.6	11	11.9	24 (26%)
B. Posterior	1	1.08	3	3.2	4 (4.3%)

Out of 92 patients 36 (39.1%) had non-infective and 56 (60.8%) had infective bleeding

Table 4: Comparison of frequency of complications in both infective and non-infective

Epistaxis Complications	Infective Epistaxis	Non-infective Epistaxis	Total number and percentage (%) 6 (6.52%)
Hypovolemic shock	1	--	1 (1.08%)
Recurrent Epistaxis	--	3	3 (3.26%)
Toxic Shock	--	1	1 (1.08%)
Facial oedema	-	1	1 (1.08%)

Out of 6 (6.52%), 5 (5.43%) complications were observed in non-infective

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Falls among Elderly in a Rural Community: Incidence and Determinants

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Abstract

Background: Falls are one of the emerging public health issues and a barrier for active aging. There is a scarcity of studies on incidence of falls among elderly population which provide information on real burden from rural part of India. Hence, the study was undertaken to find out the incidence of falls and determinants among elderly population.

Materials and Methods: A prospective cohort study was carried out by involving 260 elderlies in a primary health centre area of Bengaluru by using simple random sampling technique over a period of one year. Data was collected regarding, socio-personal characteristics, substance use, co-morbidities and self-perceived health status using interview method and assessment of housing conditions was also undertaken. House visit was conducted to explain the purpose of the study and to distribute falls diary. Telephonic interview was undertaken to collect history of falls and related information once in three months and at the end of one-year elderly were revisited to confirm the falls. All the data was analysed using Epi info 7.2.2.1.

Results: The incidence of falls among elderly was 48.2%. The socio-personal characteristics such as age group ≥ 70 years ($p < 0.001$), low/medium standard of living index (SLI) ($p = 0.03$), poor/average self-perceived health status ($p = 0.001$), provision of separate living room ($p = 0.0006$) and location of bathroom and toilet outside the house ($p = 0.04$) were associated with falls.

Conclusion: The incidence of falls among elderly was more compared to previous studies and associated with advanced age, poor income, poor self-perceived health status, living alone in separate room and location of bathroom and toilet outside the house.

Keywords: Falls, Incidence, Elderly, Rural area, cohort study.

Introduction

Aging is a dynamic process which brings about morphological, functional and biochemical changes leading to an increase in the risk of falls among elderly. Falls are one of the most serious emerging public health issues among elderly all around the world. It is considered as a barrier for active aging and identified as one of the important geriatric giants.¹

Even though, falls are part of normal aging, majority of the falls are multifaceted in nature and

result from complex interplay of intrinsic causes such as disorders of cardio-vascular, nervous and balance systems and extrinsic causes such as environmental hazards which are potentially predictable and preventable.²

Falls are responsible for injury-related hospitalization, loss of independence, poor quality of life and premature death. It has enormous socio-economic impact in terms of increased hospital stay and consumption of health care resources.³

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It was documented that approximately one-third of elderly living in community and over two-third of institutionalized elderly will fall at least once a year and also reported that about 4,24,000 fall-related deaths occurred globally and around one-fifth of them (95,000 deaths) occurred in India. These evidences confirm that falls among elderly in India is a growing public health concern due to increase in the population of elderly which is projected to reach 19 per cent by the year 2050.^{4,7}

Many prospective studies from developed countries have shown that the incidence of falls for elderly living in the community varies between 29% to 40% and this increases with age. Falls are responsible for 19% of all emergency department visits and more than 50% of injury-related hospitalisations among elderly people.^{8,9}

Recent reviews on falls among elderly in India has shown that, there are many prevalence studies displaying important information on the epidemiological problem of falls and according to these studies burden of falls (prevalence) varies from 26% - 37%. The major drawback of prevalence study is the underestimation of real burden of falls due to recall bias. This evidence is strengthened by the fact that 13% to 32% of elderly had forgotten their previous falls. This sort of under-reporting is due to embarrassment and fear related to loss of independence.¹⁰⁻¹¹

There is limited information on burden of falls and its determinants based on incidence studies carried out on the elderly living in rural part of India where majority of the elderly live. Such studies immensely help policy makers and planners to design effective interventional strategies to improve the quality of life of elderly in near future. Hence, present study was planned and undertaken with a primary objective to find out the incidence of falls and the secondary objective to identify determinants of falls among elderly population.

Materials and Methods

This population based prospective cohort study was carried out in a primary health centre (PHC) area having 21 villages with 13,901 population which comes under rural field practice area of a medical college in Bengaluru from March 2017 to June 2018 after obtaining approval from the Institutional ethics committee (KIMSIEC/D-10/2016).

Sample size: The sample size was estimated to be 233 considering 'prevalence of falls among elderly' as 18.6%, absolute precision of 5%. Assuming 10% non-response it was revised to 260.¹²

Study population: A total of 884 ambulatory elderly subjects (≥ 60 years) were enumerated in the PHC area by conducting house to house visit. Of which 570 subjects were identified based on inclusion criteria such as resident of the locality for at least six months, ambulatory and willing to participate in the study. Those with severe illness, cognitive impairment, speech and hearing difficulty were excluded. All the subjects were line listed according to alphabetical order and finally, 260 subjects were selected by simple random sampling technique using computerised random number generator.

Study tools: In the study, fall was defined according to WHO as inadvertently coming to rest on the ground, floor or other lower level, excluding intentional change in position to rest in furniture, wall or other objects.¹³ Baseline data regarding socio personal characteristics and substance use (currently using chewable and smokable tobacco, alcohol and beverages) were collected. Co-morbidities were diagnosed based on clinical examination and physician's report. Self-rated health (SRH) status was assessed by asking the elderly subjects to rate their present state of health as poor, average or good.

Assessment of housing conditions included following variables: overcrowding (< 50 sq feet/person), adequate ventilation (total area covered by doors and windows $> 2/5$ th of the total floor space of the living room), adequate lighting (able to read newspaper comfortably) in atleast $2/3$ rd area of the living room, presence of unsafe furniture (haphazardly placed, projecting and broken), cooking on the floor, uneven stairs, location of the bathroom, toilet and its flooring (uneven and slippery).¹⁴

Data collection: In the first house visit, purpose of the visit was explained and informed consent was taken from the elderly. By interview method, trained investigator collected data using a pre-tested, semi-structured questionnaire.

Each elderly subject was followed up to one year for the incidence of falls. For better monitoring, every elderly subject was instructed to record fall in a falls' diary given at the time of first visit. Every subject was asked to record time of falls, cause, location, type of injury, body part involved and treatment received

with the help of care giver. Along with this, follow-up of each subject was undertaken once in three months by telephonic interview and house visit was made in case of any fall.

At the end of year, houses of 247 (11 subjects died and 2 subjects moved out of the study area) elderly subjects were re-visited to confirm the falls and its details by verifying falls dairies. At the end of the study, every subject was given education on causes, consequences and prevention of falls.

Statistical analysis: In this study, both descriptive (percentages, mean and standard deviation) and inferential statistics such as chi-square test (to find out association of falls with socio-personal characteristics and housing conditions) were used. P-value of <0.05 was considered as statistically significant. All the data were entered and analysed using Epi info 7.2.2.1.

Results: Out of 260 subjects, 115(42%) were males and 145(58%) females. The mean age of subjects were 68.7 ± 7.5 years with a range of 60 to 98 years. 136(52.3%) belonged to the age group of 60-69 years and, 124(47.7%) to ≥70 years age group. 132 (50.8%) were literate, 128(49.2%) illiterate, 170(65.4%) were not working, 90(34.6%) working, 214(82.3%) were married, 46(17.7%) unmarried/widowed, 141(54.2%) were from joint family, 51(19.6%) from nuclear and 68(26.2%) from 3 generation family. 28(10.8%), 135(51.9%) and 97(37.3%) were respectively from high, medium and low socioeconomic class as per the Standard of Living Index.

Out of total 260 study subjects, 247 study subjects were included for the final analysis due to attrition. Totally, 119 elderly reported single fall in one year (Incidence of falls was 48.2% (13.5 per 100 person-years). Among them, 54 (45.4%) of the subjects were males and 65 (54.6%) were females. Elderly subjects who had fallen more than once were 24 (9.7%) (recurrent falls). Totally there were 143 subjects (57.9%) who had reported falls. 95 (66.4%) of subjects had falls due to environmental cause, 93(65%) of subjects experienced falls in the indoor settings and 97(67.8%) of them had fall during night time (Table - 1).

Out of 143 falls, 135 (94.4%) of falls led to injury. Most of the injuries were on the head and neck (48.7%) followed by trunk (46.7%). Contusion (72.6%) was the major type of injury following falls (Table - 2).

Incidence of falls were significantly more among subjects aged ≥70 years (61.2%) compare to subjects in 60-69 years group (36.6%), P<0.001. Similarly, falls

were significantly more among subjects from low/middle SLI (50.2%) compared to subjects from high SLI category (30.8%), P=0.03. Falls were significantly more among subjects having poor/average self-perceived health status (57%) compared to subjects with good self-perceived health status (36.2%), P=0.001. There was no statistically significant association of falls with sex (P=0.8), education (P=0.9), employment status (P=0.1), marital status (P=0.2), type of family (p=0.6), substance use (p=-0.4) and co-morbidity (p=0.09). (Table - 3)

This study revealed incidence of falls significantly more among subject living alone in separate room (66.7%) compared to those sharing room with other family members (41.9%), P=0.0006. Similarly, falls were significantly more among subjects living in house with bathroom and toilet placed outside (52.8%) compared to bathroom and toilet placed inside the house (39.3%) P=0.04. There was no statistically significant association of falls with overcrowding (P=0.9), adequate ventilation and lighting (P=0.2, 0.3), unsafe furniture (P=0.6), cooking on the floor (P=0.3), uneven steps in the entrance and stairs (P=0.7, 0.6), slippery floor in the bathroom and toilet (P=0.2) (Table - 4).

Table 1: Distribution of study subjects according to characteristics of falls (n=143).

Variable	Category	Total
No. of falls	1	119(83.2)
	≥1	24(16.8)
Causes for Falls	Intrinsic	48 (33.6)
	Environmental	95(66.4)
Location of falls	Indoor	93(65)
	Outdoor	50(35)
Time of Fall	Day	46(32.2)
	Night	97(67.8)

Table 2: Distribution of study subjects according to characteristics of injury due to falls

Variable	Category	Total
Injury after fall (n=143)	Yes	135(94.4)
	No	8(5.6)
Body parts injured (n=199) *	Head and neck	97(48.7)
	Trunk	93(46.7)
	Upper limb	7(3.5)
	Lower limb	2 (1)
Type of Injury (n=135) #	Contusion	98(72.6)
	Abrasion	28(20.7)
	Laceration	3(2.2)
	Puncture wounds	2(1.5)
	Fractures	4(3)

* Multiple parts; #subjects with injury

Table 3: Association between Socio-personal characteristics and falls (n=247)

Variable	Category	Falls	No Falls	CI		χ^2	P-value
				Lower	Upper		
Age (years)	60-69	48(36.6)	83 (63.4)	1.6	4.6	14.9	<0.001
	≥70	71(61.2)	45(38.8)				
Sex	Male	54(48.6)	57(51.4)	0.5	1.6	0.02	0.8
	Female	65(47.8)	71(52.2)				
Education	Illiterate	58 (48.3)	62(51.7)	0.6	1.7	0.002	0.9
	Literate	61(48)	66(52)				
Employment Status	Working	35(41.7)	49(58.3)	0.8	2.2	2.1	0.1
	Not Working	84(51.5)	79(48.5)				
Marital status	Married	95(46.3)	110(53.7)	0.8	3.0	1.6	0.2
	Others	24(57.1)	18(42.9)				
Type of family	Nuclear	22(44.9)	27(55.1)	0.4	1.6	0.2	0.6
	Non-Nuclear	97(49)	101 (51)				
SLI	High	8(30.8)	18 (69.2)	1.0	5.4	3.5	0.03
	Low/Middle	111(50.2)	110(49.8)				
Substance use	Yes	72(50.7)	70(49.3)	0.7	2.1	0.8	0.4
	No	47(44.8)	58(55.2)				
Co-morbidity	Yes	58(54.2)	49 (45.8)	0.9	2.5	2.7	0.09
	No	61(43.6)	79(56.4)				
Self-perceived Health status	Good	38(36.2)	67(63.8)	1.4	3.9	11	0.001
	Poor/average	81(57)	61(43)				

Table 4: Association between housing conditions and falls (n=247)

Housing Conditions		Falls	No Falls	CI		χ^2	P-Value
				Lower	Upper		
Living alone in separate room	Yes	42(66.7)	21 (33.3)	1.5	5.1	11.6	0.0006
	No	77(41.9)	107(58.1)				
Overcrowding	Yes	53(48.6)	56(51.4)	0.6	1.7	0.01	0.9
	No	66(47.8)	72(52.3)				
Adequate ventilation	Yes	66(44.9)	81(55.1)	0.4	1.2	1.5	0.2
	No	53 (53)	47(47)				
Adequate Lighting	Yes	66(45.5)	79(54.5)	0.4	1.2	0.9	0.3
	No	53(52)	49(48)				
Unsafe furniture (broken/ sharp edges)	Yes	6(40)	9(60)	0.2	3.1	0.2	0.6
	No	113(48.7)	119(51.3)				
Cooking on the floor	Yes	9(60)	6(40)	0.5	4.8	1.0	0.3
	No	110(47.4)	122(52.6)				
Uneven stairs in the entrance	Yes	10(52.6)	9(47.4)	0.5	3.1	0.2	0.7
	No	109(47.8)	119(52.2)				
Uneven stairs in the stairs	Yes	4(57.1)	3(42.9)	0.3	6.6	0.2	0.6
	No	115(47.9)	125(52.1)				
Location of Bathroom and toilet	Inside	33(39.3)	51(60.7)	0.3	0.9	4.0	0.04
	Out side	86(52.8)	77(47.2)				
Slippery floor in bathroom and toilet	Yes	39(47.3)	39(52.7)	0.8	2.4	1.8	0.2
	No	80(45.1)	89(54.9)				

Discussion

Falls is an important public health concern in developing countries like India where a large proportion of elderly live in rural areas. There has been limited research focusing on incidence of falls among elderly from India. This research studied incidence, cause, location and time of falls, injury following falls and its determinants among elderly aged ≥ 60 years in a rural community.

The present study revealed that the incidence of falls among elderly in the community was 48.2%. Similar incidence studies on falls by Sasidharan DK, Merom D et al and Palagyi A et al observed the incidence of 20.1%, 27% and 30.7% respectively.^{8,15,16} These findings strengthen the evidence that the incidence of falls in the present study is higher. This difference probably could be due to variation in the socio-demographic background and divergent lifestyle of the study population.

Most of the falls in this study occurred indoor due to environmental cause and during night times. Vikman I et al., have also reported similar findings.¹⁷ This probably could be due to spending more time in home environment because of functional decline and reduced mobility. In such elderly, environmental factors such as uneven or slippery floors, stairs, obstructed walkways due to poorly arranged furniture and poor lighting increases the incidence of falls. Even though, majority of the causes for falls are environmental in nature, it is difficult to rule out influence of intrinsic factors due to ageing.¹⁸

Majority (94.4%) of the elderly had injuries following fall and most of them were minor in nature. Similarly, Chu LW observed that 75.2% of the fallers had injuries.¹¹ These facts show that falls in elderly invariably results in injury. Such injuries also cause fear of falling, loss of independence, functional decline and social isolation as age advances. This study also documents that head and neck was the most common site of injury. Such incidents increase risk of hospitalization and demand high health care cost.

Advanced age (≥ 70 years) was significantly associated with falls. The result is consistent with studies carried out elsewhere.^{17,19,20} Possible explanations for increase in falls with age could be due to setting of frailty leading to gradual motor decline, decreased muscle strength affecting motor activity and also decreased adaptability to

the changing environment.²¹ Poor socio-economic status (poor/medium standard of living index) was associated with falls. The result is in agreement with studies by Kuh D and Zhang L.^{22,4} The reason could be due to the association of lower socio-economic status with poor health status and inadequate health seeking behaviour which increases the risk of falls. Falls were associated with poor self-perceived health status. This is in line with studies by Singh DKA et al and Zhang L.^{23,4} This could be due to presence of physical, psychological and functional decline with poor self-perceived health status. Hence, advanced age, socio-economic status and self-perceived health status can be used as risk factors for predicting falls among elderly population.

Assessment of housing environment showed that falls were associated observations elderly living alone in separate room. Similar observations were made by Bu F.²⁴ This could be due to the fact that elderly living in the separate room need to take care of themselves (self-care) which increases risk of falls. In such cases, frequent monitoring of elderly is required. Falls were also associated with location of bath room more distance to be travelled and toilet outside the house. This could be due to poor maintenance in terms of inadequate lighting, poor flooring and lack of assistive devices like grab bar in bathroom and toilet located outside. This association needs to be probed in future studies.

As a cohort study, it is limited by loss to follow-up due to death and shifting of residence by elderly and has many strengths such as use of falls diary and close monitoring of elderly subjects with falls which prevented loss of data.

Conclusions: Incidence of falls in this study was more compared to previous studies. Advanced age, low-income, poor self-perceived health status, living in a separate room and location of bathroom and toilet outside the house were associated with increased incidence of falls. This study results reinforce the need for similar prospective large representative sampled studies in near future to confirm the findings and to generate needed information for the development of long term, sustainable interventions in reducing falls among elderly in rural parts of India.

Ethical clearance: Obtained from the from the Institutional Ethics Committee of Kempegowda Institute of Medical Sciences, Bengaluru (KIMSIEC/D-10/2016).

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Conflicts of Interest: Nil

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Correlation of Automated cell counters RBC Histogram and Peripheral smear in Anemias

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Abstract

Background and Aim: The RBC histogram visualizes particle size distribution that plays a critical role in the initial screening and detection method for haematological disorders in current clinical settings. This present study was designed to determine the relationship between Abbott cell dyn ruby- 5 part analyzer automated haematology analyzer histograms and peripheral smear using the blood samples.

Material and Methods: A total of 500 samples sent for CBC and PS would be used for the present study for the duration of 5 months. The CBC samples received would be analyzed in the ABOTT cell dyn ruby instrument, and a peripheral smear would be made from the same sample, using Leishman stain.

Results: Among all, 16% histograms were normal, 31% had a left-shifted curve, 40% showed broad-based curve, 03% showed short peak, and Bimodal peaked histogram was demonstrated by 06% of total cases. In the present study, cases of dimorphic anemia showed a normal range of MCV, MCH and MCHC. At the same time, RDW is increased due to the high degree of anisocytosis and poikilocytosis, which was observed in the PBS. Cases of Macrocytic anemia show an increase in MCV, MCH and RDW with normal MCHC.

Conclusion: Histogram plays an additional role with peripheral smear for diagnosing RBCs disorders. Haematology analyzers were very useful and reliable for evaluation of abnormal peripheral smears. Histogram was correlated with almost all peripheral smear interpretation in anemia cases.

Keywords: Histogram, Haematology Analyzer, Macrocytic anemia, Peripheral Smear

Introduction

The peripheral blood smear has been the main diagnostic aid in establishing the etiology of anemia. Examining the blood films routinely has facilitated interpretation of various hematological disorders. Thirty to forty years ago, laboratory hematology was labor intensive and time consuming. Procedures were manual. Reagents were prepared in the laboratory from raw chemicals. Hemoglobin measurement was based on the cyanmethemoglobin method, which involved tedious procedure. The automated hematology analyzer has replaced the traditional manual methods for hematological parameters as the initial screening and detection system for

hematological abnormalities in modern clinical setups.

The RBC histogram visualizes particle size distribution that plays a critical role in the initial screening and detection method for haematological disorders in current clinical settings. With the emergence of more powerful haematology analyzers with significant improvement and precision, the manual peripheral smear examination steadily declines. The number of the cells counted by the automated hematology analyzers is much more than the cells measured by manual peripheral smear examination, and computerized analyzers provide far better accuracy and with the usage of histograms.

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The RBC histogram, along with other CBC parameters like RBC distribution width (RDW) and mean corpuscular volume (MCV), has been discovered to be aberrant in a variety of haematological illnesses and may provide essential clues in the diagnosis and treatment of significant red cell disorders.¹⁻⁴

The curve of Red cell distribution is bell shaped and peaks within 80 to 100 fl. For homogenous population of cells the curve was smaller, while for heterogenous population the curve was wider. The curve was shifted to right in megaloblastic anemia due to macrocytes; while in microcytic anemia it was shifted to left. If the patient had received treatment, Morphologically two red cell population was seen, in which multiple peaks can be observed and is referred to as Dimorphic anemia. In these conditions RDW was the better indicator than MCV to assess anisocytosis.^{5,6}

A histogram can assist laboratorians in 1) monitoring the accuracy of the results provided by analyzers and 2) examining the possible cause(s) of the erroneous automated outcomes. 3) establishing a tentative diagnosis.⁷ Certain situations, such as the presence of fragmented red cells or red cell agglutination, may now theoretically be seen on the red cell histogram, which could not previously be seen without a blood film study. A sequential histogram can also clearly demonstrate the increasing emergence of a new erythrocyte population well ahead of other numerical indicators in patients with iron deficiency anaemia (IDA) or megaloblastic anaemia under treatment.^{8,9} This present study was designed to determine the relationship between Abbott cell dyn ruby- 5 part analyzer automated haematology analyzer histograms and peripheral smear using the blood samples.

Objectives: 1) Interpretation of histograms in normal persons and patients with different types of anaemia. 2) Comparison of automated histogram patterns with morphological features noticed on peripheral smear examination.

Material and Methods

A total of 500 samples sent for CBC and PS would be used for the present study for the duration of 5 months.

Inclusion criteria: All patients who are diagnosed as anaemic according to WHO definition Exclusion criteria 1) Patients who are less than five years of age. 2) Inadequate quantity of blood sample for automated analyzer (< 3ml). 3) Pre Analytical errors like clotted sample.

This is a prospective cross-sectional study done on all patients diagnosed with anaemia according to WHO definition. The CBC samples received would be analyzed in the ABOTT cell dyn ruby instrument, and a peripheral smear would be made from the same sample, using Leishman stain.

Results

Out of the 500 samples, 192 samples were from Males, and 38 samples were from females. In the present study, we found that the maximum number of cases were of Microcytic hypochromic anemia and showed various histograms. Among all, 16% histograms were normal, 31% had a left-shifted curve, 40% showed broad-based curve, 03% showed short peak, and Bimodal peaked histogram was demonstrated by 06% of total cases. Correlation with Peripheral smear findings: In our study, we observe that cases of Microcytic hypochromic anemia with less than normal range of Mean Corpuscular Volume (MCV) & Mean Corpuscular (MCH) Hemoglobin with normal Mean Corpuscular Hemoglobin Concentration (MCHC) and increased Red cell Distribution Width (RDW) and this finding is correlated with anisopoikilocytosis which was seen on the microscopic examination of peripheral blood smear.

The cases of Normocytic Normochromic anemia showed the standard limit of MCV, MCH and MCHC and occasional cases having mildly increased RDW. In the present study, cases of dimorphic anemia showed a normal range of MCV, MCH and MCHC. At the same time, RDW is increased due to the high degree of anisocytosis and poikilocytosis, which was observed in the PBS. Cases of Macrocytic anemia show an increase in MCV, MCH and RDW with normal MCHC.

Table 1: Age and gender distribution in the study

Age group (years)	5-10	11-20	21-30	31-40	41-50	51-60	60 above
Male	13	9	56	38	43	23	10
female	9	19	158	82	21	14	6

Table 2: Case Distribution as per types of anemia

Types of anemia	No of cases	Percentage (%)
Normocytic	77	15.4
Microcytic	364	72.8
Macrocytic	21	4.2
Dimorphic	38	7.6

Table 3: Distribution of RBC histogram in the present study

s. no.	Type of histogram	Percentage (%)
1	Normal	16
2	Left shift	31
3	Right shift	5
4	Broad base	40
5	Short peak	3
6	Bimodal peak	6

Discussion

A single histogram graph can be equivalent to 1000 numbers. The effect of a vast collection of facts represented as a visual representation is significantly greater than the impact of numbers alone. These data can take numerous forms in haematology, one of which is the RBC histogram. The range, size, shape, and other conspicuous aspects of the red cell morphology may all be seen by scanning the histogram visually.⁹

Information about RBC parameters like RDW, MCH and MCV were obtained which helped in diagnosis and typing of anemia.^{3,4} Normal curve was symmetrical bell shaped or showed Gaussian distribution. Normal curve shows MCV range between 80-100 fl.^{7,8} The analyzer can recognize only those Red Blood cells 36fl to 360fl volume sizes as RBCs, and the range 24fl to 36 fl are not considered in the RBC count and not taken into consideration by the counter. The histogram begins above the baseline (36fl) indicates the presence of small particles like microspherocytes, platelet clumps, normoblast, elliptocytes, malaria parasites, bacteria, etc. The RBC count does not affect by WBCs count is increased by beyond 50000 cells / cumm.¹⁰⁻¹³

In the present study of 500 cases, the maximum number of instances are having Microcytic anemia followed by normocytic, Dimorphic and Macrocytic. Other studies like sandhya al¹⁴, BynaSyamSundara Rao et al.¹⁵, Chavda J et al¹⁶ were also found similar findings of anemia cases regarding Distribution. Our survey of RBC histogram showed normal curve (16%), left shift (31%), right shift (5%), Broad base (40%), short peak (3%) and bimodal (6%) and these findings regarding RBC histogram were also correlated with other studies.

The most prevalent cause of microcytic RBC is iron deficiency anaemia, which affects mostly women

in their reproductive years. Iron deficiency during pregnancy is a significant problem in our nation.^{17,18} In macrocytic anaemia, a right shift with a broad-based curve indicates a low Hb level and a macrocytic blood image. The causes of macrocytosis range from benign to malignant, and determining the aetiology requires a comprehensive approach. Macrocytosis can strike at any age, though it is more common among the elderly.¹⁹⁻²¹

In our study majority of cases of macrocytic anemia showed a right shift curve. Right shift curve correlated well with increased MCV and MCH. The dimorphic blood picture shows a bimodal curve, along with some cases leading to the left and right shifting of the curve. There are wide reasons for dimorphic blood picture, including nutritional anemia, recent blood transfusion or therapy response to nutritional anemia and sideroblastic anemia.

The majority of macrocytic anaemia cases in our study had a right shift curve. Increased MCV and MCH are associated well with the right shift curve. The bimodal curve is visible in the dimorphic blood image, with some cases showing the left and proper shifting of the curve. Nutritional anaemia, recent blood transfusion or therapeutic response to nutritional anaemia, and sideroblastic anaemia are all possible causes of dimorphic blood images. To determine the specific cause, a complete examination is required.²² These finding were correlated with study carried out by Sandhya¹⁴ and Chavda J.¹⁵ Our study was in concordance with the study conducted by Constantino et al.¹⁶ in 2010. Using Fisher Exact test and comparing the two variables i.e peripheral blood smear reports with histogram patterns the p values showed very high significant difference between the two variables .This difference was largely due to dimorphic anemia cases which was in concordance with Constantino et al.

Conclusion

Histogram plays an additional role with peripheral smear for diagnosing RBCs disorders. Haematology analyzers were very useful and reliable for evaluation of abnormal peripheral smears. Histogram was correlated with almost all peripheral smear interpretation in anemia cases. When the right interpretation of the curve is paired with the findings of blood count characteristics such as red cell distribution width and red cell indices, the RBC Histogram becomes a useful diagnostic tool. Blood

indices and Hb values, as well as histograms, will help us. Histograms are a helpful tool for technologists since they may help them determine which instances require specialist peripheral smear testing.

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Impact of COVID-19 Pandemic on Medical Education; Challenges for Faculty and Medical and Paramedical Students in a Medical College of South Kashmir.

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Abstract

Background: Coronavirus disease (COVID-19) is a highly contagious disease primarily involving the respiratory system. On March 11, 2020, the World Health Organization proclaimed COVID-19 a pandemic. One of the important strategies taken to prevent the spread of the disease has been social distancing around the world, Educational institutions have been closed for the safety of both students and communities. Social distancing measures hamper the students' learning process as they are prevented from assembling in laboratories, lecture halls, or small-group rooms and engaging in person with their peers and instructors. Although medical school is an adult schooling experience, the absence of interactive sessions affects not only Medical education but all education curricula that require hands-on experience or internship. The most significant response to the pandemic has been to shift teaching-learning and assessment online. Using standardized patients and facilitators, schools have also attempted to shift clinical learning and teaching. Both professors and students face obstacles when it comes to online teaching, learning, and assessment.

Materials and methods: This was a cross-sectional study conducted at Government Medical College Anantnag, department of Physiology between October 2021 and December 2021 among 240 Medical, Paramedical students and faculty members of GMC Anantnag. A questionnaire was distributed, by means of email to all the faculty members, medical students, and paramedical students.

Results: The reported challenges to online education during the COVID-19 pandemic at this institution included issues regarding in-person communication (19.5%), use of technology tools (12.5%), experience in online education (16.6%), time management (29.1%), students' evaluations of faculty (24.0%). In addition, we reported that 20% of participants did not have fourth generation internet access. 45% had an unsatisfactory experience with the medical education program and 40% do not have availability of advanced technology.

Conclusion: COVID-19 has had an impact on many aspects of medical education as well as on medical students. The degree of effect was especially influenced by the type of institution attended. When things return to normal, proper planning and adequate rehabilitation will be needed to mitigate and possibly reverse the effects of COVID-19 on students' health and welfare.

Keywords: COVID-19, medical education, online education, pandemic.

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Introduction

In December 2019, the Coronavirus Disease 2019 (COVID-19) was first reported in Wuhan, Hubei Province, China. It is characterized by pneumonia-like symptoms. The virus spread exponentially, culminating in an outbreak throughout China and the rest of world. Subsequently, on March 11, 2020, World Health Organization declared it as a pandemic. As of October 2, 2020, there were more than 34.3 million confirmed cases. COVID-19 has caused unprecedented disruption to the medical education process and to healthcare systems¹. Because of the virus's high contagiousness it has been difficult to continue with regular lectures, affecting the medical education process, which is based on lectures and patient-centered education. The COVID-19 pandemic puts people at risk of developing life-threatening conditions, presenting substantial challenges for medical education, as instructors must deliver lectures safely, while also ensuring the integrity and continuity of the medical education process². Our administration developed a medical education curriculum that provides students with learning opportunities on a continual basis, while also avoiding delays due to the pandemic.

Online education and their challenges for faculty.

Online education and assessment are not without obstacles. Faculty face problems in transitioning from face-to-face to online teaching. Not all professors are familiar with the technology that is utilized to provide online sessions. Faculty members must put in a lot of extra effort for transition to online learning, and they must deal with an uncertain and tough environment. In an electronic learning environment, the teacher has four major roles. These include instructional, managerial, societal, and technological issues³. In order for faculty members to be effective in these jobs, they must undergo training. Faculty members who work from home must balance additional family and social obligations. Not all faculty members, particularly in south Kashmir, may have reliable internet connectivity at home. Due to work from home and study from home rules, there may be a shortage of laptops, Personal computers, other information technology equipment, and current resources may have to be shared among family members. There might not be enough physical space or a quiet setting in the house to record presentations and conduct synchronous conversations⁴.

Challenges for Student in shifting to online learning.

Students in online learning environments receive less direct interaction and supervision than students in traditional classrooms. To stay motivated and involved with the content, these kids will need to put in more effort. There are specific standards for creating videos for online learning, such as minimizing video duration, reducing cognitive load, and providing students with clear guidance and instruction⁵. Because the teacher's supervision and guidance are limited in online learning environments, students should have well-developed self-regulated learning skills. There are issues with internet band width and a lack of a regular electrical source in several districts of South Kashmir. Many students do not have access to a computer or laptop and have to rely on their smartphones to access the internet. They had to share devices with other family members because they work from home. During this time of crisis and uncertainty, both staff and students' mental health should be supported⁶.

Issues of assessment. Assessment of knowledge and especially of skills is particularly challenging in an online environment. Standard assessment formats used in medical colleges, like: multiple choice questions (MCQs), short answer questions (SAQs) and objective structured clinical examination (OSCEs) may need to be re-imagined.⁷

Due to the concentration on COVID-19 patients, these issues have resulted in limited patient care, limiting the availability of bedside teaching opportunities for medical students and training. The impact of the COVID-19 pandemic on medical education and obstacles for teachers, medical students, and paramedical students are discussed in this study, with a particular focus on Government Medical College, Anantnag (South Kashmir).

Materials and Methods. We conducted a cross-sectional study from December 2021 to January 2022 among medical, paramedical students (age group 19-23 years) and faculty members (age group 30-55 years) of GMC Anantnag. A total of 240 participants were included in the study. A questionnaire was distributed, by means of email to all the faculty members, medical students and paramedical students. A Google Form containing the study questionnaire was distributed among specific social media groups comprising of medical students, and personal emails and messages were sent to them to ensure the

appropriate selection of study participants. A friendly reminder was sent to potential respondents to ensure the highest possible response rate. The questionnaire was self-administered without intervention by the authors or any specific person, and it did not contain any identifying data of the participants to ensure confidentiality. The questionnaire covered participants' basic demographic data, such as their gender, age, and their position in medical college. The questionnaire also addressed their experience with medical tele-education, including questions related to electronic device usage proficiency, type and quality of internet used, medical school educational program status, availability of advanced technology, person communication, student assessment, use of technology tools, experience in online education and time management.

Results. A total of 240 people took part in the research. The characteristics of the study respondents are depicted in Table 1 and Table 2

Characteristics

Out of 240 participants, 113 (47.11%) were males and 127 (52.89 %) were females.

58 (24.16%) were faculty members and 182 (58.83%) were Medical and Paramedical students.

Table 1: Urban Rural Comparison

Designation and Age Group	No. Of Participants	Urban Residents	Rural Residents
Faculty (Age Group: 30-55 Years)	58	38	20
Students (Medical and Paramedical) (Age Group: 19-23 Years)	182	47	135
Total	240	85	155

Table 2: Male Female Comparison

Gender	Number of Participants	Percentage
Male	113	47.1%
Female	127	52.8%

Table 3: The reported challenges to online education during the COVID-19 pandemic at this institution included issues regarding in-person communication (19.5%), use of technology tools (12.5%), experience in online education (16.6%), time management (29.1%), students' evaluations of faculty (24.0%),

Factors associated with online learning/teaching	Faculty participants that found it challenging		Students participants that found it challenging		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Communication	16	27.0%	31	17.22%	47	19.58%
Use of technology tools (access to hardware and software)	10	17.2%	20	10.99%	30	12.50%
Time management	23	40.23%	47	25.64%	70	29.17%
Overall experience with online teaching/learning	13	22.99%	27	14.65%	40	16.67%

We reported that 20% of participants did not have fourth generation internet access. 45% had an unsatisfactory experience with the medical education program and 40% do not have availability of advanced technology.

Table 4: Experience with Medical Teleeducation

Experience with medical teleeducation	Findings	
Type and quality of internet used	4 G	192 (80%)
	3G & Other	48 (20%)
Impression of Medical education program	Good	132 (55%)
	Bad	108 (45%)
Availability of advanced technology	Available	142 (60%)
	Unavailable	98 (40%)

Discussion. The purpose of this study was to assess the influence of the Covid 19 epidemic on medical education and the issues that it presents for medical staff, medical students, and paramedical students at GMC Anantnag. The majority of medical students thought the Covid-19 outbreak had a detrimental impact on their training, according to the conclusions of this survey. Poor pedagogy has been linked to unfavourable learning experiences among medical students in their first year⁸.

The pandemic and subsequent prolonged periods of lockdown lead to a substantial reduction in the volume of teaching received by medical students⁹. This had a greater impact on younger students in pre-clinical years, who rely heavily on pedagogical methods compared to their older counterparts who rely on andragogy¹⁰. In our study it was found students who reported a reduction in conventional lectures and ward-based teaching were also significantly more likely report a negative impact on training. Limited resources, poor infrastructure and technical difficulties are significant barriers to virtual medical training **Waliyany S et**¹¹ has found same results. The reported challenges to online education during the COVID-19 pandemic at this institution included issues regarding in-person communication (20.43%), student assessment (30.43%), use of technology tools 13%), experience in online education (17.39. %), time management (30.43%), students' evaluations of faculty (21.47%), Furthermore, medical students reported high levels of computer and information technology proficiency. Most (80%) reported that they had access to fourth generation internet services with an acceptable or good internet connection. while 20% experienced problem in medical education program and 80% of study participants do not have availability of advanced technology. The same results have been found by **Ahmed Alsoufi**¹² et al and **Jacob Hoofman**¹³, and **Elizabeth Secoryet al**¹⁴.

Conclusion

The COVID-19 epidemic has had an impact on and will continue to have an impact on how knowledge and skills are delivered at all levels of education. COVID-19 has caused a pause in medical education. To address this issue, medical schools have begun shifting to online lectures and introducing innovative teaching methods that make use of technology to facilitate remote clerkships. Medical students are working on solutions to deal with the crisis as well. We need to establish a good online curriculum and effective evaluation tools in order to prepare for the post-COVID era. We must build the necessary infrastructure and allocate sufficient resources to ensure its successful implementation. We also need to teach students how to be socially responsible as medical practitioners.

Conflict of Interest: I declare that my article does not have any potential or existing conflict of interest.

Author Declaration:

No conflict of interest. Informed consent was obtained from participants.

Ethical Clearance: Taken from Institutional Ethics Committee, Government Medical College, Anantnag, J&K.

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Periodontics-Prosthodontics - An Interdisciplinary Approach

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Abstract

As the mean age of the population is increasing and the current therapeutic concern is for teeth to be retained. It is now quite common to encounter complex clinical situations like severe tooth-tissue loss, advanced periodontal disease along with significant esthetic concerns. Dentists now a days, not just restore teeth to make them better for functioning, but also cater an increased esthetic concern of the patients. Thus, many a times, patients who present with a complex restoration also require an esthetic rehabilitation. Although periodontal factors do not usually have a direct effect on the survival of fixed prosthesis however a harmony between prosthesis and periodontium remains critical, affecting the longevity, esthetics and to prevent unsatisfactory treatment outcomes. The present article addresses and summarizes the current knowledge of Prosthetic and Periodontic clinical procedures that play a role in any clinician's attempt to create biologically acceptable and aesthetically pleasing long-lasting restorations.

Keywords: Interdisciplinary dentistry, Esthetics, Biologic width, Implants, Crown lengthening, Restorative margin, Gingival contour, Gingival Biotype, Soft-tissue augmentation.

Introduction

Interdisciplinary dentistry can be described as mutual permeation of various specialities in dentistry that goes hand in hand for the complete well-being of the patient. Periodontology and Prosthodontics hold one of the powerful and close connections of all disciplines of modern dentistry where healthy periodontium is vital for long term success of restorations. On the other hand, defective prosthesis may lead to progression of periodontal disease.¹

A sound periodontium provides a firm foundation for an esthetic and functional prosthesis. Conversely, when restorations are designed to be self-cleansing and promote gingival health, the tissues present a harmonious esthetic blend at the restorative-gingival

interface.² Periodontal therapy has developed beyond the scope of the treatment of periodontal pathoses and consists of the reconstructive procedures that enhance both function and esthetics which can be broadly categorised under:³

1. Anatomical Considerations.
2. Biologic Considerations.
3. Esthetic Considerations.
4. Peri-implant soft tissue Considerations.

Anatomical Considerations

The relationships among the tooth-supporting soft and hard tissues, the junctional epithelium, the connective tissue attachment, and the bone crest have been clarified in the landmark histological study by

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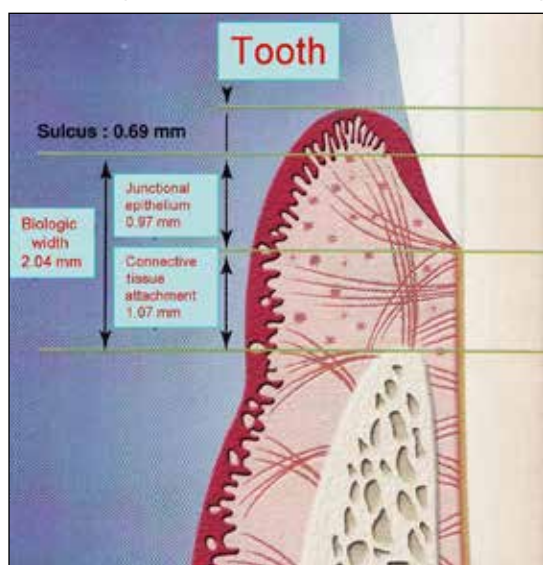
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Gargiulo et al.⁴ The dimensions of dento-gingival complex called as “Biologic Width” is present around the natural teeth in a protective cuff- like barrier which has the tendency to self-restore and adapt dynamically. (Figure 1)

The suggested physiological function of the biologic width is that of a protective barrier for the subjacent periodontal ligament and the supporting alveolar bone from the attack of a pathogenic biofilm present in the oral cavity. Hence, subgingival placement of crown margins may affect the homeostasis of the periodontal tissues.⁵

Figure 1: Diagrammatic representation of Biologic



Width

Violation of Biologic Width: It leads to difficult impressioning and hygiene procedures and unacceptable coronal contours of the restoration. The reasons for the violation include an attempt to access sound tooth structure, increased preparation length, previous restorations, existing caries, resorption defects, traumatic injury, iatrogenic insults, and improper identification of sulcus depth.⁶ However, treatment modalities to re-establish biological width and modify the gingival contour can be classified under the Subtractive and Additive Methods.

Subtractive methods are used more commonly than additive methods as they are more predictable. They re-establish a physiological biologic width by performing Crown Lengthening procedures. Crown lengthening is a surgical procedure aimed at the removal of periodontal tissue to increase the clinical

crown height.⁷ The presence of sufficient sound tooth structure coronal to the bone crest is essential to satisfy the placement of the restorative margin on sound tooth structure and preservation of biologic width together with a healthy periodontium.⁸ Furthermore, crown lengthening procedures can be done with:⁹ (Figure 2)

- Gingivectomy.
- An Apically Positioned Flap (APF) with osseous reduction.
- Forced eruption combined with surgery or combined with fiberotomy.

The additive methods correct gingival level and contour by augmenting the gingival tissues. They improve the esthetics by increasing the width of attached gingiva with a primary aim of achieving an even band of attached gingiva and maintaining root coverage. These procedures should be completed before the prosthodontic treatment using Free gingival graft, Connective tissue graft, Coronally positioned flap.¹⁰

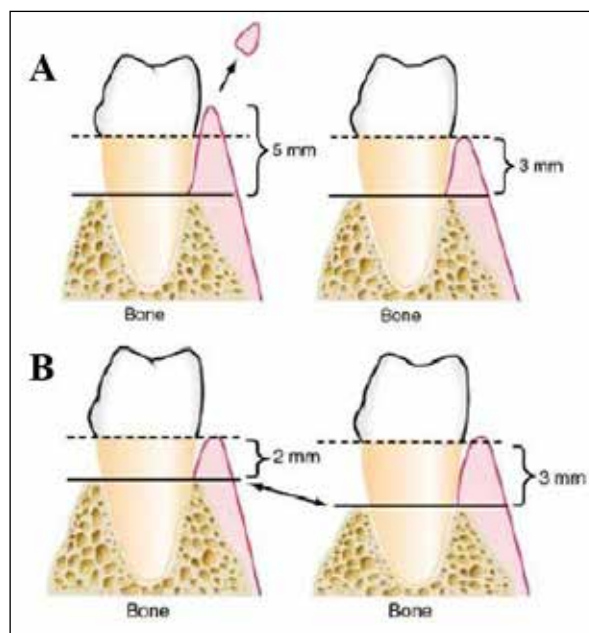


Figure 2: A: Greater than 3mm soft tissue between bone and gingival margin, with adequate attached gingiva, allowing crown lengthening by gingivectomy.

B: Less than 3mm soft tissue between bone and gingival margin, inadequate attached gingiva, flap procedure and osseous recontouring for crown lengthening.

Restorative margin placement: The effect of the location of an artificial crown margin on plaque accumulation and gingival health were well documented by Flores-de-Jacoby et al.¹¹ According to the evaluation, interactions between dental restorations and periodontal tissues, it was stated that restorative margin with a supragingival location was the most beneficial restoration type in terms of periodontal health. In contrast, restorations with equigingival and subgingival margin terminations resulted in increased plaque accumulation.⁵

Despite better esthetics, subgingival restorations were also associated with greater periodontal inflammation in the sites with keratinized gingiva less than 2 mm. With respect to periodontal health, the supragingival restoration is the most favourable design since it is easy to be cleaned.¹²

Richter & Ueno¹³ stated that marginal fit and finish may be more significant to gingival health than its location. Ideally, the margin of a prosthetic restoration should be easily accessible for the facilitation and fabrication of the provisional restoration and impression taking. The most critical factor in margin location seems to be the relationship to the supracrestal fibre attachment. A margin placed apical to the base of the periodontal pocket into the zone of biological width, specifically, into connective tissue attachment, violates important biological principles with adverse consequences on long-term gingival health.

Therefore, the most important consideration for intracrevicular restorative dentistry is locating the base of the gingival sulcus or periodontal pocket. The dentogingival complex comprises of three components namely connective tissue fibrous attachment, junctional epithelium, and gingival sulcus.

The histological sulcus depth ranges from 0.5 to 1 mm, whereas the clinical sulcus depth measures from 1 to 4 mm in health. The biological width follows the osseous scallop. Therefore, the inappropriate use of a more horizontal tooth preparation margin as opposed to a scalloped margin on anterior teeth will often violate the biological width in the interproximal area.

Thus, it is important to know the total dentogingival complex measurement when preparing a tooth. Assuming the normal 3 mm from the alveolar bone crest to the free gingival margin. The intracrevicular margins might be located 0.5-1 mm apical to the free gingival margin or 2-2.5 mm coronal to the osseous

crest. When the total dentogingival complex has a length of less than 3mm, a high alveolar crest occurs and caution must be used. Margin location should be at the level of the free gingival margin or no more than 0.5 mm apically, to avoid the risk of violating the biological width.¹⁴

Margin placement must respect the attachment apparatus and allow some degree of error during the high-speed instrumentation. The clinical steps of tooth preparation consist of facilitation of the gingival margin and placement of an extra-thin knitted retraction cord that displaces the gingiva outward and apically. The preparation designs for full-coverage restorations can be classified into four distinct types. (Figure 3)

1. **Feather-edge (vertical preparation)**
2. **Chamfer ("hybrid" preparation)**
3. **Shoulder (horizontal preparation)**
4. **Shoulder with bevel preparation**

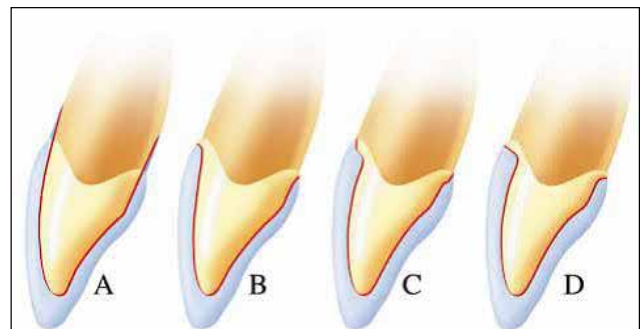


Figure 3: Preparation designs.

A. Feather-edge. B. Chamfer. C. Shoulder with bevel. D. Shoulder.

Biologic considerations

The important biological parameters that decide the success of Periodontic-Prosthetic treatment is dependent on the accumulation of plaque forming bacteria upon the restorations and the resultant gingival inflammation. Also, marginal integrity of restoration and contour are another pivotal aspect.

Bacterial Plaque Accumulation: Patient susceptibility to gingival inflammation is not based solely on the mere quantity of dental plaque but also on the virulence of the resident plaque microorganisms. The bacterial biota of dental plaque is dynamic, and its pathogenicity tends to change over time.⁶ Adamczyk and Spiechowics¹⁷ evaluated plaque accumulation on crowns of various materials and inferred that rougher

material experiences a statistically greater incidence of plaque accumulation.

Mechanical insults such as placing cords, copper bands and retraction clamps create a wound that may disrupt the junctional epithelium and connective tissue attachment. The gingival health around restorations can be managed by initial Periodontal therapy.¹⁸

Gingival level and Contour: It seems logical that the most predictable gingival response will occur when the artificial crown portion mimics the original shape of the tooth as much as possible. The location of the proximal surfaces of adjacent teeth also seems to be a critical factor in gingival health. With close root proximity, even slight deviations from the original contour may compromise the complex relationship of the interproximal gingival tissue. The initial tooth anatomy should be evaluated to determine the impact of treatment on esthetic, hygiene, and biomechanical requirements.

Esthetic Considerations

From an esthetic perspective, the intra-oral assessment involves evaluating the periodontal structures of the bone, gingiva, interdental papillae, the teeth, and the biologic space. To obtain a good esthetic outcome, scrupulous attention to detail and an accurate diagnosis should be established.

Gingival Biotype: Clinically, assessing gingival biotypes translates into observing gingival thickness. Accordingly, two biotypes can be identified:

- A thick-flat type.
- A thin-scalloped type.

Patients with thin biotype differ from patients with a thick/average biotype as they present with a thinner labial plate and an alveolar crest position that is located more apical in relation to the CEJ. Periodontal biotype can be diagnosed by the ability to visualize the periodontal probe through the gingival sulcus in thin biotype and the inability to visualize the probe in a thick biotype.¹⁹ It has been shown to affect soft tissue esthetic outcomes around anterior implants.

Patients with a thin biotype have more interproximal and midfacial recession postimplant placement than in patients with a thick biotype and they may require additional therapy such as hard and soft tissue augmentation. Numerous research indicated predictable results after root-coverage procedures

in the case of the thick-flat biotype and regrowth of gingival height after resective osseous surgery.²⁰

Gingival Zenith: Harmony and symmetry are key factors that need to be assessed when planning esthetic restorations. The zenith point orientation is distal to the long axis of central incisors and cuspids and is coincident with the long axis of the lateral incisors. As a general guideline, the height of the gingival margins of central incisors and canines should be at the same level. Correct orientation of the zenith and gingival height contour following therapeutic manipulation helps avoid gingival level disharmony and aids in establishing correct tooth proportions.

Importance of Attached Gingiva: Attached gingiva around teeth minimizes the risk of gingival recession when preparing esthetic margins and to increase patient comfort when performing oral-hygiene procedures. Lang & Loe²¹ claimed that gingival inflammation accompanied in cases in which less than 2 mm of attached gingiva was present. It was believed that the band of attached gingiva is important to dissipate the muscular pull forces and is capable of withstanding trauma from mastication and toothbrushing.

Edentulous Area: It includes assessment of the location, height, width, and contour of the residual ridge. When a fixed dental prosthesis is planned, the prosthesis components to be considered are the pontic and the connectors because they influence the esthetics, durability of the prosthesis and the health of the soft tissue. Biologically, it has been proposed that pontics should exhibit pressure-free contact on keratinized attached tissue, prevent food accumulation and facilitate plaque control. Regarding an ideal pontic design "Modified ridge lap" in the posterior region and a "lap facing" in anterior region has been found ideal in maintaining Pontic-Ridge relationship.

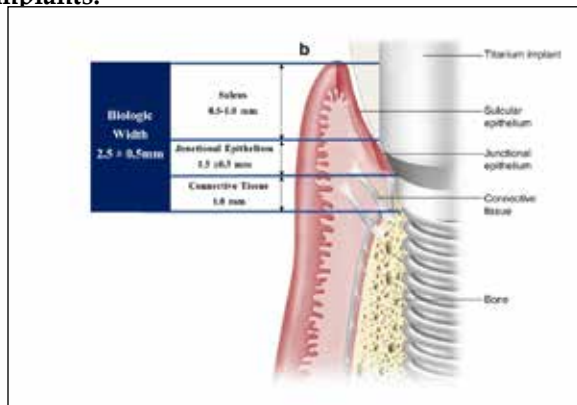
Peri-implant soft tissue Considerations

The development process of the tooth includes the formation of a biologic connection between the living tissues. For a dental implant, this connection must be created during the healing process after implant placement. The resulting attachment, although similar in function, has biologic differences that must be comprehended to design surgical techniques and biomaterials that will surround the implant with biologically functional and esthetic soft tissue.²²

Soft tissue interface: The implant-soft-tissue bone

interface is like that of natural teeth. The epithelium around the implants undergoes morphologic and functional changes and the junctional epithelium is formed. This attachment is facilitated by the basal lamina and the formation of hemidesmosomes which prevents the apical movement of the epithelium. (Figure 4)

Figure 4: Soft tissue considerations around Implants.



Unlike tooth, the collagen fibres around implants do not insert into the titanium surface. Instead, they form a cuff, making it less mechanical resistance than natural teeth. Surface characteristics of the implant influence the orientation of the fibres, which are mostly parallel to the implant surface when the surface is smooth. Surface roughness allows connective tissue to embed into the surface. When implants are loaded, fibre orientation is more transverse hence the success of implant is dependent on the establishment of a soft tissue barrier that can shelter the underlying osseous structure.

Keratinised attached mucosa: The stability of the mucosa provides better support to underlying connective tissue, and junctional epithelium which creates a seal around the implant. The challenges to the soft tissue during the prosthodontic phase are better absorbed by keratinized tissue and the esthetics of implant prosthesis also depends on the health and stability of the peri implant tissue.

Implant placement: Specific placement guidelines have been developed to accomplish soft-tissue stability around implants that are applicable when bone is sufficient and of good quality:

1. The apicocoronal placement of the dental implant platform should be positioned 3 mm below the facial marginal tissue. The 3-mm rule was created for the following reasons:

- a. The 3-mm space is needed on the prosthetic abutment for formation of biologic width.
 - b. An emergence profile of implant restorations needs room for a smooth transition from the circular implant platform to triangular or square abutment and crown.
 - c. There should be space available for restorative margin below marginal soft tissue.
 - d. The possibility of peri-implant marginal soft tissue recession increases as the patient ages.
2. Buccolingually, the implant placement from its outer aspect of platform is 1 mm palatal from the anticipated facial margins of the restoration.
 3. The implant platform is located on same axis with the gingival zenith and 3 mm lower than the free soft-tissue margin.²³

Soft tissue augmentation around implants: Peri-implant soft-tissue management can be regarded as a category of mucogingival procedures analogous to reconstructive procedures around teeth including Root coverage, Papilla reconstruction, Ridge augmentation and preservation. Prosthetic treatment of uncorrected ridge defects with a fixed restoration may lead to esthetic as well as functional complications such as open interdental spaces forming black triangles, difficult pontic design causing inadequate emergence profile, unesthetic gingival texture, whereas functional problems which may comprise food impaction.³ The augmentation procedures can be accomplished during extraction, before or during implant placement, or when the implant is uncovered, or even post restoration. Therefore, soft tissue augmentation techniques that provide better esthetic outcomes includes:

- Pedicle full- or split-thickness palatal flaps
- Free gingival grafts
- Soft tissue allografts
- Combination Hard- and Soft-tissue Grafting

An appreciation of the relationship between periodontal health and restoration longevity remains a key factor in ensuring a good function, form, and

esthetic of the dentition. Consequently, achieving a successful restorative outcome necessitates that the final restoration is planned and integrates well with the surrounding periodontium. Thus, for obtaining a good esthetic outcome clinician should establish a correct diagnosis and evaluate the prognosis to carry out appropriate treatment plan that proceeds according to the biologic as well as clinical evidence.²⁴

Conclusion

Predictability and success in esthetic dentistry are largely dependent on the health and stability of the periodontal tissues. Also, emphasis should be placed on the control of bacterial plaque, the marginal integrity of restoration, its contour and location.⁶ Although, patient cooperation is yet another aspect. Since it is a multidisciplinary approach, multiple appointments and patient compliance are required to complete and maintain the long-term success of treatment.²⁵

Ethical clearance- Taken from Ethical committee of Swami Vivekanand Subharti University.

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Conflict of Interest - Nil.

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Effectiveness of Planned Teaching Program on Knowledge Regarding the Management of Hospital acquired Infections in Children.

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Abstract

In the present study, data were collected on knowledge regarding management of Hospital Acquired infections in children. The objective of the study is to identify the knowledge of B.Sc Nursing students regarding the management of Hospital acquired infections in children and to determine the association between post-test knowledge scores with selected demographic variables. The research method adopted for this study is the evaluative approach. The research design adopted for this study was a pre-experimental design with one group pretest and post-test design. A simple random technique was used to select the sample for the study. The sample consists of 60 B.Sc Nursing students of Nursing institutions. The instrument used for the data collection is a structured questionnaire. Collected data were analyzed by using descriptive and inferential statistics. The results of the study showed that the pretest overall knowledge score regarding various aspects of management of Hospital Acquired infections in children was a mean percentage of 46.86% and SD was 3.51. During the post-test overall knowledge score was 80.53% and SD was 2.98. Hence the difference between pretest and post-test over a knowledge score was 33.67. The results show that the difference between the pretest and post-test knowledge scores for the management of Hospital Acquired infections in children is statistically significant and this difference is due to planned teaching program in the management of Hospital Acquired infections in children. The conclusion was drawn on the basis of the following findings of the study. This study shows that there was a significant improvement in the knowledge of management of infections in children among B.Sc Nursing students as evidenced by pre-test and post-test knowledge scores.

Keywords: Asses, Knowledge, PTP, Hospital acquired infections

Introduction

A hospital-acquired infection is usually one that first appears three days after a patient is admitted to a hospital or other health care facility. Infections acquired in a hospital are also called Hospital acquired infections. About 5-10% of patients admitted to hospitals in the United States develop a Hospital Acquired infections. About 90,000 of these patients

die as a result of their infections. Hospital-acquired infections usually are related to a procedure or treatment used to diagnose or treat the patient's illness or injury. About 25% of these infections can be prevented by healthcare workers taking proper precautions when caring for patients¹.

Hospital-acquired infections can be caused by bacteria, viruses, fungi, or parasites. These

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microorganisms may already be present in the patient's body or may come from the environment, contaminated hospital equipment, health care workers, or other patients. Depending on the causal agents involved, an infection may start in any part of the body. A localized infection is limited to a specific part of the body and has local symptoms. For example, if a surgical wound in the abdomen becomes infected, the area of the wound becomes red, hot, and painful. A generalized infection is one that enters the bloodstream and causes general systemic symptoms such as fever, chills, low blood pressure, or mental confusion. Hospital-acquired infections may develop from surgical procedures, catheters placed in the urinary tract or blood vessels, or material from the nose or mouth that is inhaled into the lungs. The most common types of hospital-acquired infections are urinary tract infections (U.T.I.s), pneumonia, and surgical wound infections².

All hospitalized patients are susceptible to contracting a Hospital Acquired infections. Some patients are at greater risk than others young children, the elderly, and persons with compromised immune systems are more likely to get an infection. Other risk factors for getting a hospital-acquired infection are a long hospital stay, the use of indwelling catheters, failure of healthcare workers to wash their hands, and overuse of antibiotics³. Urinary tract infection (U.T.I.) is the most common type of hospital-acquired infection. Most hospital-acquired U.T.I.s happen after urinary catheterization. Catheterization is the placement of a catheter through the urethra into the urinary bladder. This procedure is done to empty urine from the bladder, relieve pressure in the bladder, measure urine in the bladder, put medicine into the bladder, or for other medical reasons. The healthy urinary bladder is sterile, which means it doesn't have any bacteria or other microorganisms in it. There may be bacteria in or around the urethra, but they usually cannot enter the bladder. A catheter can pick up bacteria from the urethra and allow them into the bladder, causing an infection to start⁴.

Bacteria from the intestinal tract are the most common type to cause U.T.I.s. Patients with poorly functioning immune systems or who are taking antibiotics are also at risk for infection by a fungus called *Candida*. Pneumonia is the second most common type of hospital-acquired infection. Bacteria and other microorganisms are easily brought into the throat by respiratory procedures commonly

done in the hospital. The microorganisms come from contaminated equipment or the hands of health care workers. Some of these procedures are respiratory intubation, suctioning of material from the throat and mouth, and mechanical ventilation. The introduced microorganisms quickly colonize the throat area. This means that they grow and form a colony but do not yet cause an infection. Once the throat is colonized, it is easy for a patient to inhale the microorganisms into the lungs. Patients who cannot cough or gag very well are most likely to inhale colonized microorganisms into their lungs. Some respiratory procedures can keep patients from gagging or coughing. Patients who are sedated or who lose consciousness may also be unable to cough or gag. The inhaled microorganisms grow in the lungs and cause an infection that can lead to pneumonia⁵.

WHO reported that every minute a mother dies from complications in pregnancy and childbirth which means 1400 mothers die every day. More than half a million mothers die every year. The birth of a baby is a momentous occasion in a couple's life. The aim of modern MANAGEMENT of labor should be to ensure optimum conditions for the mother and the fetus during and after delivery as well as emotional satisfaction for all involved. The place of delivery plays an important role in child survival and safe motherhood. A child born with an unhygienic condition is more to get the infection. A properly assisted delivery with skilled personnel and following aseptic precaution is highly advantageous to both mother and fetus during delivery⁶. Health can neither be demanded nor given, it can neither be bought nor sold, but the circumstances and services that are prerequisites to health can centrally be demanded and received as right. A protective environment in the hospital unit is essential as a prerequisite, particularly when considering the services provided in the labor room provision for a safe and protective environment is a priority need⁷.

Healthcare-associated infections are defined as infections not present and without evidence of incubation at the time of admission to a healthcare setting. To better reflect the diverse healthcare settings currently available to patients, the term healthcare-associated infections replaced old ones such as Nosocomial, hospital-acquired, or hospital-onset infections. Within hours after admission, a patient's flora begins to acquire the surrounding bacterial pool characteristics. Most infections that become

clinically evident after 48 hours of hospitalization are considered hospital-acquired. Infections that occur after the patient is discharged from the hospital can be considered healthcare-associated if the organisms were acquired during the hospital stay⁸.

Need for the Study

Today's Nursing students are tomorrow's staff nurses who can contribute themselves more in the field of treatment. But today, this nursing curriculum doesn't give much importance to infection control measures. Thus, students have less exposure to that field makes them vulnerable to knowledge. Educating these students and creating awareness in help them to learn more about the control of Nosocomial infections in children, and they will be able to control the infection in the pediatric hospital. In 2010 M.M.R. was reduced to less than 100. The suggestion was three antenatal check-ups, three postnatal check-ups, and clean, safe delivery given by the national health and family welfare department. Service to make motherhood safe includes care by skilled health personnel, aseptic delivery before, during, and after childbirth, health education for women, their families, and decision-makers; most maternal deaths and pregnancy complications can be prevented if efficient care is given during child care⁹.

Surgical procedures increase a patient's risk of getting an infection in the hospital. Surgery directly invades the patient's body, giving bacteria a way into normally sterile parts of the body. An infection can be acquired from contaminated surgical equipment or from healthcare workers. Following surgery, the surgical wound can become infected. Other wounds from trauma, burns, and ulcers may also become infected¹⁰. Many hospitalized patients need a steady supply of medications or nutrients delivered to their bloodstream. An intravenous (IV) catheter is placed in a vein, and the medication or other substance is infused into the vein. Bacteria transmitted from the surroundings, contaminated equipment, or healthcare workers' hands can invade the site where the catheter is inserted. A local infection may develop in the skin around the catheter. The bacteria also can enter the blood through the vein and cause a generalized infection. A localized infection causes swelling, redness, and tenderness at the site of infection¹¹.

Nursing personnel working in the pediatric ward should be knowledgeable and skillful in the management of Hospital Acquired infections. If the

nursing personnel fails to adopt the infection control technique, it may lead to septicemia and children's deaths. In order to prevent I.M.R., the nursing students (at the base level) should be knowledgeable in providing infection-free nursing care. The nurse concerned with the care and management of infection occurring through all the sources holds a responsible involvement position. They have an important role in the management of infection in a pediatric hospital. The nursing student has to be knowledgeable regarding preventive measures in controlling Hospital acquired infections¹².

Hospitals and other healthcare facilities have developed extensive infection control programs to prevent Hospital acquired infections. These programs focus on identifying high-risk procedures and other possible sources of infection. High-risk procedures such as urinary catheterization should be performed only when necessary, and catheters should be left in for as little time as possible. Medical instruments and equipment must be properly sterilized to ensure they are not contaminated. Frequent handwashing by healthcare workers and visitors is necessary to avoid passing infectious microorganisms to hospitalized patients. In 2003, the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) announced it would make the management of Hospital acquired infections a major goal in 2004 and the coming years. JCAHO, the body that inspects hospitals for quality and accredits them accordingly, issued an alert stating that hospital-acquired infections are seriously underreported¹³.

The Study on the Efficacy of Hospital Acquired infections Control Project (SENIC) from 2005 showed Nosocomial rates could be reduced by 32% if infection surveillance were coupled with appropriate infection control programs. In 2005, Continued surveillance and sound infection control programs led to decreased healthcare-associated infections and better prioritization of resources and efforts to improve medical care. Healthcare-associated infections are of important wide-ranging concern in the medical field. They can be localized or systemic, involve any body system, and be associated with medical devices or blood product transfusions¹⁴.

The investigator observed that many times nursing students have adequate knowledge of aseptic techniques in a pediatric hospital. Hand washing, the single most measure in management and spread of infection from one person to another, is not being

done often. Another important area of concern is that nursing students should be careful in doing the vaginal examination, conducting delivery, aseptic precaution is very important to prevent the introduction of infection to the mother. The recognition of ignorance is the beginning of wisdom. To understand the degree of knowledge to help in future improvement thus, the investigator felt the need to take up the study such as it could assess the knowledge among B.Sc.Nursing students in selected Nursing institutions.

Objectives

The main objectives of the present study are mentioned here

Objectives of the Study

- To assess the pretest knowledge regarding the management of Hospital acquired infections in children.
- To educate the students with a planned teaching program on the management of Hospital acquired infections in children among B.Sc.Nursing students.
- To assess the effectiveness of a planned teaching program on the management of Hospital Acquired infections among B.Sc. Nursing students in terms of knowledge.
- To determine the association between post-test knowledge scores with selected demographic variables.

Operational Definitions

Assessment: It is the organized, systematic, and continuous process of collecting data regarding management of Hospital acquired infections in children.

Effectiveness: In this study, it refers to the extent to which the planned teaching program on the management of Hospital acquired infections in children has achieved the desired effect in improving the knowledge of B.Sc.Nursing students as evident from the gain in knowledge score.

Knowledge: It refers to the level of awareness among selected subjects regarding the management of Hospital acquired infections in children.

Hospital Acquired Infections: An infection acquired in the hospital by a patient who was admitted for a reason other than that infection.

B.Sc. Nursing Students: It refers to those students who are studying nursing course in selected Nursing institutions.

Variables

Dependent variable: In this study knowledge of B.Sc. Nursing students on management of Hospital acquired infections in children will be the dependent variable.

Attribute variable: In this study Age, gender, Religion, Type of family Occupation of the father and sources of information on the management of Hospital acquired infections in children are attribute variables.

Assumptions

- Students of B.Sc.Nursing may have inadequate knowledge on management of Hospital acquired infections in children.
- B.Sc. Nursing students may utilize the planned teaching program on management of Hospital acquired infections in children.
- A carefully prepared Planned Teaching Program may enhance the knowledge of B.Sc. Nursing students on management of Hospital acquired infections in children.

Hypothesis

H₁: There will be significant difference in the pretest and post knowledge score of B.Sc.Nursing students regarding management of Hospital acquired infections in children.

H₂: There will be a significant association between the post-test score with the selected demographic variables.

Limitations

- The study is limited to only the selected school of Nursing at Akluj.
- Students who are available at the time of data collection.
- The sample size is limited to 60 B.Sc.Nursing students from selected Nursing institutions at Akluj.

Research Methodology

Research Approach:

The researcher found that the **evaluative approach** is best suited and adopted for the present study.

Research Design

The present study's pre-experimental one group pretest and post-test design was selected.

Setting of the Study

The study was conducted at the school of Nursing setup.

Population

The population of the present study comprises selected Nursing institutions at Akluj. The accessible populations are those available at the time of conducting the study.

Sample

In the present study, 60 students of B.Sc.Nursing, studying in various institutions of Nursing, were selected.

Sampling Technique:

The sampling technique adopted to select the study samples was **simple random technique**.

Sampling Criteria

Inclusion Criteria

- Students who are willing to participate in the study.
- Both male and female students are included.
- B.Sc.Nursing. students studying at the selected Nursing institutions at Akluj.

Exclusion Criteria

- Students who are in internship.
- Students who are not available at the time of the study.

Method of Data Collection

Data Collection Instruments.

The present study is aimed at assessing the knowledge of students on the management of Hospital acquired infections in children. Thus, a structured knowledge questionnaire to assess the knowledge was prepared and used for data collection.

Development of Tool

A structured knowledge questionnaire was developed for assessing the knowledge on the management of Hospital acquired infections in children.

The tools were prepared on the basis of the objectives of the study.

Description of the Tool

Structured Knowledge Questionnaire

The structured knowledge questionnaire consists of two sections

Part - I

This section includes a demographic background of the students i.e. Age, Gender, Permanent area of residence, Previous academic performance, Religion, and Sources of information on infection control.

Part -II

This section is the second part of self-structured questionnaire, which consists of the following headings

Section - A: Consists of questions assessing knowledge about management of Hospital acquired infections in children's.

There are total 30 Multiple Choice Questions in section A, Item number 1-8 inquire general information on Hospital acquired infections in children, and 8-13 are related to measures used in the management of Hospital acquired infections in children, 14-25 sepsis and barrier techniques.

There are total of 30 questions in section B, of which are positively stated

Scoring

The 30 questions in section- A are Multiple-choice questions and for the correct option, the score is 1 and other options 0.

The 30 questions in Section- B are closed-ended dichotomous questions.

In positively stated items the score for Yes is 1 and for No is 0. In negatively stated items the score for Yes is 0 and for No is 1.

Data Collection Procedure

Prior to data collection permission was obtained from the concerned authorities. Further, the investigator obtained consent from the subjects. Confidentiality was maintained during data collection.

The data collection procedure was carried out for a period of six weeks. After obtaining permission from the authorities of a Nursing institutions Akluj. The

data collection was carried . After obtaining formal permission from the school of Nursing and from the participants, data were collected from 10 nursing students selected by a simple random sampling technique.

The investigator selected the Nursing students from VMP Nursing college at Akluj and administered the structured questionnaire to each of the B.Sc Nursing students.

It took about 1 hour to collect the data. The responses were recorded in the space provided in the questionnaire itself followed by a structured teaching program for the samples.

Results

Analysis and interpretation of the information collected through a structured questionnaire from 60 I year B.Sc.Nursing students of selected Nursing institutions at Akluj. The present study was designed to assess the effectiveness of Planned teaching program on knowledge management of Hospital acquired infections in children among collected data were coded, tabulated organized, analyzed, and interpreted using descriptive and inferential statistics.

Organizations of findings

The data collected from the B.Sc.Nursing.students were organized, analyzed and presented under the following headings.

- Section I: Description of sample characteristics
- Section II: Assessment of pre-existing knowledge.
- Section III: Evaluating the effectiveness of Planned teaching programme.
- Section IV: Association of Post-test knowledge with selected demographic variables.

Section-I

Demographic Characteristics of the Samples

It depicts that the majority of 47% were between the age group of 21-22yrs. Similarly, the remaining 26% of students were between the age group of 23-24 years, 18% of students were between the age group of 19-20yrs, and 8% were 24yrs and above. Gender shows that most nursing students were female, 58% and 42% were males. The majority of students, 53% were Christian, 23% students were Hindus, 17% were Muslims, and the remaining 7% of students

belonged to some other religion. Family depicts that the majority of 3rd year G.N.M.students were 47% from a joint family, 28% from a nuclear family, and the remaining 25% were from extended family. Works depict that the majority of students' fathers were, 28% were homemakers, 27% were private employers, 23% were self-employ, 18% were daily wages, and the remaining 3% had a government job. In the majority of 3rd years, students gained knowledge 58% from their teachers/tutors, 35 % from mass media and 7% from health articles.

Section-II

Assessment of knowledge on management of Hospital Acquired infections in children

It shows that all 60, 53(88.3 %) had inadequate knowledge, 7(11.7 %) had moderate knowledge and adequate knowledge was zero. Table.1 summarizes statistical outcomes of knowledge on preventing Hospital Acquired infections in children was 14.06 with SD 3.519 before S.T.P. The mean score percentage was computed, and it was 46.86%. The results found that the sampled subjects had inadequate knowledge regarding the management of Hospital Acquired infections in children. Thus from the statistical significance, it may be confirmed that knowledge of the management of Hospital Acquired infections in children increased after S.T.P.

Table 1: shows the knowledge score after a planned teaching program.

Knowledge	Mean	S. D	Mean %	't' value	Result
Pretest	14.06	3.519	46.86%	20.215	HS
Post -test	24.16	2.985	80.53%		P<0.05

Section-III

Evaluating the effectiveness of P.T.P. overall pretest and post-test mean knowledge on preventing Hospital Acquired infections in children. Table. 2 shows the pre and post-test knowledge of preventing Hospital Acquired infections.

Table 2: pre and post-test knowledge of management of Hospital Acquired infections.

Aspects	Max. score	Respondent's knowledge			Paired 't'-test
		Mean	SD	Mean (%)	
Pre-test	40	14.06	3.519	46.86%	20.215
Post-test	40	24.16	2.985	80.53%	

The study shows that the pretest findings depict that the pretest knowledge of preventing Hospital Acquired infections in children, such as incidence and cause aspect of management of Hospital Acquired infections, the mean score is 28.63%. Pattern and route of transmission of Hospital Acquired infections mean score is 28.33%, management of Hospital Acquired infections in children mean score is 37.60%. The mean combined score for preventing Hospital Acquired infections in children is 33.05% and SD is 3.519. In post-test knowledge of preventing Hospital Acquired infections in children, such as incidence and cause, the mean score is 52%. Pattern and route of transmission of Hospital Acquired infections mean score is 50.66%. Management of Hospital Acquired infections in children's mean score is 82.65%. and combined mean score of management of Hospital Acquired infections in children mean the score is 67.02%, and SD is 2.985. Improvement of knowledge regarding the management of Hospital Acquired infections in children, such as the general aspect of incidence and cause mean score, is 23.37%. Pattern and route of transmission mean score is 23.33%. Management of Hospital Acquired infections in children's mean score is 45.05%, the combined mean score of environmental hazards affecting the outcome of pregnancy mean score is 33.97%, and SD is 6.50. Paired 't' value of management of Hospital Acquired infections in children, combined paired 't'-test is 20.21.

Section-IV-Association of Post-test knowledge with selected demographic variables

Chi-square results of socio-demographic and post-test knowledge management of Hospital Acquired infections in children among B.Sc Nursing students are shown in Table.3.

Table 3: Chi-square results for sample (n=60)

Sl no	Characteristics	Chi-square Value	Results	P' value
1	Age	2.891	Non-Significant	>0.05
2	Gender	0.17	Non-Significant	<0.05
3	Religion	3.723	Non-significant	>0.05
4	Type of family	1.835	Non-significant	>0.05
5	Father's occupation	2.860	Non-Significant	>0.05

6	Source of information	6.25	Significant	<0.05
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Health can neither be demanded nor given. It can neither be bought nor sold, but the circumstances and services that are prerequisites to health can centrally be demanded and received as right. A protective environment in the hospital unit is essential, particularly when considering the services provided in the pediatric wards. Providing a safe and protective environment is a priority need. The present study was designed to assess the effectiveness of structured teaching program knowledge regarding preventing Hospital acquired infections in children among B.Sc Nursing students of VMP college of nursing at Akluj. The data findings have been organized and discussed based on the objectives and hypothesis.

The majority of students belong to the age group 21-22, i.e., 47% and 58% of students were female. 53% of students belonged to Christianity, and a maximum of 47% of them were from joint families. 28% of the sample's fathers were housemakers, and 58% of the samples were getting the source of information regarding the management of Hospital acquired infections from their teachers. The overall mean score percentage of knowledge is 46.86%; the current study investigator concludes that the selected student's knowledge regarding the management of Hospital Acquired infections in children was inadequate. The knowledge of students was influenced by the source of information. The calculated chi-square value for association of knowledge with the source of information was (Highly significant). The ability of students was also influenced by demographic variables such as a source of health information.

In the majority of B.Sc Nursing, students have inadequate knowledge about the incidence, causes, pattern of transmission and management of Hospital acquired infections in children. Education of students in these aspects is essential for the effective management of Hospital acquired infections in children. It aims to provide students with knowledge on identifying and avoiding trigger factors, maintaining asepsis and regular use of barrier techniques to safeguard children. Thus it may decrease the duration of hospital stay and provide comprehensive nursing care. It was found that the majority of B.Sc Nursing students' knowledge management of Hospital acquired infections in children was inadequate. It needs education in identifying and avoiding triggers,

sterilization and disinfection, and strict asepsis for proper preventive measures to be implemented in pediatric wards. The structured teaching program is beneficial to the nursing students in preventing Hospital acquired infections. This reduces mortality and morbidity associated with Hospital acquired infections.

Conclusions

The structured teaching program's efficiency in preventing Hospital Acquired infections in children has improved significantly among B.Sc Nursing students. The pretest revealed that B.Sc Nursing students understanding of Management of Hospital Acquired infections in children was lacking in all categories. It emphasizes the significance of regular in-service education sessions to keep students up to date on the latest developments in the management of Hospital Acquired infections in children. The post-test scores showed an improvement in knowledge after P.T.P. was administered. Hence it was concluded that Planned teaching program was an effective strategy for improving the knowledge of the B.Sc Nursing students.

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Conflicts of Interest

None

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Give space between C and reactive Protein as an early Predictor of acute Pancreatitis: An Observational Study

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Abstract

Background and Aim: In the early risk stratification of acute pancreatitis, C-reactive protein (CRP) is being used extensively worldwide. There are few studies that show that CRP is useful in predicting pancreatic necrosis which is a determinant of severe pancreatitis. Aim of the present study was to assess the role of CRP as a prognostic indicator in acute pancreatitis.

Material and Methods: A total of 128 patients that were diagnosed to have acute pancreatitis were included in the study. Data collected from the patient's record (file/EMR) and organised in an Excel sheet that contained basic demographic data (age and gender), cause, APACHE score, length of hospital/intensive care unit (ICU) stay and the CRP level. Blood samples for CRP and biochemical markers for the APACHE II score were routinely drawn and processed on admission.

Results: The patients were divided into two groups, those with mild pancreatitis and those with severe acute pancreatitis. Men were predominating in the study group where they contributed to 85.9% of the study population. Mean age of presentation of acute pancreatitis was 37.7 years. Amylase and lipase were taken for the diagnosis of acute pancreatitis; amylase and lipase were elevated significantly in 104 and 108 patients respectively. Twenty eight patients had an elevated CRP > 150 in BISAP positive patients. There was significant association of CRP and BISAP.

Conclusion: Acute pancreatitis is a life-threatening disease with a wide spectrum of clinical symptoms. The job of diagnostic markers as prognostic pointers has been a disappointment. However, CRP as a prognostic marker has shown promising results in earlier studies.

Keywords: Amylase, Acute pancreatitis, C reactive protein, Pancreatic Necrosis

Introduction

Acute pancreatitis, the sudden inflammatory process of the pancreas is a common disease that has a variable clinical course, and its severity is often difficult to predict.^[1] Although this condition does resolve in some cases without any medical intervention and patients can make full recovery within a relatively short period, there are others who end up developing severe complications that could be fatal. Acute pancreatitis (AP) is an inflammatory condition which may be mild or severe; in severe cases, pancreatic enzymes can cause damage to the gland itself.^{1,2}

AP has many different etiologies, and overall mortality is 5% to 10%. Most cases (80% to 90%) are mild or self-limited and have a good prognosis. The remaining 10% to 20% of cases warrant monitoring in intensive care units due to pancreatic necrosis or distant organ damage. Severe AP cases usually require surgical intervention, and overall mortality can be up to 40%.^{3,4}

Acute Pancreatitis is a disease of unpredictable outcome; early intervention can prevent the development of acute severe pancreatitis which develops in 20 to 30% of patients with Acute

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Pancreatitis.⁵ The progression of the disease and the development of complications are mainly due to the release of proinflammatory cytokines leading to third space volume loss. C-reactive protein (CRP) being an acute phase reactant is elevated in the ensuing inflammation of the pancreas, this elevation when above 150 mg/L has been noted to be a predictive marker of the development of acute severe pancreatitis.⁶

In the early risk stratification of acute pancreatitis, C-reactive protein (CRP) is being used extensively worldwide.⁷ There are few studies that show that CRP is useful in predicting pancreatic necrosis which is a determinant of severe pancreatitis. There not many studies reported from our country using CRP to differentiate between MAP and SAP which is the need of the hour for better use of our limited resources as it is a simple and an efficacious way to triage acute pancreatitis patients. Considering its peak at only 48-72 hours, so cannot be used to assess severity in the therapeutic window of pancreatitis (first 72 hours).⁸ CRP is also elevated in conditions like coronary heart disease, insulin resistance, diabetes, dental disorders, smoking, overweight, obesity, Alzheimer's disease, rheumatoid arthritis and cancer.⁹ Hence the aim of the present study was to assess the role of CRP as a prognostic indicator in acute pancreatitis.

Materials & Methods

The present study is the observational study that was done in the medical college and the associated hospital. A total of 128 patients that were diagnosed to have acute pancreatitis were included in the study. Variables (age, sex), were recorded along with local complication and systemic complication. The ethical committee was informed about the study, and the ethical clearance certificate was obtained prior to the start of the study.

The inclusion criteria and exclusion criteria were as follows: the patients with more than age of 18 years and those who satisfy the Atlanta classification for diagnosis of acute pancreatitis were included in the study. Patients who had any of the following were excluded from the study: Age < 18 years, already diagnose with chronic pancreatitis, severe acute pancreatitis on admission, Pregnant women, Hematologic diseases, Connective tissue disorders, Collagen vascular diseases.

Data collected from the patient's record (file/EMR) and organised in an Excel sheet that contained basic

demographic data (age and gender), cause, APACHE score, length of hospital/intensive care unit (ICU) stay and the CRP level. Blood samples for CRP and biochemical markers for the APACHE II score were routinely drawn and processed on admission. Collected data analysed to assess the possible statistical significance of the variables and to present the data accordingly. Their CRP levels were sent on second day of admission and CT scan done after 72 hours of admission.

All the data collected in proforma were entered in Microsoft excel sheet and SPSS software version 21 was used for statistical calculations. Chi-square test with Fischers exact was used to calculate p value and find the significant association between CRP and different variables. Serial C reactive proteins levels were analyzed at 72 hours. Computed tomography with oral and IV contrast agents was done at 72 hours after admission and CT severity Index with CT grade and necrosis grade was ascertained.

Results

A total of 128 patients of acute pancreatitis were studied. The patients were divided into two groups, those with mild pancreatitis and those with severe acute pancreatitis. Both moderately severe acute pancreatitis and severe acute pancreatitis were considered as severe acute pancreatitis. Young and middle age persons were the predominant population of the study i.e., < 50 years constituted > 80% of the study population. Men were predominating in the study group where they contributed to 85.9% of the study population. Mean age of presentation of acute pancreatitis was 37.7 years.

In the present study, Pain was the predominant presenting complaint seen in 98% of the study population, while the least common presenting complaint or associated symptom was upper gastrointestinal bleed which was seen only in one individual. Extra pancreatic manifestations were seen in a frequency of 1.8% to 19.4%.

Amylase and lipase were taken for the diagnosis of acute pancreatitis; amylase and lipase were elevated significantly in 104 and 108 patients respectively. Patients who did not have significantly elevated amylase and lipase levels were diagnosed by means of abdominal pain and CT findings.

All individuals underwent CT Abdomen. Eighty two patients had a normal study or had mild

pancreatic or peri pancreatic inflammation. Forty six patients had pancreatic or peripancreatic fluid collection with or without accompanying necrosis of the gland. Severity on CT was classified into 3 groups, Group 1: Normal CT or mild enlargement of the gland ,Group 2 :presence of pancreatic or peri pancreatic fluid collection and Group 3-presence of necrosis.

Twenty eight patients had an elevated CRP > 150 in BISAP positive patients. There was significant association of CRP and BISAP with p value of 0.0001.

Table 1: Distribution of CRP in the patients

C reactive protein	Number of patients
< 150	82
> 150	46

Table 2: Symptoms on presentation

Symptoms	Present	Absent
Pain	124	4
Vomiting	76	52
Abdominal distention	22	106
Fever	22	106
Jaundice	14	114
Oliguria	10	118
Dyspnoea	10	118

Table 3: Analysis CRP with CT in Predicting Severe Acute pancreatitis

CRP	Severity basedon CT		Chi square	P value
	1	2 &3		
< 150	66	16	15.21	.0001
> 150	16	30		

Discussion

Acute pancreatitis is undoubtedly a disease in which the progression can be greatly altered by early intervention. Numerous scores and single prognostic markers have been suggested to predict the severity of pancreatitis on admission or after a couple of days, this by itself suggests none of the available scores or markers are the gold standard to predict the severity of the disease.^{10, 11} In this study CRP and pancreatitis predicting scores BISAP were analyzed to predict the severity of pancreatitis. Scores which had many markers may have had an increased sensitivity but simpler and easily available scores and markers were taken.

In our country where resources are limited, the simplest and the most economical of the scores or markers are the ones which would have a great impact on the society in the prediction of severity in AP Epidemiology.¹² In the study population of 110 were male contributing to 86.5% of the study population. This is higher than studies from the Mediterranean by Stimac et al¹³ and the study of Roberts¹⁴ from UK who showed only a slight male predominance of 53% and 50.7% respectively. The probable reason could be that gall stone disease is not as common as it is in the west, the predominant cause of AP in this study being alcohol which is more abused by men than women and are young comparatively in our country.

Symptoms Abdominal pain (96.9%) and vomiting (59.4%) were the predominant complaints seen in the study population. This is similar to the study by Milheiro et al¹⁵ who stated the predominant symptom in AP as abdominal pain in 100% followed by vomiting in 69.2%. A symptom association of extra-pancreatic manifestations to the occurrence of SAP was done, which showed that the presence of extra pancreatic manifestations in acute pancreatitis had a high probability to be associated with SAP.

In this study there was a significant association with jaundice, fever, dyspnea and oliguria which is similar to the study by Abbasi and Jacobs et al.⁷ Thus this study further emphasizes the well known fact of the need of aggressive fluid management in AP thus preventing volume depletion, which may lead on to the development and progression of SAP.

C - reactive protein A CRP of > 150 mg /L was taken to predict acute severe pancreatitis, 46 (35.9%) patients of the 128 study population had an elevated CRP at 48 hours of admission. 30 of the 46 patients who had a significant elevation of CRP had CT features of SAP (P = 0.0002), while 24 of the 46 patients with significant elevation of CRP had Necrotising pancreatitis on CT (P = 0.0004). Thus drawing on a conclusion that CRP had a significant association in predicting severity of pancreatitis, which is in accordance to studies by Alfonso and Cardoso who took a CRP value of 200 mg /L and 170 mg/L respectively in predicting SAP and necrotising pancreatitis. This study achieves the same association with a CRP cut off of 150mg/L as suggested by recent studies by Wilson. Thus this study confirms that a CRP of >150mg/L is as diagnostic as higher levels in predicting SAP.

The Positive predictive value of CRP in predicting SAP was 65.2% while it had a negative predictive

value of 80.5%. This is similar to previous studies which have stated that at 48 hours CRP had a sensitivity ranging from 65% to 100% and a positive predictive value of 37% to 77%. 82 patients of the study population had mild pancreatitis, while 46 patients had SAP as determined by CT, which is taken as standard to predict the severity of pancreatitis. Incidence of SAP is similar to study by Svetlana. The reason could be that in our population there is a delay in presentation to the hospital as the patients seek over the counter medications or complementary and alternative forms of medicine for the most common symptom of abdominal pain or it could be that of a referral bias.

Conclusion

Acute pancreatitis is a life-threatening disease with a wide spectrum of clinical symptoms. The job of diagnostic markers (pancreatic enzymes like amylase and lipase) as prognostic pointers has been a disappointment. However, CRP as a prognostic marker has shown promising results in earlier studies. CRP levels can give a prior insight about the undergoing inflammatory process.

Ethical Approval is taking from institutional ethical committee

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Association of Academic Performance and load with Depression, Anxiety and Stress among School going Students (9th-12th class) of District Amritsar: A Cross Sectional Study.

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Abstract

Background: Adolescence is a ripe stage where the onset of many psychiatric illnesses increases sharply. Identification of factors making adolescent population vulnerable to disturbed mental health is of high public health importance.

Materials and methods: A cross sectional study was conducted among students of 9th -12th class of government and private schools of urban and rural areas of Amritsar. Sample size was calculated using formula $N > 4pq/d^2$. Data was collected during the period of one year. Pre tested, semi structured questionnaire and DASS -21 scale were used. Chi squared tests were applied and statistical analysis was conducted using Epi-Info. P value <0.05 was considered to be statistically significant.

Results: The prevalence of Stress, Anxiety and Depression was found to be 53%, 58% and 54% respectively having significant associations with academic performance, excessive homework, performance satisfaction among self & parents and comparison by parents.

Conclusion: Stress, anxiety and depression were associated with factors like academic performance, academic load, performance satisfaction by self and parents and other parental factors. There is need to provide a healthy and supportive school as well as home environment to reduce the risk of stress, anxiety and depression among adolescents.

Keywords – Stress, anxiety, depression, academic performance, academic satisfaction, parental satisfaction.

Introduction

Worldwide there are 1.2 billion adolescents, which is approximately 1 in every 6 persons¹. 21% of Indian population comprises of adolescents i.e about 243 million, making India the country harboring highest number of adolescents in the world. Although adolescence is the period of life filled with most vitality, specific needs regarding changes in mental and physical growth along with

evolving understanding of the world can overwhelm an adolescent outside his/her coping capacity. Such circumstances increase the risk of mental disorders in adolescents most commonly mood disorders like stress, anxiety and depression.

According to World Health Organization (WHO) 1 in 13 globally suffer from anxiety². It is estimated that 3.6% of 10-14 year-olds and 4.6% of 15-19 year olds experience an anxiety disorder³. Stress and anxiety

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can make a person vulnerable to depression which in adolescents is a real, distinct clinical entity. Increasing academic pressure; unrealistic parental & social expectations; unstable home environment; emotional, sexual or physical abuse; bullying; loss of a closed one; chronic illness in self & family are some of the important factors that can upset the mental health of an adolescent. Various studies done in India report prevalence of stress among school students ranging from 40%-50%^{4,5,6}. Whereas anxiety is reported to be 17-59%^{5,7,8}. Indian studies conducted on adolescents report prevalence of depression to be 40% – 54%^{5,9}.

Evolution from childhood to adulthood exposes an adolescent to changing academic environment from the playful junior schools to more serious senior grades. Students with high stress levels in academia are seen to exhibit signs of depression, anxiety, phobia, school refusals, increased irritability, and complaints and reduced interest in schoolwork¹⁰. In a Delhi based study all the three (depression, anxiety and stress) were found to be higher among students having lesser academic performance¹¹. Pushed by the parents to 'be the best', some students cannot cope with the demands anymore and emotionally collapse. This can result in deep rooted nervous disorders. Keeping such factors in mind, this cross sectional study was conducted to find the prevalence of stress, anxiety and depression and its association with academic pressure & load among the students of 9th-12th class of district Amritsar.

Materials and Methods

Study population – students studying in 9th-12th class of government and private schools consisted the study population. Those who gave their written assent were included in the study whereas those who did not and those who were already suffering from a mental disorder were excluded from the study.

Study period – 1 year (1 st April 2020 – 31st March 2021)

Sample size and sampling technique - Sample size was calculated using the prevalence rate of stress among students, found to be 47% in a similar study conducted at Chandigarh in the year of 2014¹². Formula $N > 4pq / d^2$ was used, where p= prevalence of the problem, q = (1-p) and d = absolute error/precision (taken as 5% for the current study)¹³. Assuming power of the study to be 80% and α to be 5% required sample size was calculated to be 399 using the above formula. Taking the non - response ratio to be 20%,

the final sample size for the study was decided to be 480. However, 444 students participated in the study due to the prevailing COVID-19 pandemic and lockdowns.

Data collection tool

Data collection tools consisted of a pre-tested semi structured questionnaire developed to collect the desired information on the socio-demographic profile and contributory factors towards Stress, Anxiety and Depression and a standardized Depression Anxiety and Stress Scale -21 used for assessment of presence of Depression, Anxiety and Stress. DASS -21 consists of 3 subscales and each of the three DASS-21 subscales contains 7 items. Scores for depression, anxiety and stress are calculated by summing the subscale items individual scores which were marked on a likert scale of 0-3¹⁴.

Methodology

After required ethical committee's and District Education Officer's approvals, 4 schools as per the selection criteria were randomly selected. Consents of Principals of selected schools were taken and students in equal representations from each class were selected using simple random sampling. Written informed consents were obtained from the parents/guardians of the selected students along with written assent from students themselves. Data was collected over the period of 1 year using self-administered, pre-tested, semi structured questionnaire and DASS -21 scale. Circulation of google forms was done among the students through whatsapp groups during COVID-19 lockdown and personal visits were conducted once restrictions were lifted. Visits to the schools were conducted in such a manner so that school's routine schedule was not disturbed. Students of only one class were studied during a visit and next visit was planned as per the convenience of the school's Principal. Students were sensitized regarding stress, anxiety and depression and instructions related to filing-up the forms were also discussed. After fully ensuring the students regarding the confidentiality of their responses performas were distributed to be filled. The performas were collected after an average period of 45 minutes.

Statistical Analysis

Prevalence of depression, anxiety and stress were calculated by dividing the number of students having score above the respective cut offs of DASS-21 by total students and was compared across various groups.

Mean scores of all the subscales were calculated along with standard deviation of the same. Responses of each student were compiled using Microsoft excel and later imported into Epi-Info for the statistical analysis. The distribution of various variables was represented through frequencies and proportions whereas, for continuous variables mean \pm standard deviations were calculated. Association of various contributing factors with three subscales was established by using Chi-square test where p-value of less than 0.05 (on both sides) was considered to be statistically significant. If any of the expected cell value of <5 was found then Fisher's exact test was used. Those who were found to have stress, anxiety and depression were advised to seek counseling and appropriate treatment.

Results

205 (46%) students studied in government schools whereas 239 (54%) were from private schools. Minimum participation was from 12th standard because of ongoing board examinations at the time of the study. As far as age was concerned majority of the students, 218(49%) were of 16-17 years of age followed by 138 (31%) of those in the age group of 13-15 years and only 20% (93) were above 18 years of age. A total of 227 (51%) students were male and 217 (49%) students were female. More than half (253: 57%) of the students belonged to Sikh religion, while 264 (60%) were of general caste. Out of the total 444 study participants, students participating from rural areas were 245 (55%) whereas those from urban areas were 199 (45%).

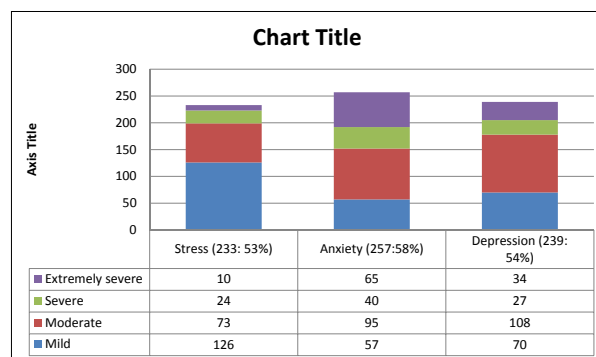
The prevalence of Stress was 53% (233/444) in study participants with majority of them (126; 54%) having mild stress, anxiety was found to be in 257 (58%) students with majority (95; 40%) having moderate anxiety and 239 (54%) study participants had depression with high prevalence (108; 46%) of moderate depression.

166 (38%) students thought homework to be excessive but majority, (294; 66%) completed their assignments on time. Among the study participants, 56% (247) felt nervous when new assignments were given. Assistance for doing homework was required by 69% (305) of the study participants out of which half (50%) took tuition classes for completing homework while 20% and 14% took assistance from friends and siblings for doing the same. Minimum (23; 7%) used internet as an assistant to complete their homework.

As far as academic performance was concerned,

12% (55) and 14% (62) scored above 90% and $<60\%$ in last exam, respectively. Scores of rest of the students (74%) ranged between 61%-90%. Failure in exam was faced by 15% (69) of the study participants. 66% (291) of the study participants were satisfied with their own academic performance and teachers of 60% (265) study participants were satisfied with their academic performance. It was observed that parents of 55% (245) students were not usually satisfied with their academic performance, whereas, that of 53% (236) of study participants compared them with others. Out of all the study participants, 16% (71) felt nervous while conveying their results to parents.

Figure 1: Distribution of depression, anxiety and stress in study participants (N = 444)



Based on the responses to DASS-21, stress, anxiety and depression related symptoms were found to be present among, 53%, 58% and 54% study participants. Moderate depression (46%) and anxiety (40%) were most common whereas mild symptoms related to stress were the commonest (54%). A significant proportion of study participants having anxiety and depression had severe symptomology (27% and 14% respectively).

Table 1: Association of academic load with depression, anxiety and stress among study participants (N = 444)

Variable	Depression (n=239)	Anxiety (n=257)	Stress (n=233)
Excessive homework			
Yes (166)	87(53)	84(51)	82(49)
No (278)	152(55)	173(62)	151(54)
χ^2 (p value)	0.21; df=1 (0.6)	5.7; df=1; (0.01)*	1.00; df=1; (0.3)
Completion of assignments			

Variable	Depression (n=239)	Anxiety (n=257)	Stress (n=233)
On time (n=294)	146(50)	164(58)	143(49)
Not on time (n=150)	93(62)	93(62)	90(60)
χ^2 (p value)	6.08; df=1; (0.01)*	1.57; df=1; (0.2)	5.14; df=1; (0.02)*
Nervousness at new assignments			
Yes (n=45)	30 (67)	27(60)	27(60)
No (n=399)	209 (52)	230(58)	206(52)
χ^2 (p value)	3.32; df=1; (0.06)	0.09; df=1; (0.7)	1.13; df=1; (0.2)
Need for assistance with homework			
Yes (n=305)	162(53)	182(60)	162(53)
No (n=139)	77(55)	75(54)	71(51)
χ^2 (p value)	0.19; df=1; (0.6)	1.2; df=1; (0.2)	0.15; df=1; (0.6)

- All figures in parenthesis are percentages
- *= p < 0.05 is considered to be significant

Depression (62%) and stress (60%) were significantly higher among those who did not complete their assignments on time when compared to those who completed their assignments on time (depression-50% and stress-49%)

Similarly depression (67%), anxiety (60%) and stress (60%) were relatively higher among those who felt nervous when they were given new assignments.

Depression (53%) was lower, whereas anxiety (60%) and stress (53%) were higher among those who needed assistance with homework without statistically significant differences.

Table 2: Association of academic performance

with depression, anxiety and stress among study participants (N = 444)

Variable	Depression (n=239)	Anxiety (n=257)	Stress (n=233)
Performance grade in last exam			
>80% (n=153)	68(44)	76 (50)	70 (46)
60-80% (n=229)	132 (58)	143 (62)	131 (57)
<60% (n=62)	39 (63)	38 (61)	32 (52)
χ^2 (p value)	8.8; df=1; (0.01)*	6.4; df=1; (0.03)*	4.8; df=1; (0.08)
Satisfied with own academic performance			
yes (n=291)	146(50)	157(54)	135(46)
no (n=153)	93(61)	100(65)	98(64)
χ^2 (p value)	4.54; df=1; (0.03)*	5.35; df=1; (0.02)*	12.54; df=1; (0.0003)*
Teacher satisfaction with grades			
yes (n=265)	133(50)	150(57)	130(49)
no (n=179)	106(59)	107(60)	103(58)
χ^2 (p value)	3.50; df=1; (0.06)	0.44; df=1; (0.50)	3.08; df=1; (0.07)
Parental satisfaction with grades			
Usually (n=199)	90 (45)	110 (55)	93 (47)
Unusually (n=245)	149 (61)	147 (60)	140 (57)
χ^2 (p value)	10.73; df=1; (0.001)*	1.00; df=1; (0.3)	4.77; df=1; (0.02)*
Comparison with others by parents			
No (n=208)	88(42)	102(49)	90(43)
Yes (n=236)	151(64)	155(66)	143(61)

Variable	Depression (n=239)	Anxiety (n=257)	Stress (n=233)
χ^2 (p value)	21.8; df=1; (0.000)*	13.3; df=1; (0.00)*	14.03; df=1; (0.00)*
Feeling of nervousness while telling results to parents			
Unusually (n=373)	193(52)	205(55)	192(51)
Usually (n=71)	46(65)	52(73)	41(58)
χ^2 (p value)	4.08; df=1; (0.04)*	8.17; df=1; (0.004)*	0.94; df=1; (0.3)

- All figures in parenthesis are percentages
- *= p < 0.05 is considered to be significant

Depression increased with decreasing percentage in exam (44% in those who scored >80% to 63% among those who scored <60%) and this difference was found to be statistically significant. Levels of depression (61%), anxiety (65%) and stress (64%) were found to be significantly higher among those who were not satisfied with their own performance, but teacher satisfaction with grades did not have significant associations. Depression (61%) and stress (57%) was higher among those whose parents were not satisfied with their and this difference was statistically significant. Depression (64%) anxiety (66%) and stress (61%) were significantly higher among those students whose parents compared them with others. Those who felt nervous while telling their results to parents had significantly higher levels of depression (65%) and anxiety (73%).

Discussion

Prevalence of anxiety was reported be highest (58%) in the present study, which was followed by depression (54%) and stress (53%). Similar results have been noticed in different parts of country where the prevalence of stress, anxiety and depression ranged from 19%-49%; 24%-81% and 21%-65%^{4,5,15}. In our study, 27% of the anxious, 14% of depressed and 4% of stressed were graded to be suffering from extremes of these conditions.

Adolescent population already suffers from the stage of rapid physical and mental maturation that can give rise to intense psychological and physical change. The desire to be needed by others, independence,

adequate adjustment to the opposite sex along with conflicting beliefs with parents; academic, parental and social pressure; quality of friends, etc. all contribute towards the disruption of mental harmony that result into tremendous stress, anxiety and depression among this population. Lagging behind in academics can result in self and parental academic dissatisfaction that causes worry and stress among students. Constant academic inferiority complex and incapacity to achieve goals set by self, parents and teachers may result in stress and anxiety due to which student feels incapacitated to complete work on time, thus piling up of more work which results in overburdening of a student.

Various studies have also found low academic performance to be the cause of stress, anxiety and depression^{11,16}. In our study too, students who had lower grades in exams were found to have high levels of anxiety (61%) and depression (63%). Large number of students (70%) who did not attend tuition classes were found to be significantly depressed in the present study. Being overburdened by academic load, especially in board classes and not getting proper help to handle it may be the cause of such finding. This finding was opposite to a study where strong association of stress, anxiety and depression was observed in students taking tuitions¹¹.

Negative effects of stress at home linger and affect student's academic performance at school¹⁷. Present research showed high prevalence rates of stress (57%), anxiety (60%) and depression (61%) among students whose parents were not satisfied with their grades. Similar significant results were seen among those students whose parents compared them with others. It has been noted in other studies as well that students whose parents pressurize them to study have significantly higher depression and stress¹⁸.

Conclusion

Present study highlights the prevalence of stress, anxiety and depression among students of 9th -12th classes studying in government and private schools of rural and urban Amritsar. It also identifies important positive and negative risk factors associated with adolescent depression. The results of this study are cautious reminder of the extreme pressure the adolescent face in this particular age. The study reflects the importance of student friendly curriculum, positive parenting and psychological counseling availability at school.

Conflict of interest – the author declares that there is no conflict of interest

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Ethical clearance – clearance granted from Institutional Ethics Committee (IEC), Government Medical College, Amritsar

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Emotional and Behavioural issues in children during early Phases of school opening after Covid 19 Pandemic in Eastern India

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Abstract

Introduction: The Covid 19 pandemic was first officially noted in China in late 2019. After that, the virus spread globally. At that time it was a new virus and we did not know anything about the virus. So lock down or home confinement was the only option to control the spread of the virus ⁽¹⁾. During that time children suffered the most as they were confined at home ⁽²⁾. During this period they showed various behavioural problems and when restrictions were withdrawn they still showed some behavioural issues.

Methodology: We conducted a cross-sectional study using an English questionnaire. The questionnaire was validated by five independent psychiatrists who were finally excluded from the study. Responses from the parents of randomly selected 76 children were recorded. We included the children aged between 3 to 12 years and who previously used to go to school.

Results: 40.8 % of children were of 6 to 10 years of age and the male and females were almost equal in number in our study (M: F = 40:36). Maximum children are from urban residences (about 59.2%) and the nuclear family (56.6%) followed by joint families (38.2%) and single-parent families (5.3%). In most of the cases (61.8%) father is the only earning member followed by both parents working (34.2%) and in only 3.9% of cases, the mother is the only earning member of the family. About 76.3% of parents observed behavioural issues in their children. The problems were mostly observed in 6 to 10 years of age. Males showed the problem most often than females (M:F = 33:25). Children from urban areas showed behavioural problems more often.

Discussion: Most of the parents reported that their children were having different sorts of problems during this period⁽³⁾. The families of small children aged 6 to 10 yrs of age were facing various problems more often. The children of this age group showed problems more often as they were isolated at home. Previously they were in the discipline of school and society. Due to the sudden release of pressure, all routine activities got disturbed.

Keywords: Covid 19, Temper tantrum, restlessness, inattention

Introduction

Severe acute respiratory distress syndrome, caused by a new strain of coronavirus (COVID 19) was first officially reported in Wuhan, China in late 2019 ⁽⁴⁾. Since then it has spread in alarming speed all over the world. WHO declared it a global pandemic in

March 2020 ⁽⁵⁾. India's first novel coronavirus disease was reported in January 2020 in Kerala ⁽⁶⁾. Within about 50 days India had reported 360 cases. As it was a new virus and also there was no known effective treatment it was the primary concern to break the chain of virus transmission by confining the people

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at home⁽⁷⁾. On March 25 nationwide lockdown was imposed by India Government⁽⁸⁾.

Since the day of lockdown, the children are confined at home. Before lockdown children could go for a face to face interaction with their peers, teachers, and relatives. They could go outside for playing or for some extracurricular activities. But from the very beginning of lockdown children were confined at home. All the learning and communications became restricted to digital platforms⁽⁹⁾⁽¹⁰⁾. Children often show emotional and behavioural problems during this period of lockdown.⁽¹¹⁾

In this background, we studied a few children to record the degree of changes in this tough time of home confinement.

Materials and Method

We conducted a cross-sectional study using an English questionnaire. India was under unlock period during the study. The questionnaire was validated by five independent psychiatrists who were finally excluded from the study. Before the start of the study, we did a pilot study. The final questionnaire consists of 51 items. The questionnaire was divided into three groups, Socio-demographic data (age, sex, religion, residence, family type, occupation of parents), behavioural changes in children (inattention, sleep pattern, change of eating habits, depression, anxiety, engagement in mobile, television and internet game, nail-biting, thumb sucking) and parents perception of prolonged home confinement.

Responses from the parents of randomly selected 76 children were recorded. We included the children aged between 3 to 12 years and who previously used to go to school. The children having previous psychiatric problems had been excluded from the study. Before participating in the study written or verbal consent was obtained from the parents. After receiving the consent details of the study were explained. We assured every parent about the confidentiality of responses. The sample consisted of all the residential areas including rural, urban, and metro areas.

Result

40.8 % of children were of 6 to 10 years of age and the male and females were almost equal in number in our study (M: F = 40:36). Maximum children are from urban residences (about 59.2%) and the nuclear family (56.6%) followed by joint families (38.2%) and single-parent families (5.3%). In most of the cases (

61.8%) father is the only earning member followed by both parents working (34.2%) and in only 3.9% of cases, the mother is the only earning member of the family.

Table 1: Basic Socio-Demographic data of study participants

		Frequency	Percent
Age	11-15	23	30.3
	3-5	22	28.9
	6-10	31	40.8
Sex	M	40	52.6
	F	36	47.4
Residence	Metro	22	28.9
	Rural	9	11.8
	Urban	45	59.2
Family type	Joint	29	38.2
	Nuclear	43	56.6
	Single Parent	4	5.3
Occupation of Parents	Both Working	26	34.2
	Father Working	47	61.8
	Mother Working	3	3.9

We tried to assess the change of behaviour in children during this tough time. They were detached from school, friends and social activities for the last 2 yrs. About 76.3% of parents observed behavioural issues in their children. And the problems are mostly observed in 6 to 10 yrs of age. Males showed the problem most often than females (M: F = 33:25). Children from urban areas showed behavioural problems more often than in rural areas and metro cities. Children are having problems whose father is the only earning member of the family and where both parents were working.

Table 2: Changes in behaviour as per different socio-demographic parameters

(N=76)		Change of Behaviour	
		No (n=18) ; 23.7%	Yes (n=58) 76.3%
Age (yrs)	11-15	5	18
	3-5	8	14
	6-10	5	26

(N=76)		Change of Behaviour	
		No (n=18) ; 23.7%	Yes (n=58) 76.3%
Sex	M	7	33
	F	11	25
Residence	Metro	6	16
	Rural	1	8
	Urban	11	34
Family type	Joint	5	24
	Nuclear	12	31
	Single parent	1	3
Occupation of Parents	Both working	6	20
	Father working	12	35
	Mother Working	0	3

The following table shows different behavioural problems and their frequencies. 51.3% of children demand attention from their family members. 55.3% of children became restless and 46.1% became inattentive in family settings. 53.9% of children got distracted easily. Sleep pattern was more or less normal. A significant number of children (71.1%) increased their mobile use behaviour. 53.9% of children became anxious in different circumstances. 64.5% of children showed temper tantrums and 38.2% of children argued with their family members in various contexts. Watching television and mobile gaming increased more than before. 68.4% of children increased television watching and 59.2% of children increased playing mobile games.

Table 3: Frequencies of different behavioural issues

		Frequency	Percent
Demands attention	Often	39	51.3
	Rare	6	7.9
	Sometimes	31	40.8
Restlessness	Often	42	55.3
	Rare	11	14.5
	Sometimes	23	30.3
Inattention	Often	35	46.1
	Rare	11	14.5
	Sometimes	30	39.5

		Frequency	Percent
Easy distraction	Often	41	53.9
	Rare	8	10.5
	Sometimes	27	35.5
Sleep more	Often	26	34.2
	Rare	25	32.9
	Sometimes	25	32.9
Sleep less	Often	19	25.0
	Rare	37	48.7
	Sometimes	20	26.3
Increased mobile use	Often	54	71.1
	Rare	6	7.9
	Sometimes	16	21.1
Fearful	Often	4	5.3
	Rare	39	51.3
	Sometimes	33	43.4
Anxious	Often	41	53.9
	Rare	18	23.7
	Sometimes	17	22.4
Aggressive	Often	19	25.0
	Rare	24	31.6
	Sometimes	33	43.4
Disobedience	Often	29	38.2
	Rare	18	23.7
	Sometimes	29	38.2
Telling lie	Often	15	19.7
	Rare	26	34.2
	Sometimes	35	46.1
Temper tantrum	Often	49	64.5
	Rare	9	11.8
	Sometimes	18	23.7
Argues a lot	Often	29	38.2
	Rare	22	28.9
	Sometimes	25	32.9
Nail biting	Often	6	7.9
	Rare	50	65.8
	Sometimes	20	26.3
Increased TV watching	Often	52	68.4
	Rare	5	6.6
	Sometimes	19	25.0
Increased mobile gaming	Often	45	59.2
	Rare	11	14.5
	Sometimes	20	26.3

Table 4: behavioural issues in different age groups, sex, family type, working status of parents

11-15		Age (yrs)			Sex		Family type			Working status of parents		
		3-5	6-10	F	M	Joint	Nuclear	Single parent	Both Working	Father Working	Mother Working	
Inattention	Often	9	9	17	15	20	16	17	2	13	21	1
	Rare	4	3	4	6	5	2	9	0	4	7	0
	Sometimes	10	10	10	15	15	11	17	2	9	19	2
Temper tantrum	Often	14	14	21	21	28	20	26	3	17	29	3
	Rare	3	2	4	5	8	3	6	0	4	5	0
	Sometimes	6	6	6	10	4	6	11	1	5	13	0
Increased mobile use	Often	16	16	22	28	26	21	31	2	17	36	1
	Rare	2	2	2	1	5	2	4	0	2	4	0
	Sometimes	5	4	7	7	9	6	8	2	7	7	2
Increased TV watching	Often	14	16	22	19	33	17	31	4	14	35	3
	Rare	2	1	2	2	3	4	1	0	2	3	0
	Sometimes	7	5	7	15	4	8	11	0	10	9	0

The table above shows different behavioural problems in different age groups. Mainly 6 to 10 yrs old children became inattentive mostly. All the other behavioural problems like temper tantrums increased mobile use and increased watching of television were observed mostly in the 6 to 10 yrs age group.

Inattention, temper tantrum and increased television watching were seen most often in males. But females were using mobiles more often than males.

All the behavioural problems of inattention, temper tantrums, increased mobile use and increased television watching are seen mostly in nuclear families.

Surprisingly the problems are most often seen where the father was working than both parents were working. Inattention, temper tantrums, and increased mobile and television use are seen in families where the father is the only working member.

Table 5: Behavioural issues and watching Television and mobile use

		Increased watching of TV			Total
		Often	Rare	Sometimes	
Temper tantrum	Often	38	3	8	49
	Rare	1	1	7	9
	Sometimes	13	1	4	18
	Total	52	5	19	76

		Increased watching of TV			Total
		Often	Rare	Sometimes	
		Mobile use increased			
	Often	35	4	10	49
	Rare	4	2	3	9
	Sometimes	15	0	3	18
	Total	54	6	16	76

The above cross-tabulations shows behavioural issues (temper tantrum) in children who used Mobile phones and watch television more often. Temper tantrums increased in children who spend more time using the screen.

Discussion

We got 76 responses from different regions like metro cities, and urban and rural areas. During the pandemic, children were confined at home and when the pandemic related restrictions were withdrawn, little kids continues to show maladjusted behaviour. In our study, 76.3% of parents reported some behavioural and emotional problems in their children. Previous studies conducted during the early phases of lockdown show various kinds of emotional and behavioural issues in children. ⁽¹²⁾

In our study, we collected the data when strict restrictions were withdrawn. The kids started to go outside, but their emotional issues persisted which is most notable at 6 to 10 yrs of age. Our study matches

with a study done on Chinese children which shows significant behavioural issues in a reopened school group. ⁽¹³⁾

In our study children from rural areas were affected less often. It is assumed that housing conditions during the isolation phases have a definite impact on children's mental health. When the children have more access to spend time in nature, they are more healthy both physically and mentally. It is supported by one previous study which was conducted during the early phases of quarantine in three different European countries ⁽¹⁴⁾. In rural areas people were more reluctant to maintain restrictions. So the children could go outside and could mix and play with their friends.

In our study, we noticed children showed behavioural problems in attention, restlessness, easy distraction, sleep disturbances, fearfulness, anxiety, aggression, disobedience, temper tantrum, nail-biting and increased television and mobile phone use. The previous studies also showed similar findings in behavioural issues ⁽¹⁵⁾. During the isolation phases when kids were detached from their friends, relatives found the only way of pleasure is watching TV or mobile phone use. In some families, domestic violence increased during the isolation phases which changed the children's behaviour ⁽¹⁶⁾.

Temper tantrums increased in children who watched mobile and television more often and in nuclear families. Few previous studies also show similar findings where there was a positive correlation between screen time and behavioural and emotional symptoms ⁽¹⁷⁾. During the time of home confinement, children had less chance to ventilate emotions. Their pent up emotions were channelized into unacceptable emotional expressions.

Conclusion

We studied behavioural problems during the early phases of school opening after about 2 yrs of home confinement during Covid 19 pandemic. Most of the parents reported that their children were having different sorts of behavioural problems during this period. The families of small children aged 6 to 10 yrs of age were facing various problems more often than children younger and older than this age group. The children of this age group showed problems more often as they were being isolated at home when they started to socialize and were in the discipline of school and society. Due to the sudden release of pressure of

discipline all routine activities got disturbed. They spent most of their time watching television and different activities on mobile phones.

Most behavioural issues occurred in nuclear families where children got less chance to play with the family members who also got emotionally disturbed by the uncertainty of future, health and economy. The small kids with pent up emotional stress often behaved in a way that was not acceptable to their families.

A significant number of children (53.9%) became anxious in various family and social circumstances. During the pandemic, children spent most of their time with their families. They did not have a chance to socialize or attend the social gathering which ultimately provoked anxiety in the environment which is not very familiar to them.

Conflict of Interest: Nil

Source of Funding: Nil

Ethical Clearance: Informed consent was obtained from each participant. Only willing parents participated in the study. They were assured to keep the information confidential. Respondents were asked that they have full right to withdraw from the study if they feel embarrassed to answer any question. Ethical clearance was not obtained for the study.

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Seroprevalence of Hepatitis C Virus in Blood Donors of Kathua District (J & K)

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Abstract

Background: Hepatitis C is a transfusion transmitted infection and leads to Chronic liver disease and cirrhosis in about 10 to 20 percent of infected individuals. **Aim:** To find out the seroprevalence of HCV in Blood donors of Kathua district and also see the trend of the HCV infection. **Methods:** Retrospective analysis of the number of HCV seroreactive donors over a period of 6 years was done from the records. **Results:** In the present study, the seroprevalence of HCV in blood donors was 0.7% (n=57) and the number of HCV seroreactive donors has increased gradually from 3 in 2016 to 27 in 2021. Maximum (73.68%) HCV seroreactive donors were in the age group of 18-30 years. **Conclusion:** The seroprevalence of HCV infection is increasing that too in the young population so for provision of safe blood, focus should be laid on the prevention of HCV infection at the community level.

Keywords: Blood Donor, Transfusion Transmitted Infection, Hepatitis, Seroprevalence

Introduction

Blood is a life saving resource but at the cost of risk of acquiring Transfusion Transmitted Infections via Blood Transfusion. Hepatitis C is one of the infections that can be transmitted via blood transfusion and primarily affects the liver leading to chronic liver disease and cirrhosis in about 10 to 20 per cent of those infected and can also lead to hepatocellular carcinoma (HCC). The worldwide seroprevalence of HCV varies from 0.4 to 19.2 per cent in blood donors and therefore the risk of transmission of HCV infection from donors who are in the window period is quite significant. In India, every blood unit is tested for HIV, HBV, HCV, malaria and syphilis. The main route of HCV transmission is blood-to-blood contact via intravenous drug abuse, unsterilized medical devices, needlestick injuries in healthcare, and Blood Transfusions. In addition, vertical transmission from mother to child can occur during birth^[1]

It is estimated that worldwide about 58 million people have chronic hepatitis C virus infection and the incidence of HCV is 1.5 million per year. According to WHO factsheet 2019, approximately 290 000 people died from hepatitis C, the most common cause being cirrhosis and hepatocellular carcinoma.^[2]

Our institute is a newly established Medical College and therefore the present study was conducted to find out the seroprevalence of HCV in blood donors of Kathua district as no such previous data was available from this area.

Materials and Methods

This is a retrospective observational study conducted in Blood Centre, GMC Kathua (J&K) over a period of 6 years from April 2016 to March 2022 to find out the seroprevalence of Hepatitis C infection in blood donors of this region and also to see its changing trend over the years.

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All the Blood Donors were screened according to the standard Blood Donor Questionnaire and blood was collected from those found fit. About 5 ml of blood sample was collected in test tubes at the end of donation and screened for the five mandatory markers i.e HIV, HBV, HCV, malaria and syphilis. HCV screening was done by Enzyme Linked Immunosorbent Assay (ELISA) method using ErbaLisa HCV Gen 3 kits.

Results

Out of the total 8192 blood donors, 8127 were males (99.21%) and 65(0.8%) were females. 57 blood donors were found reactive for HCV. In the present study, the seroprevalence of HCV in blood donors was 0.7% and the number of HCV seroreactive donors has increased gradually from 3 in 2016 to 27 in 2021 (Table 1) Maximum(73.68%) HCV seroreactive donors were in the age group of 18-30 years (Table 2).

Table I. Number of HCV seroreactive donors

Year	Total number of donors tested	Number of HCV seroreactive donors	HCV seroreactive donors(%)
2016	956	3	0.31
2017	1008	1	0.1
2018	993	3	0.3
2019	1194	10	0.84
2020	1771	13	0.73
2021	2270	27	1.19
Total	8192	57	0.7

Table II. Age distribution of Seroreactive HCV donors

Age (yr)	Total number of donors	(%) of HCV seroreactive donors
18-30	42	73.68
31-40	13	22.8
41-50	1	1.75
51-60	1	1.75

Discussion

Maximum donors in our study were males 8127 (99.2%). All HCV seroreactive donors were also males which is comparable with studies of Dowerah et. al^[3] where male donors showed greater seropositivity than female donors.

In our study, HCV seroprevalence of 0.7% was found in blood donors which is comparable to study done in Kaur et.al.(0.77%)^[4] & Pahuja et.al. (0.66%)^[5] in

Punjab & New Delhi respectively but higher than the retrospective studies done in Jammu region i.e Sidhu et.al. with HCV seroprevalence of 0.2% and 0.17% in replacement and voluntary donors respectively^[6] & Arora et. al. reported a seroprevalance rate of 0.075%^[7]. This difference in seroprevalence rate could be due to different sociodemographic variables, lack of awareness about blood safety & high risk behaviour.

Among studies done in New Delhi, Makroo et.al. reported seroreactivity for anti HCV as 0.39%^[1] Pahuja et.al. as 0.66%^[5], Jain et.al. as 1.57%^[8]. Kaur et.al. showed high HCV seropositivity of 2.44% in punjab^[9] & Arora et.al. 1.0% in Haryana^[10]. Other studies have shown variable results, Khaneta et.al. HCV 1.04% in Mumbai^[11], Kumar et.al. 0.28% in Wardha, Maharashtra^[12], Karmakar et.al. 0.59% in Kolkata^[13] & Dowerah et.al. 0.1% North East^[3]

There was an increasing trend in HCV seroprevalence over a period of 6 years which is consistent with studies by Kumar et. al^[12], Saini et. al^[14], Ram et. al^[15], Patel et. al^[16].

In the present study, 73.68% seroreactive donors were in the age group of 18-30 years as also reported by Makroo et.al.^[1]. In another study conducted by Karmakar et.al al^[13] more than two-third seropositive (69.36%) were in the age group of 21-40 years of age.

The rising seroprevalence that too in the young population is a matter of concern for Blood Centres as it shrinks the donor pool. India is a developing country and unlike the western countries, is far away from the universal implementation of NAT testing in all Blood Centres of the country, so for minimizing the chances of HCV transmission from donors who may be in the window period, we still have to depend on vigilant history taking and identification of blood donors with high risk behavior. Thus we should put emphasis on the need of a trained and efficient Counselor in every Blood Centre. Healthcare authorities should also focus more on the prevention of the disease by creating awareness as there is no vaccine available till date and it is an ailment with high chronicity and thus increased morbidity and mortality in our population.

Conclusion

The seroprevalence of HCV infection is increasing that too in the young population so for provision of safe blood, focus should be laid on the prevention of HCV infection at the community level.

Ethical Clearance

Taken from Institutional Ethical Committee(IEC), GMC Kathua

Conflict of Interest: NIL

Funding: SELF

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Predicting and Identifying Postpartum Blues may be the key to implementing Preventive Approaches in Perinatal Mental Health: Findings from a Prospective, follow up Study in India

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Abstract

Objective: The present study aimed to estimate the prevalence of post-partum blues and investigate the correlates of the disorder. An additional objective was to study the correlation of blues with subsequent development of psychiatric disorders.

Methods: A prospective study design was adopted and a total of 73 women were included. Those who developed maternity blues were compared with those who hadn't on multiple socio-demographic, obstetric, psychiatric and psychosocial variables.

Results: The prevalence of post-partum blues was estimated to be 28.8 %. Of the women with blues 14.2% went on to develop post-partum depression whereas none of the women who had not experienced blues developed depression. It was found that there was a significant correlation between post-partum blues and the following variables in decreasing order of significance: poor marital quality, pre-menstrual dysphoric disorder, past history of psychiatric illness, higher scores on stressful life events in the past one year, fear of labour and upcoming events, perinatal complications to the mother, unplanned pregnancy and family history of psychiatric illness.

Conclusions: The study highlights the importance of post-partum blues as these women are at higher risk of developing post-partum depression. Psycho-social variables that can contribute to the development of blues such as stressful events experienced during pregnancy and poor marital quality should be assessed and interventions planned accordingly to reduce the impact of these on women.

Keywords: maternity blues, post-partum, maternal mental health

Introduction

Post-partum blues refers to the tearfulness, irritability, hypochondriasis, sleeplessness, impairment of concentration, headache that occurs in the 10 days or so postpartum. A peak in symptoms occurs around the fourth to fifth day after delivery, coinciding with maximal hormonal changes. A recent systematic review and meta-analysis estimated the prevalence of blues as 39.6 % in 5667 women.¹ Predictors of postpartum blues from existing literature are a previous history of post-partum depression and lower education level whereas normal delivery has been found to be protective.² A study from Japan found that availability of social support and living with parents following delivery negatively

predicted blues.³ As many as 20 % of women with blues go on to develop post-partum depression.⁴ In India, to the best of our knowledge there has been only one previous study⁵ that has investigated the phenomenon of blues and there is a paucity of literature on this topic worldwide. This study was therefore planned to further understand maternity blues so that vulnerable women can be identified early and pre-emptive measures taken so that the downstream path to post-partum depression and its devastating consequences can be potentially averted.

Materials and Methods

This was a prospective, follow up study and 73 women who delivered a healthy baby at Haji

Abdullah Municipal Maternity and Child Health Centre, Udupi were included. Informed consent was taken from the participants. The study was approved by the Ethics Committee of Kasturba Medical College, Manipal.

Instruments used

1) General Health Questionnaire- 5⁶

This is a 5 item self-rated questionnaire widely used as a screening tool for mental disorders. The cut-off score of 1 produced optimum indices of validity.

2) Blues Questionnaire⁷

It is a self-rated 28 items self-rated questionnaire valid for detecting and measuring specific brief psychological disturbances occurring in a few days after childbirth. For the calculation of the cut-off point for severe maternity blues the authors suggest that the mean peak score of all women should be used. The highest score on any of the days of observation is considered the peak score for each woman.

3) The Marital Quality Scale⁸

It is a multidimensional measure of marital quality that gives global and specific scores. It is a 50 item self-report standardized scale. Higher scores are indicative of poorer quality of married life.

4) The Lubben Social Network Scale⁹

It is a self-report 10 item scale to assess the level of social support available to a person. The minimum score is 0 and maximum is 50, with higher scores indicating greater level of social support.

5) Presumptive Stressful Life Events Scale (PSLES)¹⁰

The PSLES comprises 51 life events relevant to the Indian setting which is standardized for 2 frames: past 1 year and lifetime. The scores can be calculated according to two formats- number of life events and weighted stress scores.

6) MINI PLUS- International Neuro-Psychiatric Interview.¹¹

The MINI Plus is a short structured diagnostic interview. A total of 19 psychiatric disorders are included. The instrument has a good inter rater and retest reliability.

Procedure

The first assessment was carried out in the third trimester after admission for safe confinement. Scales that were administered at this time were the General information proforma, GHQ-5, Marital Quality Scale, The Lubben Social Network scale, Presumptive Life Events Scale. All women who scored 2 or above on GHQ-5 were then interviewed using MINI-PLUS and those with syndromal psychiatric disorders were excluded at this point. For those women who did not have any psychiatric illness following interview with MINI-PLUS, Blues Questionnaire was administered on the 5th day following delivery. A follow-up assessment was carried out at 6 weeks using GHQ-5 and MINI-PLUS to look for development of post-partum psychiatric disorders with the main focus being identifying women with post-partum depression and anxiety.

Statistics

The participants were divided into two groups for statistical analysis. The first group comprised of women with post-partum blues and the second group without post-partum blues. Data was analyzed descriptively to determine the basic characteristics of the sample like age, parity, type of delivery. Independent t-test was used to compare the groups on continuous variables for data that was normative like social network scale, marital quality scale. For comparing the groups in case of life events score, Mann Whitney U test was used as the data was non-normative. The Chi-square test was used to know if there was a significant association between the two groups on categorical variables such as socio-demographic details, obstetric history, past and family history.

Results and Discussion

A total of 73 women completed both the baseline assessment and the Blues Questionnaire. As suggested by the authors, the mean peak blues score of all the women was calculated which was 4.3, hence the cut-off for diagnosing maternity blues was taken as 5. A total of 21 women (28.8 %) were found to have blues. A 6 week follow up was carried out and a total of 70 women were interviewed. Four women were lost to follow-up at this point.

Prevalence of Post-Partum Blues

Prevalence of post-partum blues was found to be 28.8 %. In most prior studies the prevalence quoted is between 40-60%^{12, 13} with the lowest prevalence rates of 15.3% being reported for Asian countries like Japan.¹⁴ The present study also has a relatively low prevalence rate compared to Western authors and is more proximal to the rates reported in Japan. A similar socio-cultural milieu in both countries where women return to their maternal home for delivery and have extensive social support in view of living in large joint families¹⁴ may be the reason for this.

Socio-Demographic Details:

Variable	Group	Postpartum blues present n(%)	Postpartum blues absent n(%)	Total	Chi square χ^2	p
Planned pregnancy	Yes	15(20.5%)	49(67.1%)	64(87.6%)	7.196	.007**
	No	6(8.2%)	3(4.1%)	9(12.3%)		
Antenatal complications	Hypertension	2(2.7%)	4(5.4%)	6(8.2%)	1.342	.719
	Diabetes	0(0%)	3(4.1%)	3(4.1%)		
	Others	2(2.7%)	4(5.4%)	6(8.2%)		
	None	17(23.2%)	41(56.1%)	58(79.4%)		
Delivery Type	Normal	11(15.06%)	29(39.7%)	40(54.7%)	.069	.792
	Caesarian	10(13.6%)	23(31.5%)	33(45.2%)		
Perinatal Complications	Post-partum hemorrhage	1(1.4%)	0(0%)	1(1.4%)	10.479	.005**
	Infection	3(4.1%)	0(0%)	3(4.1%)		
	None	17(23.2%)	52(71.2%)	69(94.5%)		
Parity	Primi	13(17.8%)	36(49.3%)	49(67.12%)	.930	.628
	Second	8(10.9%)	15(20.5%)	23(31.5%)		
	Third	0(0%)	1(1.4%)	1(1.4%)		
Fear of labor and upcoming events	Yes	16(21.9%)	20(27.3%)	36(49.3%)	8.519	.004**
	No	5(6.8%)	32(43.8%)	37(50.6%)		

** $p < 0.01$

The present study found that unplanned pregnancy ($p=0.007^{**}$), fear of upcoming events in late pregnancy ($p=0.004^{**}$), perinatal complications in the mother ($p=0.005^{**}$) significantly predicted the development of post-partum blues. This would indicate that it is necessary to ask expecting mothers about whether the pregnancy was planned or not, and address any anxiety related to the same to reduce their vulnerability. Similarly, towards the end of pregnancy, sensitizing obstetricians about the importance of asking mothers

The mean age of the sample was 25.8 years (S.D 8.1). Majority of the women (78.08%) belonged to an extended family setup. When the socio-demographic variables were compared between women with blues and those without, no significant difference was found between the two groups.

Obstetric Variables:

Obstetrics variables pertaining to mother as predictors of blues

Table-1

about their thoughts and emotions regarding the upcoming delivery and clarifying any doubts they may have may go a long way towards allaying their anxiety which in turn may prevent the development of blues.

Table 2: Obstetrics variables pertaining to child as predictors of blues

Variable	Group	Postpartum blues present n(%)	Postpartum blues absent n(%)	Total	Chi square χ^2	p
Gender of the child	male	8(10.9%)	25(34.2%)	33(45.2%)	.602	.438
	female	13(17.8%)	27(36.9%)	40(54.7%)		
Gender expected as	yes	18(24.6%)	46(63%)	64(87.6%)	.104	.747
	no	3(4.1%)	6(8.2%)	9(12.3%)		
Postnatal Complications	yes	5(6.8%)	4(5.4%)	9(12.3%)	3.595	.058
	no	16(21.9%)	48(65.7%)	64(87.6%)		

In our study the gender of the newborn, parity, gender of the child contrary to expectation and type of delivery was not found to have any significant association with the development of blues.

The finding that the gender of the newborn was not found to predict the subsequent development of blues is in contrast to another study from West

Nigeria by Adewuya¹⁵ where the birth of a female child had been shown to contribute significantly towards development of blues. Such a finding may reflect increasing levels of awareness and a gradual shift of the mindset at least in parts of our country from a conservative, patriarchal outlook to one that is more gender-neutral.

Table 3: Past and family history as predictors of blues

Variable	Group	Postpartum blues present n(%)	Postpartum blues absent n(%)	Total	Chi square χ^2	p
Past History of Mental Illness	yes	6(8.2%)	2(2.7%)	8(10.9%)	9.372	.002**
	no	15(20.5%)	50(68.4%)	65(89.04%)		
Family history of mental illness	yes	4(5.4%)	1(1.3%)	5(6.8%)	6.876	.0098**
	no	17(23.3%)	51(69.8%)	68(93.1%)		
Pre-menstrual dysphoric disorder (PMDD)	yes	7(9.5%)	2(2.7%)	9(12.3%)	12.033	.001***
	no	14(19.1%)	50(68.4%)	64(87.6%)		

** $p < 0.01$

*** $p \leq 0.001$

In our study, amongst those women with a past history of mental illness, a greater proportion went on to develop blues and this association was significant. ($p = 0.002^{**}$) Although history of several types of mental illnesses were enquired into, all the women with blues having significant past psychiatric history reported having experienced depression. Previous studies have also found a link between past history of depression and blues. Stein¹⁶ reported that the most severe symptoms in the first postpartum week occurred in women with a history of "neurotic

depression" or a previous postnatal depressive episode. O'Hara et al.¹⁷ found that women with blues were more likely to report depressive symptoms during pregnancy. This points to the importance of enquiring into the past history of psychiatric disorders especially depression during antenatal visits.

We also found that past history of pre-menstrual dysphoric disorder significantly predicted the development of post-partum blues. ($p = 0.001^{***}$). Earlier studies have also consistently reported the

link between PMDD and post-partum blues^{18,19,20}. There is a massive reduction in levels of circulating estrogen following delivery that may mimic the sort of estrogen fall that occurs during the pre-menstrual phase. This would explain why women who have experienced depressive symptoms during the latter may also develop maternity blues after having a baby.

A majority of those with family history of mental illness in a first degree relative went on to experience blues and this relationship was significant. (p=0.009**). This finding has been replicated in previous studies.^{17,18}

Table 4: Social support as a predictor of blues

Variable	Postpartum blues	Mean	SD	t	df	p
Social Support	yes	26.83	6.91	1.56	30	.128
	no	30.25	5.36			

There was a difference in the mean scores on Lubben’s Social Network Scale in women with blues (Mean 26.8, SD 6.91) and those without (Mean 30.25, SD 5.37) with higher scores indicating higher level of social support in women who did not develop blues. However, this association was not significant.

Table 5: Marital quality as a predictor of blues

Variable	Postpartum blues	Mean	SD	t	df	p
Marital quality	Yes	90.23	24.93	3.73	31	.001***
	No	66.05	12.14			

***p<0.001

On the Marital Quality Scale, a significant difference (p=0.001***) was seen in the mean scores of women in the group with post-partum blues and those without. When the mean scores were compared across the groups, the women with blues had higher scores (Mean 90.23, SD 24.93) than those without blues (Mean 66.05, SD 12.14) indicating poorer quality of marital life. One previous study has found an association of reported discontent with the quality of the marital relationship and development of blues.²¹ An Indian study⁵ had also found that poor marital relationship was found to significantly predict blues. Therefore, given that marital quality has been found to consistently predict blues, it is important to enquire about the health of the marital relationship when a woman is pregnant. This can even be gauged informally by observing how involved the lady’s partner is during antenatal visits. Emphasizing to expecting fathers how importance

their support is during the post-partum period can go a long way to improving a mother’s psychological well-being which will have a positive impact on their infant’s health and development as well.

Table 6: Stressful life events as a predictor of blues

Variable	Postpartum blues	Mean Rank	Mann Whitney U	Z, p value
Stressful life events	yes	47.62	323.000	Z= -2.905, p=.004**
	no	32.71		

**p<0.01

Women who developed blues had higher weighted scores (47.62) on stressful life events in the past one year compared to those who did not develop blues (32.71) and this difference was significant. (p=0.004**). Financial difficulties were the most common stressor reported. This echoes the findings of O’Hara et al.¹⁷ who found that women who had more severe blues were more likely to have experienced negative life-events during pregnancy than those who did not. Economic insecurity specifically has been found to be related to the development of blues in a recent study from Greece.²²

Outcome of Post-Partum Blues

In our study it was found that 21 women developed blues out of a total of 73 and of these, 3 women went to develop major depression that was diagnosed at 6 weeks post-delivery. None of the women who had not experienced blues developed depression later on. Thus, in our sample 14.2 % of women with blues went on to develop depression. Previous studies have reported that approximately 20% of women suffering from maternity blues are diagnosed as having major depression in the first year following delivery.¹⁷ The fact that our figure is slightly less can be explained by the fact that in our study the follow-up was limited to 6 weeks’ post-partum. A longer duration of follow-up may have been ideal to look for any such association.

Conclusions

In conclusion, our study was a prospective follow-up study that estimated the prevalence of post-partum blues to be 28.8 %. Of the women with blues 14.2% went on to develop post-partum depression whereas none of the women who had not experienced blues developed depression. The study highlights the importance of early post-partum mood changes or post-partum blues and the need to identify these

women as they are at higher risk of developing postpartum depression. Some of the variables identified as risk factors such as history of pre-menstrual dysphoric disorder and past history of mental illness should be carefully enquired into during routine antenatal assessments. Psycho-social variables that can contribute to the development of blues such as stressful events experienced during pregnancy and poor marital quality should also be assessed and interventions planned accordingly to reduce the impact of these on the women. It is hoped that more studies of this kind will further expand on this important area and aid in formulating comprehensive management plans for women's mental health in pregnancy and the puerperium.

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Conflict of Interest - Nil

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Forecasting Multivariate time-series data using LSTM Neural Network in Mysore district, Karnataka

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Abstract

Advanced and precise forecasting of infectious diseases plays a critical role in planning and providing resources effectively. Time series forecasting for non-linear issues are accessible using deep learning techniques. The association between climatic parameters and dengue occurrences was investigated in this work, and a forecasting model was constructed using a deep learning approach called long short-term memory (LSTM). Univariate and multivariate LSTM time series forecast models were developed using meteorological and dengue incidence data from January 2006 to December 2019. For univariate data, the Pycharm/Google Colab platform was implemented, as the deep learning framework Keras, which is one of the models in the machine learning library based on Tensorflow. The Pandas Python package with built-in support for time series data was used for multivariate data. The final model was chosen using the mae loss and the Adam optimizer. Once the model had been fixed, predictions were made using the model. The research showed that the meteorological factors such as maximum temperature at lag 3, minimum temperature at lag 3, maximum vapour pressure (lag 0,1 and 2), minimum vapour pressure at lag 1, and vapour pressure daily mean at lag 0,1,4 are all significant predictors of dengue along with RMSE value of 1.121. The results indicated that LSTM network has higher prediction accuracy than any other traditional forecasting methods. Timely management of seasonal diseases such as dengue along with meteorological parameters can predict epidemics in the future.

Keywords: Dengue, LSTM, Prediction, Meteorological variables, RMSE

Introduction

Infectious diseases which are caused by agents, most probably microorganism impairs human health. Infectious diseases occurring either naturally or purposefully instigated biological threats bear intensifying risk to trigger disease, disability, and death. Infectious diseases are a worldwide threat that transcends political and geographic boundaries

such that every individual across the globe is at risk⁽¹⁾. International Organization for Migration (IOM) further reports that improved global health can be achieved through evidence from the studies that advise on how to reduce the burden of disease and disability due to infectious diseases in low-middle-income or developing countries, thus eliminating the emerging threats of infectious diseases on global health. Dengue is one of such infectious diseases

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which is increasing and has doubled over the last years. It is more prone in tropical and subtropical countries ⁽²⁾. For understanding its transmission to humans by a microbe, studying climate change and its effects to the disease is necessary. Temperature, rainfall, humidity, vapour pressure, sunshine are the significant meteorological factors for the spread of the disease. Knowing the relationship between variation in these climatic factors and dengue incidences helps to predict the disease outbreak accurately. Machine learning along with deep learning techniques are used as the powerful predictive techniques to know the influence of climatic factors on dengue incidences ⁽³⁾.

Fang et al., (2020) studied the relationship between meteorological elements and air quality by using LSTM neural networks for Beijing data. In his studies, he observes that the LSTM models predicts better as the model with better accuracy and robustness and thus he concludes that LSTM models can be used as prediction methods⁽⁴⁾. Chaturangi et al., (2021) describes the machine learning models such as LSTM to analyse dengue incidences along with weather and population density to predict and forecast the dengue incidences ⁽⁵⁾. In his study, he observes and predicts the incidence of dengue with a good precision level. The recent advances in deep learning have helped the healthcare industry. Various applications have been implemented and commercialized which incorporated AI-driven component that assists doctors and healthcare providers in achieving accurate diagnosis ⁽⁶⁾.

In this study, we have applied LSTM models taking into account the univariate and multivariate time series infectious data along with meteorological parameters. LSTM are distinct type of RNN capable of handling long-term dependences. Machine learning is increasingly being utilized for linear and non-linear time series models to improve predictions. RNN, one of the machine learning models, works with time series to construct network structures, making it more adaptable in time series data analysis. The LSTM model is one of the RNN variations that address the problem of RNN gradient disappearance and explosion, allowing damaged neural networks to be utilized for long-term time series forecasting. LSTM models have turned into a vital model for forecasting time-series and are suitable for situations involving sequences with autocorrelation.

LSTM Architecture

RNN is one of the powerful techniques for deep neural network that plays a significant role in processing long-term dependent time-series data. Hochreiter and Schmidhuber (1970) proposed the problem of gradient descent for long-term dependence is handled utilizing the LSTM neural network model ⁽⁷⁾. LSTM can encode and decode time series data; hence memory units can be used in place of hidden layer neurons in RNNs to actualize previous knowledge from memory. One or more memory cells, as well as three door controllers, are found in each memory unit.

LSTM have chain like structure. The cell state, which is a kind of conveyor belt that runs straight down the entire chain, is a key structure of LSTM. The ability of LSTM to add or subtract information from the cell state is controlled by a structure known as gates. Gates are the one which allows information through. These gates are made up of a sigmoid neural net layer and a point wise multiplication operation sigmoid⁽⁷⁾. layer's outputs are integers between 0 and 1, indicating how much of each component should be processed. A value of zero indicates that 'nothing should be allowed through;' whereas a value of one indicates that 'everything should be allowed through' ⁽⁸⁾. As a result, the LSTM contains three gates to protect and control the state of the cell.

The Fundamental building of RNN and LSTM are alike that it has a chain structure. LSTM is not based on single network-layer and four modules interact with each other.

LSTM Time Series Network

In sequence to sequence learning, RNN models are specialists at mapping an input sequence to an output sequence. The length of the input and output does not have to be the same. Two RNNs, such as LSTMs, are used as a sequence to sequence model. These are encoders and decoders, respectively ⁽⁹⁾. The encoder's job is to convert a given input sequence into a context vector, which is a fixed length vector. To forecast the output sequence, the decoder is given the context vector as input and the final encoder state as a starting decoder state. Speech recognition, language translation, time series forecasting, and other applications use this form of sequence to sequence learning.

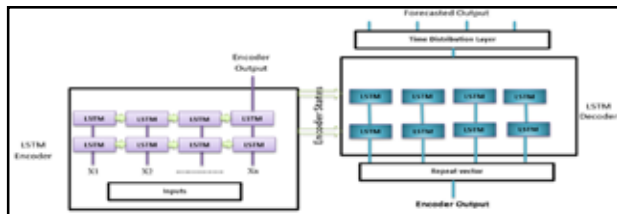


Figure 1: Multivariate Multistep forecasting time series data using stacked LSTM sequence to sequence auto encoder in tensorflow/Keras

Need for applying LSTM

LSTM can automatically handle long and short term dependencies and it can be used when there is a presence of multivariate time series data. In our study we have used LSTM models for uncombined (Without meteorological parameters) and combined (With meteorological parameters) to predict and forecast infectious diseases.

Objectives

The objective of LSTM is to capture temporal dependency in data and preserves back propagated error through time and layers. It is also used to compute new states in the memory cell given old ones.

Data and Methodology

Data

Data of monthly incidence of infectious diseases (dengue) were used from the year 2006-2019. We have used natural logarithm for all the diseases. Since some of the observations are zero which means no case of the infectious diseases are added by 5 and taken natural logarithm (ln). Therefore we have considered logarithm for the dengue incidences.

Data Preprocessing

To fit the data we employed a three-layer stacked LSTM. The LSTM model is separated into three periods for training and prediction: training period (12*5), testing period (12*2), and span period (12*1).

Data Normalization

Machine learning algorithms such as Tensorflow and Keras needs the data to be normalized. Here we have used minmaxscaler to normalize the data

Univariate LSTM (uncombined meteorological variables)

The Environment pycharm/Google colab platform, the deep learning framework are used in Keras which is one of the models in machine learning library based on Tensorflow, Keras are considered to be one of the high-level neural networks which are edited by python. In this scenario, 80% of the data was employed as a training set, with the remaining 20% being used as a testing set.

Multivariate LSTM (combined meteorological variables)

For multivariate data the Pandas library in Python with built-in support for time series data is used. Pandas represented the time series datasets as a series. The read csv() method is the most important function in Pandas for loading CSV data. We have run the algorithm in google colab platform. We have considered combined exogenous variables along with infectious disease data and performed spearman's correlation analysis.

The infectious illnesses dataset must first be prepared for the LSTM. The input variables must be normalized and the dataset must be viewed as a problem of supervised learning. The supervised learning task was posed to forecast infectious diseases based on the previous time step's climatic circumstances. The series to supervised () function was used to modify the dataset. To create a model for LSTM on multivariate input data, we divided the prepared dataset into train and test sets. The input and output variables were then extracted from the training and validation sets. Finally, the inputs (X) are molded into the [samples, time steps, features] 3D structure that LSTMs expect. The LSTM has 50 neurons in the first hidden layer and 1 neuron in the output layer for anticipating infectious diseases. The input form will be a single time step with eight attributes. The Mean Absolute Error (MAE) loss function and the Adam optimizer are used.

The model will be suitable for 50 training epochs with a batch size of 72. Keras resets the internal state of the LSTM at the conclusion of each batch. Finally, the fit() function's validation data parameter is set to the training and test loss during training. At the end of the run, both the training and test losses are shown. After the model has been fitted, the prediction for the complete test dataset is derived, and the forecast is

mixed with the test dataset and the scaling is inverted. An error score for the model was produced using forecasts and actual values in their original scale, i.e., the Root Mean Squared Error (RMSE), which provides error in the same units as the variable is calculated.

Cross correlation

It was performed to identify the significant lagged meteorological parameters for the incidences of infectious diseases.

Software’s used

R, Python, keras and tensor flow programming language are used to build LSTM model and stepwise LSTM package was adopted. In this R is used for univariate LSTM with keras and Tensorflow, whereas Python is used for multivariate LSTM with keras and Tensorflow.

Results

Univariate LSTM models for dengue cases

To predict incidence of dengue, we used LSTM model which was developed by using Keras, connects Tensor Flow in R backend. Using the rsample package’s rolling forecast origin resampling it performs Time Series Cross Validation with Back Testing. The trend value and forecasted value of dengue for the year 2008-2019 using keras LSTM deep learning is shown in the **Figure 2**.

Figure 2: Fitted and forecasted values of the dengue



for the year 2008-2019

Visualization was done through Sampling Plans and Results Prediction with ggplot2 and cowplot by Keras Stateful LSTM backtested Predictions.

Data is split into train set and test set data in 80% and 20% ratio.

The **Figure 3** shows the data splits into slice 1 and 2.

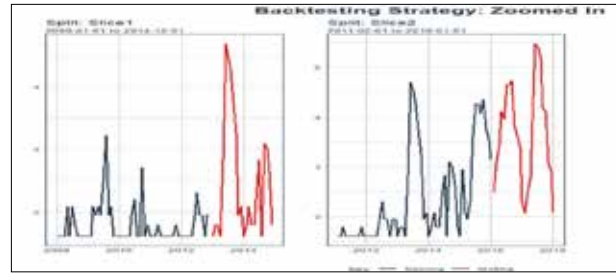


Figure 3: Back testing strategy shows for the year 2008-2014 as slice 1 and for the year 2012-2018 as slice 2

From the **Figure 3**, Slice 1 shows the predicted value for 2014 by using 2008-2012 data and Slice 2 shows the predicted values for 2018 by using 2012-2016.

The Autocorrelation plot was obtained for Data set of dengue cases

Algorithm of deep learning estimates accurately predicted dengue cases. The backtested Keras Stateful LSTM Model plot was constructed.

Table 1: RMSE value based on different slices of data of dengue cases.

Sl. No	Slice No	RMSE	Data
1	1	1.2	2010-2015
2	2	1.3	2011-2019

The RMSE (or another equivalent statistic) average and standard deviation are a helpful approach to compare the performance of different models. The results obtained by using LSTM model are presented in Table 1. We observe that the mean of the above slices of dengue cases is 1.25 and its standard deviation is 0.05.

From the **Figure 4**, we observe the trend value and forecasted value for dengue cases using Keras LSTM deep learning.

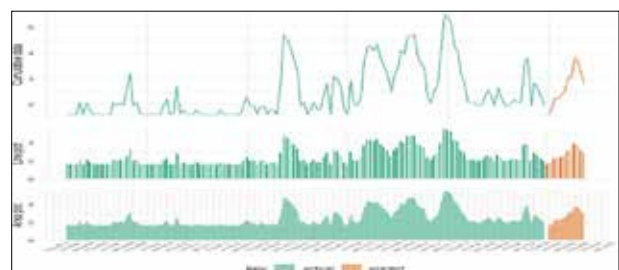


Figure 4: Trend value and forecasted value for dengue cases using Keras LSTM deep learning

We also observed that the Observed and Predicted incidences of dengue that is R^2 value is exactly equal to 1 indicating that all the values are falling on the regression line indicating that the fitted model is best suited for the observed data.

Multivariate LSTM models for dengue cases

To construct multivariate LSTM, we have taken logarithm (ln) dengue data which is taken as dependent variable or targeted variables. Exogenous variables i.e., meteorological variables are considered to be independent variables or features in machine learning language. There are 144 observations in the dengue cases. The whole dataset was split into training and tested data. Correlated exogenous variables are considered along with dengue cases which are entered as columns. Meteorological variables maximum temperature at lag 3, minimum temp₃, maximum vapour pressure (lag 0,1 and 2), minimum vapour pressure at lag 1 and vapour pressure daily mean at lag 0,1,4 are significant predictors for dengue. These series are then converted to supervise learning. Depending on the amount of the data, automatically training and testing data will be considered. Here number of observations is equal to number of hours multiplied by number of features. The next step is to reshape the input to a 3D format that is samples, time steps and features. In order to design the network, epoch will be set 50. Final model will be selected based on mae loss and adam optimizer. Once the model is fixed, prediction will be done based on the model. RMSE value 1.121 was obtained for the dengue.

Discussion and Conclusion

In the current study, a univariate and multivariate LSTM was considered for dengue incidences. The developed model estimates by using existing data of a given month, the number of cases can be estimated with minimal error. Our study has considered the dengue incidence along with 19 meteorological factors to know the impact of climatic change on infectious diseases. We have used machine learning algorithm i.e., Long Short-Term Memory (LSTM) for the infectious diseases for combined with meteorological parameters (multivariate) and uncombined (univariate) data. Based on the results compared with RMSE value for both univariate and multivariate LSTM models, RMSE value for multivariate LSTM is less, indicating that the prediction of accuracy is

more when added with exogenous meteorological variables. Further based on Univariate LSTM, we observed that R^2 value is exactly equal to one for dengue incidences indicating that the predicted values fit the observed data exactly and RMSE value for univariate data was 1.25 and for multivariate LSTM was 1.121. Our results indicated that compared to univariate LSTM, multivariate LSTM that is when meteorological variables are added, improves the accuracy of LSTM. The R square value for univariate LSTM was equal to one for dengue.

LSTM models require significantly less time to train in terms of accuracy and computational, and once trained, constant prediction can be estimated. Therefore LSTM models are suitable for predicting the monthly incidence of dengue in Mysuru district, Karnataka.

Ethical clearance - Taken from JSSMC/IEC/2308/19NCT/2019-20 dated on 3/9/2019 from JSS Medical College. IE Committee.

Source of funding- No funding has been received.

Conflict of Interest - Nil

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Evaluation of Vitek2 and Colistin broth disk elution test in comparison with Micro broth dilution for Susceptibility testing of Colistin among Carbapenem Resistant Enterobacterales.

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Abstract

Colistin is the last expedient for treating the infections caused by Carbapenem resistant Enterobacter ales (CRE). Expanding usage of colistin as led to development of Colistin resistance. This urges for a need of reliable and accurate testing method that can be adopted as routine for susceptibility testing of Colistin. The innate cationic property of colistin molecules is associated with complexities. Hence evaluation of testing method is needed for detection of colistin resistance. Present study is done to evaluate the results yielding from Vitek2 and CBDE in comparison with rBMD. About 200 CRE isolated from clinical specimens were tested, results of Vitek2, CBDE was compared with rBMD. In comparison with BMD Categorical agreement (CA) of Vitec 2 was 83% with major error of 17% .CA of CBDE was 99% with 1% of very major error. Since the resistance to colistin is increasing accurate reporting of Colistin MIC by a validated method becomes important. So, we would recommend CBDE for routine testing of Colistin susceptibility.

Keywords: Carbapenem resistant Enterobacterales, Colistin broth disk elution, rBMD- reference broth microdilution, Categorical Agreement.

Introduction

Emergence of MDR (Multidrug resistant) microorganisms especially Carbapenem resistant Enterobacterales (CRE) are alarmingly being reported worldwide. Because of the restricted treatment choice, it's been challenging to treat the infections caused by these CRE organisms. Polymyxins (colistin or Polymyxin B and Polymyxin E) antimicrobials remain the last resource for treating the infections caused by these Carbapenem resistant gram-negative bacteria ⁽¹⁾. Acquired resistance to these polymyxins was reported less in the past but in the present situation because of its expanding usage both clinically and non -clinically resistance to colistin is more frequently being reported ⁽²⁾. Hence it becomes

crucial that clinical microbiology laboratories should be able to appropriately identify organisms which are resistant to colistin, so that such kind of drugs are cautiously used for treatment ^[3,4]. This further signifies the need of requirement of a standardised antimicrobial susceptibility test (AST) for colistin, that helps for both patient-care and for surveillance purposes. Presently Broth Micro dilution (BMD) is the only standard reference method for colistin AST according to CLSI [5] CLSI is also evaluated other alternative MIC based methods such as colistin broth disk elution test (CBDE) & colistin agar test (CAT) as accurate as reference BMD ^[4]. Although BMD is a reference method it is difficult to be done on routine basis because of its laborious nature. In

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most of the laboratories, MIC of colistin is determined and reported by Vitek-2 automated antibiotic susceptibility test (AST) system, even though it is not an approved method by CLSI [5]. In view of this present study was taken up to evaluate the results of Vitek-2, CBDE in comparison with rBMD so that we can analyse if we can continue reporting Colistin MIC from Vitek-2 AST or adapt new test like CBDE.

Materials and Methods

A cross sectional analytical study was conducted in department of Microbiology, JSS medical college and hospital, about 200 clinical isolates yielded from routine clinical specimens, such as blood, endotracheal aspirate, sputum, sterile fluids (bile, ascitic fluid, CSF) and exudate specimens which were Enterobacterales & Carbapenem resistant were included in the study. Other organisms from the Enterobacterales which are intrinsically resistant to colistin such as *Proteus*, *Serratia*, *Morganella* and *Providencia* were excluded, also clinical isolates from stool samples & clinical isolates isolated from same patient were also excluded from the study. The study involved the specimens that were collected from the samples that were routinely received in Microbiology laboratory for evaluation & since no intervention was needed informed consent was not taken, by application of statistical tool 200 clinical isolates which were resistant to Carbapenem were subjected to broth micro dilution (BMD), colistin broth disk elution and vitek-2 AST system. Results were noted and analyzed. Reference in-house BMD was performed according to standard operating protocol issued by National Programme on Antimicrobial Resistance Containment National Centre for Disease Control, India, August 2020, Cation adjusted Mueller-Hinton broth (90922) was used for performing CBDE, discs were procured from Oxoid™ & test was performed according to CLSI 2020, M100 document using appropriate control strains. Thermo Scientific company and colistin sulphate salt (C4461) was procured from Sigma Aldrich company. If susceptibility result of the isolate done by the test

method (CBDE and vitek-2) is same as the reference standard method (BMD), the test method is said to be categorically agreed with that of the reference method, if not it is categorically disagreed. Again Categorical disagreement is classified into Very Major, Major and Minor errors. If the test method shows sensitive category and the reference method is resistant, it is very major error. If the test method shows resistant category and the reference method is sensitive, it is major error. If the test method is intermediate category and the reference method is either sensitive or resistant category, it is said to be Minor error. As EUCAST does not give any intermediate breakpoint for colistin, Minor errors is not applicable for colistin.

Results

Among 200 clinical isolates the most common organism isolated was *Klebsiella pneumoniae* (112), followed by *Escherichia coli* 71 and *Enterobacter cloacae* 13 (Table 2). Colistin MIC distribution of 200 clinical isolates by reference BMD method. 23 isolates showed resistance and organism that exhibited highest resistance was by *Klebsiella pneumoniae* (Table 3). 92 isolates showed MIC value of ≤ 1 by both CBDE & MBD, 11 isolates showed MIC of 2 in both CBDE and reference BMD, 21 isolates showed MIC of ≥ 4 in both CBDE & reference BMD, 2 isolates showed MIC of 2 in CBDE & 4 MIC value in reference BMD which accounts for very major error. Categorical agreement of CBDE with respect to reference BMD was 99% (Table 4) 135 isolates yielded MIC of ≤ 1 in vitek-2 & reference BMD, 23 isolates showed MIC of ≥ 4 in both Vitek 2 and reference BMD, 13 isolates showed MIC of 4 in Vitek-2 and 1 in reference BMD, 12 isolates yielded MIC value of 8 in Vitek 2 and 2 in reference BMD, 9 isolates showed MIC of 16 in Vitek 2 and 2 in reference BMD, in total 34 isolates were resistant in test method that is Vitek -2 and sensitive in reference BMD which indicates major error. 83% of categorical agreement in comparison of test method that is Vitek 2 with reference method that is BMD.

Tables & Figures

Table 1: Colistin interpretative breakpoints according to the Clinical and Laboratory Standards Institute (CLSI) and European Committee on Antimicrobial Susceptibility Testing (EUCAST) guidelines- 2021 was used for interpretation of the results.

Organism/groups	CLSI 2021			EUCAST 2021		
	S	I	R	S	R	ATU
Enterobacterales	-	≤ 2	≥ 4	≤ 2	> 2	-
<i>Pseudomonas aeruginosa</i>	-	≤ 2	≥ 4	≤ 2	> 2	4

Organism/groups	CLSI 2021			EUCAST 2021		
	-	-	-	≤2	>2	4
Pseudomonas spp	-	-	-	≤2	>2	4
Acinetobacter baumannii complex	-	≤2	≥4	≤2	>2	-
Acinetobacter spp	-	-	-	≤2	>2	-
Non-Enterobacterales*	-	-	-	-	-	-

*Other non-fermenting Gram-negative bacilli except *Pseudomonas aeruginosa*, *Acinetobacter baumannii*, *Stenotrophomonas maltophilia* and *Burkholderia cepacia*

ATU- area of technical uncertainty; S- Susceptible; I- intermediate; R-resistant

Table 2: Distribution of carbapenem resistant Enterobacterales isolates

Organism	Number of isolates tested
<i>Klebsiella pneumoniae</i>	112
<i>Escherichia coli</i>	71
<i>Enterobacter cloacae</i>	13
Citrobacter species	04

Table 3: Colistin MIC distribution for 200 isolates with reference BMD method is shown in [Table-3]

Organism	No. of isolates tested	MIC range (µg/mL)							
		0.125	0.25	0.5	1	2	4	8	16
<i>Klebsiella pneumoniae</i>	112	20	10	30	16	18	8	4	6
<i>Escherichia coli</i>	71	20	21	22	3	2	3	0	0
<i>Enterobacter cloacae</i>	13	2	3	4	1	1	2	0	0
Citrobacter species	04	1	1	2	0	0	0	0	0

Table 4: Colistin MIC distribution of CBDE with reference to MBD method

MIC of CBDE	MIC range (µg/mL)	MIC of MBD							
		0.125	0.25	0.5	1	2	4	8	16
≤1		23	18	30	11	10	0	0	0
2		20	17	28	9	11	2*	0	0
≥4		0	0	0	0	0	11	4	6

*Indicated very major error

Table 5: Colistin MIC distribution of Vitek-2 with reference to MBD method

MIC range (µg/mL)	0.125	0.25	0.5	1	2	4	8	16
≤0.5	20	16	30	3	0	0	0	0
1	18	19	25	4	0	0	0	0
2	5	0	3	0	0	0	0	0
4	0	0	0	13*	0	8	3	0
8	0	0	0	0	12*	5	1	4
16	0	0	0	0	9*	0	0	2

* Indicates major error

Discussion

There is re-emergence of usage of polymyxin drugs over the past as last agent for treatment of infections caused by multi drug resistant gram-negative rods. Although polymyxins being considered as last option of treatment it should be used carefully since even in optimal doses they are highly nephrotoxic and neurotoxic, hence knowing the MIC of infecting organism is of clinical importance so that accurate report is communicated to the treating physician which ensures that such kind of drugs are discreetly used [6]. CLSI and EUCAST [7,8] in the year 2017 together recommended rBMD as the reference test for Colistin testing. But it has its own limitations since the procedure is tedious and also difficult to use as routine test for detection of colistin resistance in resource limited settings, so there is a need of an alternative method which is more amicable to be performed on routine basis. Many laboratories are reporting colistin MIC by using Vitek-2 system which is not an approved method by CLSI. Apart from rBMD CLSI is also recommended CBDE and CAT as alternative method for colistin MIC reporting, present study focuses on evaluation of results of colistin MIC with VITEK -2 system & CBDE in comparison with rBMD to evaluate which is the better method that can be adopted on routine basis for testing the colistin susceptibility. Reference micro broth dilution (MBD) was performed on 200 Carbapenem resistant Enterobacterales which were isolated from clinical specimens among which 11.5% were resistant to colistin. Various other studies also showed similar kind of resistant pattern, *Klebsiella pneumoniae* showed the highest resistance to colistin among other Enterobacterales which was around 9% similarly In the year 2019 Walia k et al also reported around 8% of colistin resistance in *K. pneumoniae* causing hospital-acquired infections 12.6% of *klebsiella* species isolated from urinary tract infection were colistin resistant in study conducted by Jain S. et al., (2018) [10]. 20.4% of colistin resistance were reported in 2020 by Sarumathi D et al., [11]. High resistance to colistin was noted in many other studies conducted by authors like L. Bardet et al., in 2019 reported 63.4% of colistin resistance among gram negative rods [13]. Qadi M, et al., (2021) has reported 41% of Enterobacterales that were resistant to colistin [12]. Capone A, et al. reported around 36.1% of colistin resistance that were carbapenem resistant *klebsiella*

pneumoniae in 2012 [14]. CBDE was performed the results were compared with reference BMD. Based on EUCAST 2021 guidelines Categorical agreement was analysed. Essential agreement was not analysed as CBDE was performed only in 3 dilutions whereas BMD was performed in 8 dilutions. As shown in (Table 4). 2 of the isolates showed MIC of 2 in CBDE & MIC value of 4 in reference BMD which is very major error, categorical agreement of CBDE with reference BMD was 99%. In a study conducted by Simner PJ, et al; which was a 2-site evaluation of CBDE method conducted in 2019, in this study in both the evaluation centre CBDE had 100% categorical agreement in comparison with reference BMD method [14]. Similar findings were observed by Humphries RM et al, (2019) in which they reported 97.9% categorical agreement compared to the reference MIC and reported 9 VME (3.2%). Dalmolin TV et al., conducted a study in two different research centres in Brazil, in his study he reported 91.18% of CA and 4.95% of VME with CBDE compared to reference method [15].

As mentioned in (Table 5) 13 isolates with MIC value of 4 obtained by Vitek-2 showed MIC value of 1 in reference BMD, 12 isolates that yielded MIC of 8 in Vitek 2 showed MIC of 2 in reference BMD, 9 isolates with MIC of 16 resulted from Vitek 2 showed MIC value of 2 in reference BMD, 34 isolates totally were resistant in test method that is Vitek -2 and sensitive in reference BMD. Categorical agreement between Vitek-2 (Test method) in comparison with reference method (BMD) was 83% with 17% of major error and no very major error, many studies have been done for evaluation of Vitek-2 automated method for testing of colistin susceptibility. In a study conducted by Ka Lip Chew et al Similar categorical agreement was seen between Vitek -2 and BMD, which was < 90% with very major error of 36% & no major error [17]. In a study conducted by Jerome R. Lo-Ten-Foe et al vitek-2 had high level of categorical agreement in comparison with BMD, and he concluded that Vitek -2 is a reliable alternative tool for detection of colistin susceptibility and he specified that it's a good tool for detection of colistin susceptibility only in isolates that do not exhibit hetero resistance [18].

N. Pfennig Werth et al in his study Vitek 2 had 90.5% of categorical agreement with BMD and 31% of very major error with no detection of false resistance [19]. Another study done by Salima Qamar et al the categorical agreement between Vitek 2 and BMD was 100% [20].

In our current study done for evaluation of alternative method for routine colistin testing Vitek 2 showed 83% of categorical agreement 17% of major error was detected in our study that is resistant in test method (Vitek 2) and sensitive in reference method (MBD) which indicates the detection of false resistance to colistin. And to be noted that there was no very major error detected by Vitek 2 compared to BMD in our study. Whereas CBDE had very good categorical agreement of 99% with only 1% of very major error and no major error compared to rBMD.

Conclusion

As per our study Vitek 2 detected more of false resistance to colistin but no false susceptibility was seen. Parallely CBDE yielded good categorical agreement with only 1% of false susceptibility. Hence Vitek2 can be used routinely for testing of Colistin susceptibility but if colistin resistance is yielded by Vitek 2 then that isolate needs to be retested by one more method. CBDE can be used as alternative to vitek2 so that the isolate susceptibility will be double confirmed and false resistance will not be reported. This further avoids the unnecessary usage of other antibiotics like Fosfomycin, Tigecycline & other drugs that are used for treating colistin resistant infections.

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Periodontal Ligament: Health, Disease and Regeneration

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Abstract

Understanding of the structure and metabolism of connective tissue components in recent years has increased drastically. The support and attachment of the tooth in the bones of the jaw is provided by a complex comprising of four connective tissues and is known as the Periodontium. It is attached to the dentine of the root by the cementum and to the bones of the jaw via the alveolar bone. Two of the connective tissues are mineralized and comprise of cementum and alveolar bone, while the other two are essentially fibrous in nature and are represented by the periodontal ligament (PDL) and the gingiva. This review article summarizes the current knowledge of the periodontium and will discuss the most important vital structure in detail that is Periodontal ligament.

Keywords: Periodontal ligament, Regeneration, Disease.

Introduction

The periodontium is a dynamic structure that is served throughout life by a unique vascular arrangement, a lymphatic system and a highly specialized network of nervous elements. The periodontium is defined simply as “the tissues investing and supporting the teeth”. Thus, the periodontium is composed of the following tissues: **(Fig-1)** *alveolar bone, root cementum, periodontal ligament and gingiva*.¹

The unique properties of the periodontal ligament endow this tissue with functional attributes that are not replicated by other tissue. Other names include periodontal membrane, alveolo-dental ligament, desmodont, pericementum, dental periosteum and gomphosis.² Width of periodontal ligament ranges from 0.15mm to 0.38mm. Its shape is like an hourglass apicocoronally, corresponding to the rotation point of the tooth. The thickness of the periodontal ligament seems to be maintained by the functional movement

of the tooth. It is diminished around tooth that are not in function and in unerupted teeth but it is increased in cases of hyperfunction and excessive occlusal stresses.³

Cells of the PDL

A healthy, functioning periodontal ligament consist of numerous cell types, which involves: Connective tissue cells; Bone forming cells; Epithelial rest cells and Immune system cells.⁴ These cells have specialized properties. They all act together to sense applied physical forces and respond to them by maintaining PDL width and preserving cell viability. They are also capable of synthesizing and releasing bioactive molecules, for instance cytokines, growth factors and cell adhesion molecules.⁵

Connective tissue cells

Connective tissue cells include fibroblasts, cementoblasts and osteoblasts. Fibroblasts are the

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main component cell type in the PDL. In rodents, they make up 35% of the volume space of the ligament, approximately 20% in sheep and 25-30% in humans. The fibroblasts are interconnected by gap junctions and adherence-type junctions. Fibroblasts are responsible for forming and remodeling the PDL fibers. Periodontal fibroblasts are responsible for the overall production and turnover of most of the extracellular matrix. The fibroblasts are the major resident cells which inhabit the periodontal tissues and the ability of the fibroblast to proliferate, migrate, elongate, adhere, immobilize itself and commence matrix synthesis is critical for cell function, wound healing and tissue integrity.⁶

Bone forming cells: Osteoblasts and osteoclasts

Osteoblasts are bone-forming cells located along the alveolar bone surface, which differentiate locally from mesenchymal cells when needed. They are only prominent when there is active bone formation. Bone is constantly being turned over. Therefore, the osteoblasts will form new bone in that area of alveolar bone being remodelled.⁷ Osteoclasts originate from monocytes within the blood vascular system and are found in areas where bone and cementum are being resorbed.

Epithelial cell rests of Malassez

The PDL also contains characteristic epithelial islands, known as epithelial cell rests of Malassez, which may in fact be a "chicken-wire" network of cells throughout the ligament. The origin of these cell rests is thought to be the result of the breakdown of Hertwig's epithelial root sheath during embryological root formation.⁸ The fact that the epithelial cells are in connective tissue is a unique characteristic. They may maintain normal PDL width and do not prevent ankylosis and root resorption.⁹

Immune cells: Defense cells

Defense cells in the periodontal ligament include neutrophils, macrophages, mast cells, lymphocytes, and eosinophils. Macrophages are derived from blood monocytes and make up approximately 4% of the PDL population.¹

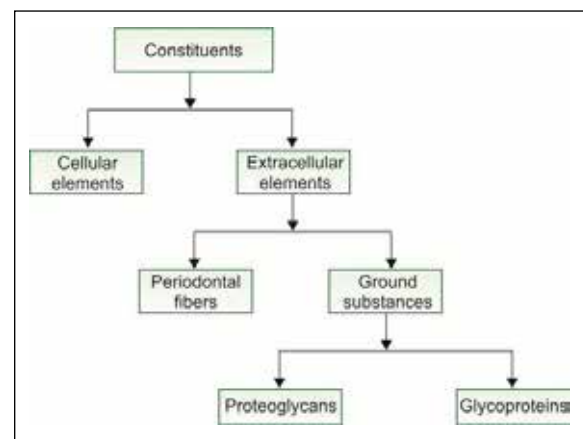
Maintenance of periodontal function

The integrity of PDL tissue is maintained by the extremely high turnover of collagen. This is because PDL collagen has half-life of only few days.¹⁰ Collagen

towards cementum was found to be more mature than that towards bone. This also indicates that remodelling is faster on the bone side of PDL. This might also be attributed to the fact that alveolar bone undergoes continuous remodelling whereas cementum on the other hand, doesn't undergo remodelling under normal conditions.¹¹

Development of PDL fibers

In the pre-occlusal stage, developing transseptal fibers extend over the alveolar crest in an oblique-apical direction toward the cemento-enamel junction of the nonerupted adjacent tooth. However, when the adjacent tooth has erupted, the mechanical field around the erupting tooth changes.⁴ This results in a re-orientation of the transseptal fibers in a superior-oblique direction toward the erupted tooth. When the tooth reaches the first occlusal contact, PDL fiber organization is more advanced.



At this stage, the dentogingival and transseptal fibers are well developed. In the cervical third of the root, closely spaced fibers emerge from the cementum in an oblique, downward direction toward the alveolar bone. Near the bone these fibers join with more widely spaced Sharpey's fibers. When in full function, all principal fiber groups in the ligament are present. As a result of dental loading, overall, the fiber bundles thicken and form a network.¹² (FIG.2)

Periodontal ligament fibers

The most important elements of the periodontal ligament are the principal fibers, which are collagenous and arranged in bundles and which follow a wavy course when viewed in longitudinal section. The terminal portions of the principal fibers that are inserted into cementum and bone are termed Sharpey's fibers.¹³ Sharpey's fibers are extensions

of the principal fibers of the ligament into the tooth cementum and bone. Once they insert themselves into the alveolus wall or the cementum, they calcify and become associated with non-collagenous proteins in cementum and bone. Sharpey's fibres are coupled with high levels of osteopontin and bone sialoprotein. This could give useful physical properties to the hard and soft tissue interface.¹⁴

The ligament collagen bundle fibre composition is primarily interstitial collagens I and III, which then arrange as banded fibrils. Collagen V is also involved with these fibrils and is located in the interstitial spaces between the bundles or within the centre of the fibrils. Other minor collagens involved in the fibrous meshwork of the PDL are collagens IV, V, VI and XII, which are important to maintain the normal architectural structure of the PDL.¹⁵ The principal fibers of the periodontal ligament are arranged in six groups that develop sequentially in the developing root, which are as follows: transseptal; alveolar crest; horizontal; oblique; apical; interradicular fibers. Transseptal fibers extend interproximally over the alveolar bone crest and are embedded in the cementum of adjacent teeth. They are reconstructed even after destruction of the alveolar bone that results from periodontal disease. Fibers also run from the cementum over the alveolar crest and to the fibrous layer of the periosteum that covers the alveolar bone. The alveolar crest fibers prevent the extrusion of the tooth and resist lateral tooth movements, helps in securing teeth in their sockets.¹⁶ The incision of these fibers during periodontal surgery does not increase tooth mobility unless significant attachment loss has occurred.

The horizontal fibers are found immediately apical to the alveolar crest fiber group. The fiber bundles of this group pass from their cemental attachment directly across the periodontal ligament space to become inserted in the alveolar process as Sharpey's fibers. Oblique fibers constitute the largest group in the periodontal ligament, extend from the cementum in a coronal direction obliquely to the bone. Oblique fibers bear the brunt of vertical masticatory stresses and transform such stresses into tension on the alveolar bone.¹ The apical fibers radiate in a rather irregular manner from the cementum to the bone at the apical region of the socket. They do not occur on incompletely formed roots. The apical fiber bundles resist the forces of luxation, may prevent tooth tipping and probably also protect the delicate blood and

lymph vessels and nerves traversing the periodontal ligament space at the root apex.

The interradicular fibers fan out from the cementum to the tooth in the furcation areas of multirrooted teeth. Their function is believed to be resisting tooth tipping, torquing and luxation. Three types of elastic fibers exist: elastin, oxytalan and elaunin. Only oxytalan fibers are found in the human PDL, but the gingival ligament also has fibers bundles which may be linked to elaunin fibers. Oxytalan fibres were described initially by Fullmer. They are pure bundles of microfibrils, which resemble pre-elastic fibres and run in a vertical direction from the surface of the cementum, which forms a meshwork that covers the tooth root.¹⁷

Blood and nerve supply of PDL

For a fibrous connective tissue, the PDL has an unusually rich nerve and blood supply. In addition to the usual autonomic nerves associated with the vasculature, the sensory nerves show endings of the Ruffini type that play an important role in the reflex control of mastication. It also releases neuropeptides such as substance P, vasoactive intestinal peptide and calcitonin gene-related peptide.¹

The major blood vessels of the PDL lie between the principal fiber bundles, close to the wall of the alveolus. The majority of vessels appear to be postcapillary venules.⁴

Functions of Periodontal Ligament

The functions of the PDL are categorized as:

1. *Physical:* Provision of a soft-tissue "casing" to protect the vessels and nerves from injury by mechanical forces. Transmission of occlusal forces to the bone.
2. *Formative and remodeling:* Cells of the PDL participate in the formation and resorption of cementum and bone, which occur during physiologic tooth movement, during the accommodation of the periodontium to occlusal forces, and during the repair of injuries.
3. *Nutritional and Sensory:* The PDL supplies nutrients to the cementum, bone, and gingiva by way of the blood vessels, and it also provides lymphatic drainage. The PDL is abundantly supplied with sensory

nerve fibers that are capable of transmitting tactile, pressure, and pain sensations via the trigeminal pathways.¹⁶

Periodontal ligament in disease

The PDL can be destroyed because of the following causes:

- A. Abnormal occlusal forces
- B. Periodontal diseases
- C. Periodontal component of systemic diseases

A. Abnormal occlusal forces

The PDL has a cushioning effect on forces applied to teeth as means to accommodate forces exerted on the crown. Due to the elastic nature of the periodontal ligament, all teeth with normal bone support present with physiologic mobility in all directions. Whenever occlusal forces exceed the adaptive capacity of the tissues, tissue injury results and tissue responses occur in three stages.

- a) Injury;
- b) Repair;
- c) Adaptive remodeling of the periodontium.¹⁸

B. Periodontal diseases

Periodontal diseases are mainly characterized by affecting the composition and integrity of all the structures involved in the periodontium resulting in the destruction of the connective tissue, the loss of attachment and finally the resorption of alveolar bone. If periodontitis is left untreated, it will eventually result in loss of tooth and unfortunately conventional therapies are only palliative. Once the periodontium is disrupted, restoration of its normal structure and function is very difficult.⁹

C. Periodontal component of systemic diseases

Periodontium can also be affected by systemic diseases such as Down Syndrome, Papillon-Lefevre syndrome, Ehler Danlos Syndrome, Hypophosphatasia.

PDL in Regeneration

Regeneration is defined as the reproduction or reconstitution of a lost or injured part of the body in such a way that the architecture and function of the lost or injured tissues are completely restored.

Regeneration of periodontal tissues is one of the most important goals for the treatment of periodontal disease. Periodontal regeneration requires the coordinated formation of new alveolar bone, cementum and functional PDL.¹⁹

PDL regeneration can be expected under the following conditions:

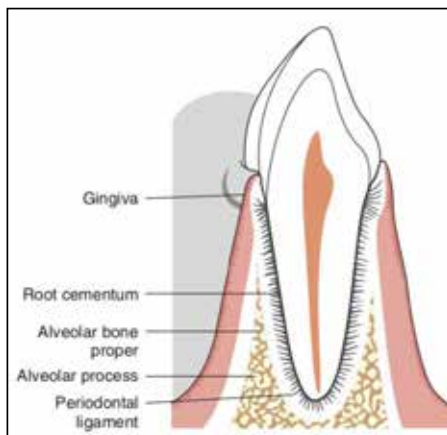
1. PDL regeneration during tooth movement
2. PDL around implants
3. After the treatment of periodontal diseases

Regeneration of tooth and periodontal ligament tissue is of great interest in dental research as well as in clinical practice. PDL regeneration can be done through stem cells and guided tissue regeneration.²⁰ Successful periodontal regeneration relies on the reformation of an epithelial seal, deposition of new acellular extrinsic fiber cementum and insertion of functionally oriented connective tissue fibers into the root surface, and restoration of alveolar bone height.²¹ Therefore, the major factor believed to prevent periodontal regeneration after conventional therapeutic approaches is the migration of epithelial cells into the defect area at a faster rate than that of mesenchymal cells, which leads to the formation of a long junctional epithelium and the prevention of the formation of a new attachment apparatus over the previously diseased root surface.

The goal of regenerative procedures is to prevent apical migration of gingival epithelial and connective tissue cells and to provide maintenance of a wound space into which a selective population of cells (hence guided tissue regeneration [GTR]) is allowed to migrate, favoring the formation of a new periodontal attachment. Derived from the classic studies of Nyman, Lindhe, Karring, and Gottlow,²¹ this method is based on the assumption that periodontal ligament and perivascular cells have the potential for regeneration of the attachment apparatus of the tooth.

The biologic basis of GTR is based on the assumption that the placement of physical barriers prevents apical migration of the epithelium and gingival connective tissue cells of the flap and provides a secluded space for the inward migration of periodontal ligament cells (PDL) and mesenchymal cells on the exposed root surface, which in turn promote periodontal regeneration.²² Types of barrier membranes used can be non-resorbable or resorbable membranes.

PDL tissue engineering presents several specific challenges. First, the very narrow PDL space, which spans approximately 150-400 μm from alveolar bone



to tooth, limits the possibilities of placing off-the-shelf constructs. The second challenge is engineering of a soft tissue between two mineralized surfaces and specifically anchoring it to them. PDL engineering constructs needs to be able to functionally cope with high forces and should contain a self-repair mechanism to maintain their integrity, as damage resulting

Conclusion

The PDL is a highly organized tissue between two mineralized surfaces, which is capable of coping with extremely high forces. The complex arrangement of this tissue makes PDL tissue engineering an enormous challenge. So, the current researches still target on the regeneration of the PDL by novel methods.

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Application of Lean Methodology in Radiology Department of a Multispecialty Hospital.

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Abstract:

Hospital Administrators are continually looking for ways to reduce the cost and expenditure related to healthcare services. The radiology department is one of the key areas for reducing the expenditures of the hospital. The radiology department is an important revenue-generating department, but it also houses one of the costliest technologies to maintain and repair. The study was carried out in a Multispecialty Hospital in India. The objective of the study was to reduce identify wastes or “muda” as in lean methodology of Toyota Production System and to study the cost of materials consumed in the radiology department without compromising the quality of services. The study design was descriptive & cross-sectional, and data of cost analysis was obtained from the Hospital Information System. The period of the study was over a three-month period between March - June 2021. Data of Radiology Information System (R.I.S) (medical imaging software) was also used. The cost related to radiology was determined for the consumables. The sampling technique was purposive. Data was analysed using Minitab and MS Excel. Value Stream Map was created, and 8 types of wastes (lean tool) were identified in the study. The wastes or “muda” occurred during transportation which occurred during shifting of patients and material transportation, inventory, motion, too many clicks for uploading images, waiting for procedures, waiting for reports, re-do and unnecessary tests, excess radiation doses, reporting errors, and insufficient training to staff. In the MRI procedure, Value Stream Map was made, the takt time of 24 min, but the cycle time was 100 min and waiting of 120 minutes, which resulted in the lead time of 220 minutes. Pareto analysis of the consumables was done for 28 products, the products were classified under ABC categories. Radiographic Film-14 x 17 inch & Contrast Omnipaque consumed 73.3 % of the consumption value, they were classified under A category products, 3 products viz Contrast Omniscan, Radiographic Film-11x14inch, Radiographic Film-8 X10inch were categorized under B category which consumed additional 21.05 % of the expenditure, the remaining 20 products were classified under C category, which consumed only 5.68 % of the monetary consumption value.

Category A materials are the most expensive and hence require strict control. From the data analysis, it was observed that stringent control on consumption, monthly consumption analysis, and commitment of the staff members could be the contributory factors for the reduction in expenditure. The maximum scope for cost reduction in the radiology department was in the MRI Studies.

Some of the strategies for cost reduction could be digitalization of services, use of IT in MRI studies CDs could be provided, linking the RIS with mobile application. The reports could be made assessable online which would reduce paper records. is another money-saving tactic. The purchase department must be informed of the consumption pattern on a weekly or monthly basis, particularly for costly products like contrast (Omnipaque and Omniscan).

Keywords: Radiology, Lean, Toyota Production System, Muda, Consumables, Value Stream Map, Pareto Chart.

Introduction

Radiology is the medical discipline that uses medical imaging to diagnose and treat diseases within the bodies of animals, including humans. It is involved with medical imaging techniques such as X-ray, Ultrasound sonography (USG), Computed tomography (CT), Magnetic Resonance Imaging

(MRI) etc. to diagnose and treat diseases. It is an important revenue-generating department, but it also houses one of the costliest technologies to maintain and repair. For example, cost of an MRI Machine for GE Systems 1.5 Tesla ranges from 80 Lakhs to 8.5 crores, the CT Scan machine ranges from 80 lakhs to 3.8 crore and X Rays machine ranges from

1.5 lakhs to 75 lakhs. As the department is important revenue generating area in a hospital, it is key area for reducing the expenditure of the hospital. Hence, hospital administrators are continually looking for ways to reduce the cost and expenditure related to radiology services¹.

The need for containing and controlling the imaging cost requires an understanding of procedures and quantify the cost of the imaging services. Radiology department uses consumables for procedures like X Ray, CT, MRI & USG and may include X-ray film for producing radiographic image and generally consists of emulsion of silver bromide (AgBr), Contrast or dyes like Omnipaque™ (iohexol) by GE Healthcare, which contains iodine and add contrast to body parts, and is taken before imaging tests (such as CT scans), Contrast Omniscan™ which is a Gadolinium based contrast agent used in MRI examination generally for tumours and abnormalities in brain and spine, electroencephalogram (EEG) conductive paste used for brain disorders, and helps in reducing skin impedance while using EEG electrodes, intravenous cannula or IV cannula which is a tube inserted into the body for delivery of fluids into the body, Syringe-plain with needle, 3 way Stop cock for infusion of two fluids, Mannitol 20% Infusion which is a medicine with high osmotic pressure and increases water retention, Examination gloves, Ultrasound Gel which reduces the air between the skin and the probe or transducer, Surgical paper tape, General stationery, personal protective equipment (PPE) face shield for infection control², sodium chloride solution (intravenous) normal saline (NS), Surgical drape which is OT linen used to isolate surgical site from other areas of patient body and reduce surgical site infection (SSI), Scalp vein set for drawing blood or for intravenous (I.V.) therapy into a vein, N95 respirator & surgical masks, Syringe-plain with needle, Xylocaine 2% Jelly which contains Lidocaine used for local anesthetics, Baccirub Plus which is Antimicrobial Alcohol Hand Rub, etc. The diverse nature of value and cost of radiology consumables gives rise to a complex set of dynamics, with various items to be purchased, consumed, and in turn influence the cost of the images which is the primary product.

Lean manufacturing concepts were established in Toyota corporation in Japan in 1970s and 1980s, hence are also called as Toyota Production Systems. The principles of lean include identifying all steps that add value to the product or service through

value stream map (VSM), identifying & eliminating wastes, and continual improvement of the processes for improving quality. These tool and techniques are aimed to optimize time, improve productivity, while improving quality of products and services³. In Lean approach there are 7 type of wastes or muda as referred in Toyota Production System which are Transportation, Inventory, Motion, Waiting, Overproduction, Overprocessing, Defects. These wastes were defined by Taiichi Ohno, father of the TPS. Some practitioners include 8th waste as Skills or unutilized talent. They make the acronym TIMWOODS.

First application of lean principles in healthcare was in 2001 in Virginia Mason Medical Centre, in Seattle, Washington, when they applied Toyota Production System (TPS) to the healthcare context. They implemented Virginia Mason Production System (VMPS) to identify and eliminate “muda” or waste to improve productivity and efficiency⁴.

Value stream mapping in hospitals maps all the operational processes related to patient flow, material supplies, information related to the journey of patients, etc. and acts as a visual tool of the health care service delivery. Takt time is calculated which signifies the time in which a service needs to be completed keeping in mind the demand and total available service time. Current-state and future State Value Stream Map are drawn⁵.

Lean techniques could be applied to reduce costs and improve quality in radiology department. The basic tools included “kaizen” which means continuous improvement, VSM(value stream mapping) of the department, applying 5 S’s which include Sort, Set in order, Shine, Standardise and Sustain, and other lean productive improvement techniques^{6,7,8}.

With this backdrop the current study was undertaken to apply lean concepts and explore avenues for cost containment and to identify the wastes (non-value adding steps) in the radiology department for resource utilization.

Materials and Methods

The research was undertaken with the objective to identify wastes using lean approach, and to conduct a cost analysis of the material consumption in the radiology department. It was carried in a Multispecialty tertiary care hospital based in Jaipur, India.

The study design is descriptive & cross-sectional, and data of cost analysis was obtained from the Hospital Information System. The period of the study was over a three-month period between March - June 2021. Data of Radiology Information System (R.I.S) (medical imaging software) was also used. The cost related to radiology was determined for the consumables for three weeks. The sampling technique was purposive. Data was analysed using Minitab & MS Excel. 8 type of wastes (TIMWOODS) were identified for the radiology department, current and future state Value Stream Maps were developed, and Pareto analysis of the material consumed in the radiology department was done using Minitab software.

Results & Discussion

Waste (TIMWOODS) analysis of Radiology Department^{9,10,11}

In Lean Six Sigma, the type of wastes may include transportation (i.e. unnecessary movement of people, products and information), inventory, movement, waiting, over-production, overprocessing, defective products or services and underutilized skills & inadequate training. They may be memorized with the acronym as “timwoods”.

The concept was analyzed in the radiology department and all types of wastes were identified¹².

1. **Transportation:** The transportation type of waste took place while shifting the patients from wards/ ICU to the radiology department. It also occurs while shifting the patient back to the respective ward or ICU. Transportation of patients took a great deal of time and it requires communication on the part of technicians as well as nursing staff in the wards. The subsequent delay in the transportation and the time between the billing and procedure adds to the waiting time of the patient. The waiting time increases in the case of delays in transportation. The transportation delay also occurs when the portable machines are shifted from the department during a bedside procedure. Furthermore, transportation can lead to the wear and tear of the machine leading to an increase in the cost of maintenance. The shutdown time of the machine during maintenance can also adds to the cost.
2. **Inventory:** Inventory contributes to the material expenditure and consumption both add to the cost of the department. Both the inventory costs and increase in the stock levels act as a burden to the hospital's financial performance. The inventory is under the control of the purchase department of the hospital. The strict control of the inventory is always kept. Excess inventory or low inventory are both responsible for the rise in expenditure by the department.
3. **Motion:** It was identified as too many clicks for loading and uploading the images in the PACS⁹.
4. **Waiting:** Waiting was observed as waiting for the procedure i.e. the time between the patient arrived at the counter to the time of the procedure, waiting in report generation i.e. time between examination/procedure and the report finalization by the radiologist, and waiting for receiving the materials from the store.
5. **Over-processing/non-value-adding processing:** This type of waste occurs when more steps are added to the procedure than required or doing more work or producing the service which is required. The over-processing in the department occurred due to unnecessary tests performed.

The re-dos are done for CT, MRI, and X-ray which all adds to the over processing and increases the cost of the department.
6. **Overproduction:** This type of waste occurs when products and services are delivered before they were required. The radiation dose in excess can be an example of overproduction.
7. **Defects:** Defects occur when the products are not deemed fit for use. They add unnecessary costs to the operations of the department without adding any value. Reporting errors are the defects in the radiology department. The reporting error can occur before the report is dispatched or after the report is dispatched.
8. **Staff:**

The 8th waste is the waste of unutilized human resources. This happens when the staff is not involved in the management processes such as planning, organizing, controlling, and innovating. The staff should also be included in the overall process and quality improvement and should be encouraged to come up with ideas by the management. Another type of waste is because of insufficient training. Due to

COVID-19 restrictions, training sessions were not conducted for the staff during the study period. When the machine is idle or underutilization of the machine takes place in the department, the human resources also remain unutilized. The staff should be motivated, encouraged to give proper feedback, and challenged to come up with new ideas at work.

The wastes have been depicted in Fig.1 below.

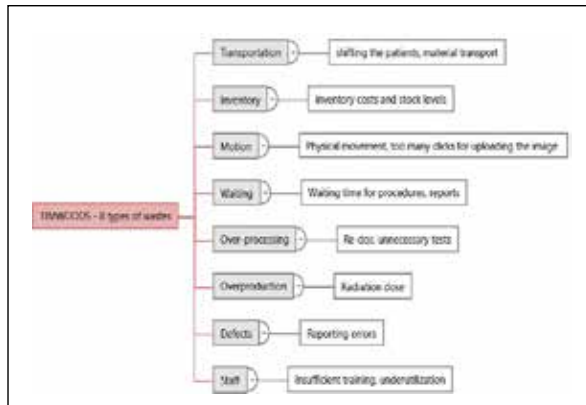


Fig. 1 8: wastes of the Radiology Department

Value Stream Maps of the Radiology procedures^{13,14}

The workflow of radiology department for Outpatient (OPD) was recorded which included request for examination, registration at the billing counter, and included collecting history of diseases such as hypertension, diabetes, and cardiac health conditions, allergies to the contrast, surgeries, metallic implants, etc. A consent form was filled for the MRI scan. When the process of registration is completed, the patient was directed to wait for his/her turn. The patient was called for the examination and the patient was prepared for the examination. The technician explains the procedure to the patient in brief. The images for the examination are uploaded in PACS. From PACS, the radiologist could view images and the process of reporting of images starts. The images are read, reports are finalized, and then uploaded in the RIS. The RIS is integrated with the HIS and the reports can be printed and dispatched afterwards. The reports are then collected by the patient at the designated time.

As there was maximum waiting in the MRI procedure, current and future state Value Stream Map (Lean TOOL) of MRI were created for the same (Figure 2, Figure 3) using Minitab software.

Current State MRI Value Stream Map

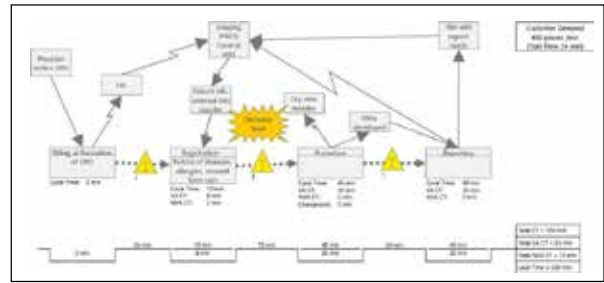


Fig. 2: Value Stream Map (Current State) - MRI

The total no. of procedures in the study month were 400 and timings was 9.00am-5.30pm, daily 6 days / week, which gave the takt time of 24 min. The cycle time was observed at 83 min and Lead time of 220 min.

In the future state map, lean time was reduced to 83 min, as shown in Fig. 3.

Future State Value Stream Map for MRI procedure

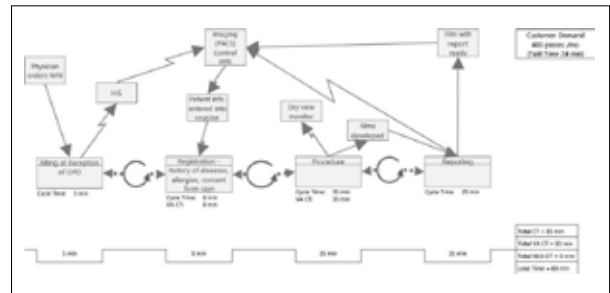


Fig. 3: Value Stream Map (Future State) - MRI

Cost Control of consumables¹⁵

Radiology department consumables for the procedures (X Ray, CT, MRI & USG) was studied for three months. The consumables included Radiographic films (14x 17Inch, 11x14inch, 8 x10inch), contrast (Omnipaque & Omniscan), Baccirub plus, Surgical face mask, EEG paste, IV cannula, Syringe-plain with needle, Stop cock-3 way, Mannitol-Infusion-20%, Examination gloves, Ultrasound gel, Surgical paper tape, General stationery, PPE-visor shield, Contrast media Syringe, Sodium chloride(NS), Douche set complete, Surgical drape-plain sheet, IV cannula, Syringe-plain with needle, Infant feeding tube, Scalp vein infusion set, Respiratory protection mask N95, Syringe-plain with needle, Lidocaine-jelly-2% etc.

The material consumption consists of 28 items indented for the radiology department during the study period i.e. from March to May 2021. To understand the products which were consuming maximum consumption value, Pareto Chart was developed which is shown in the [Figure 4](#) below.

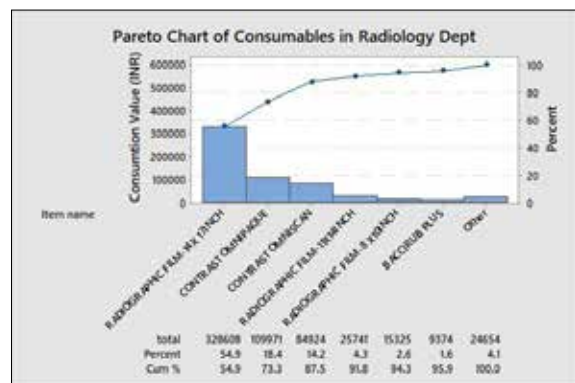


Fig. 4: Pareto Chart for consumables in Radiology Dept.

The total consumption expenditure is 598598.282 (approx. value). In the data analysis, the consumption of 28 consumables were studied (three months). Radiographic Film-14x17 inch & Contrast Omnipaque consumed 73.3 % of the consumption value, hence they were classified under A category products, 3 products viz Contrast Omniscan, Radiographic Film-11x14inch, Radiographic Film-8 X10inch were categorized under B category which consumed additional 21.05 % of the expenditure, the remaining 20 products were classified under C category, which consumed only 5.68 % of the monetary consumption value.

Conclusion

The wastes or “muda” occurred during transportation which occurred during shifting of patients and material transportation, inventory, motion, too many clicks for uploading images, waiting for procedures, waiting for reports, re-do and unnecessary tests, excess radiation doses, reporting errors, and insufficient training to staff¹⁶.

In the MRI procedure, Value Stream Map was made, the takt time of 24 min, but the cycle time was 100 min and waiting of 120 minutes, which resulted in the lead time of 220 minutes. Since waiting is waste, so it needs to be reduced as shown in the future state value stream map.

It was observed that consumables Radiographic film-14x 17inch, Contrast Omnipaque, Contrast Omniscan were consuming 87.5% of the monetary value. Hence it was suggested to utilize the film size 14 x 17 inches in X-ray by dividing it into 4 portions, which may help in cost reduction. The contrast used were of 2 types – Omnipaque & Omniscan and consumption was dependent on investigations ordered by the physicians. It was advised to use the contrast judiciously, avoiding any wastage. It was also advised that have tighter inventory control of the above material and supplies (Radiographic film-14x 17inch, Contrast Omnipaque, Contrast Omniscan). As cost reduction practices of the radiology department is holistic approach, the radiologists, technicians, and administration must work as a team for achieving the goals.

Some of the strategies for cost reduction could be digitalization of services, use of IT in MRI studies CDs could be provided, linking the RIS with mobile application. The reports could be made assessable online which would reduce paper records. is another money-saving tactic. The purchase department must be informed of the consumption pattern on a weekly or monthly basis, particularly for costly products like contrast (Omnipaque and Omniscan).

Ethical clearance : Due considerations of confidentiality and privacy of information has been undertaken in this study.

Source of funding : Self.

Conflict of Interest : Nil

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Comparative evaluation of MIC of Vancomycin among methicillin resistant *Staphylococcus aureus* (MRSA) isolates in tertiary care hospital

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Abstract

Vancomycin, a glycopeptide antibiotic with in-vitro activity against all staphylococci and clinical response to methicillin resistant *Staphylococcus aureus* (MRSA) infection, became the backbone of treatment due to MRSA's universal resistance to the antimicrobial agents belonging to beta-lactams and There are no other viable options. In patients with staphylococcal infections, this study demonstrated a significant conflict of minimum inhibitory concentrations (MICs) of vancomycin for MRSA strains between an automated system, Vitek 2, and the method. test E-strip. In the Microbiology laboratory of JSS hospital which is a tertiary care center situated in Mysuru, 90 isolates were acquired from various clinical samples to analyse Vancomycin MIC. Out of 90 isolates, 2.2% MRSA isolates showed highest vancomycin MIC 2µg/ml by Vitek-2 method, where no isolates showed MIC up-to 2µg/ml by E-strip method. But the higher vancomycin MIC 1µg/ml was observed in 82.2% by vancomycin E-strip method compared to 37.7% by Vitek-2 method. Lowest MIC 0.5µg/ml showed by Vitek-2 method in 58.8% compared to 4.4% by E-strip method. The study concludes that all *S. aureus* isolates were resistant to methicillin by both Vitek-2 system and cefoxitin disc diffusion method and also identified as VSSA (vancomycin susceptible *Staphylococcus aureus*) by Vitek-2 and E-test method. Higher vancomycin MIC ≥1µg/ml in 93.3% may be due to using of vancomycin improperly and infrequently in MRSA infection with lowest MIC value. Therefore, this method can also be used as routine laboratory practice or as alternative method where Vitek 2 system or other methods are not available.

Keywords: *Staphylococcus aureus*, MIC (minimum inhibitory concentration), MRSA (methicillin resistant *Staphylococcus aureus*), VSSA (Vancomycin susceptible *Staphylococcus aureus*).

Introduction

Staphylococcus aureus normally found as normal flora in human beings. For more than a century, *S. aureus* has been identified as a major source of human diseases. It has been associated with various infections which cover minor skin infections and osteomyelitis to urinary tract infection and severe bloodstream infection. MRSA strains, also known as multidrug-resistant *Staphylococcus aureus* (earlier it is

mentioned in 1960s) appeared in the previous decade as a cause infection linked to healthcare accountable for mortal diseases as well as serious life-threatening pneumonia, osteomyelitis, severe sepsis, necrotizing fasciitis, endocarditis, and toxicoses such as toxic shock syndrome.^[1]

In 1960, MRSA emerged and spread throughout the world after the implementation of methicillin for the treatment of *S. aureus* diseases that produce

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penicillinase. *S. aureus* strains which are resistant to antibiotics, specially to methicillin, are uniformly adapted to hospitals and external territory, developed as a universal pathogen of communal health concern.^[2]

MRSA strains are mainly mediated by *mecA* gene, and resistant to other higher β -lactam group of antibiotics including cephalosporins. To treat MRSA infection other antibiotics also used such as, Cotrimoxazole, aminoglycosides, erythromycin, clindamycin etc. The glycopeptide antibiotic, Vancomycin was once thought to be the best option for treatment. Apart from vancomycin, other efficient medications such as linezolid and teicoplanin are extensively utilised.^[3]

Vancomycin has been used in clinical practice for more than 50 years and is remain the gold standard for treating MRSA infections.^[4] In MRSA infection with lowest MIC value, indiscriminate and sporadic administration of vancomycin has led in the establishment of isolates with higher vancomycin MIC values. Only VISA (Vancomycin intermediate *S. aureus*) strains were known in the early 1920s, however *S. aureus* strains with higher vancomycin MIC are now appearing in India.^[5] Vancomycin acts especially by suppressing the cell-wall synthesis. It functions against gram positive cell walls by preventing N-acetyl glucosamine from being incorporated into the peptidoglycan matrix.^[5] The isolate was designated as VISA because of slightly higher vancomycin MIC, in the range of 4-8 μ g/ml.^[4]

Recently, vancomycin-resistant *S. aureus* (VRSA) has been discovered. This larger MIC of vancomycin in VRSA is associated with mutations due to excessive peptidoglycan accumulation and cell wall thickening. The vancomycin MIC test is the gold standard for determining whether a strain is susceptible, intermediate, or resistant to vancomycin.^[3] According to CLSI criteria, *S. aureus* is sensitive to vancomycin if its MIC is $\leq 2\mu$ g/ml, resistant strains have MIC $\geq 16\mu$ g/ml while VISA strain has MIC of 4-8 μ g/ml.^[6]

Materials and Method

The study was performed in the Department of Microbiology at a tertiary care hospital, Mysuru, in a duration of 1 year. A complete 90 MRSA clinical isolates were obtained from various clinical samples

like pus, blood, endotracheal swabs, blood and other body fluids received in the laboratory. All the isolates were subjected to standard procedure for identification. MRSA was detected by modified Kirby-Bauer disc diffusion method. Isolate suspension of 0.5 McFarland turbidity was applied on Muller-Hinton agar followed by application of Cefoxitin disc (30 μ g) incubated at 37°C for 18-24 hours. Zone of inhibition around Cefoxitin disc < 21 mm were considered as methicillin resistant.

For detection of vancomycin MIC by E-test method, isolates were inoculated on Mueller Hinton agar (MHA) media. Vancomycin E-strip (paper strip from Hi-media) impregnated with vancomycin drug, comprises of predefined antibiotic gradient was placed on the MHA plate and incubated for overnight at 35°C to determine the MIC, in μ g/ml (Figure 1).



Figure 1: Quality control of *Staphylococcus aureus*



Figure 2: vancomycin E-strip test result of MIC 1 μ g/ml.

The test organisms were suspended in sterile physiological saline to 0.5 McFarland standards for the Vitek2 method to obtain the vancomycin MIC values. The bacterial suspension was auto-filled into an antimicrobial susceptibility test card, which was then inserted into the the Vitek 2 system incubator reader and results are expressed as MIC values in micrograms / ml.

Results

A total of 90 MRSA strains were collected from various clinical specimens. Pus was the predominant sample 81(90%) followed by 2(2.2%) were blood samples, 5(5.5%) from Ear swabs and ET (2.2%) samples. (Chart 1)

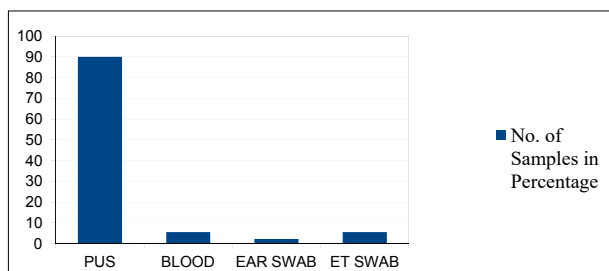


Chart 1: Bar diagram showing the various clinical isolates.

All the MRSA isolates were sensitive ($<4 \mu\text{g/ml}$) by vancomycin E-strip method and Vitek-2 method also. (Table 1)

Table 1: Comparison of vancomycin MIC values by E-test with Vitek-2 system.

Vancomycin MIC values ($\mu\text{g/ml}$)	No. of isolates by Vitek-2 method (n=)	No. of isolates by E-strip Method (n=)
0.5	54 (60%)	4 (4.4%)
1	34 (37.7%)	74 (82.2%)
1.5	0	12 (13.3%)
2	2 (2.2%)	0
≥ 4 to 16	0	0

Highest vancomycin MIC determined was $2 \mu\text{g/ml}$ by Vitek-2 method for 2.2% MRSA isolates, where no isolates showed MIC upto $2 \mu\text{g/ml}$ by E-strip method. Higher vancomycin MIC $1 \mu\text{g/ml}$ was observed in 82.2% by vancomycin E-strip method compared to 37.7% by Vitek-2 method. Vancomycin MIC $1.5 \mu\text{g/ml}$ was observed in 13.3% by E-strip test method but no isolate had an MIC at this level by Vitek2 method. Lowest MIC $0.5 \mu\text{g/ml}$ showed by Vitek-2 method in 60% compared to 4.4% by E-strip method.

Discussion

MRSA is becoming a global problem, producing a wide spectrum of infection compared to methicillin-sensitive *S. aureus* (MSSA). Antibiotic choice usually begins with trimethoprim- sulfamethoxazole or, doxycycline or minocycline for the sulfa allergic

patient. MRSA infections that do not respond to standard treatment may require a combination of medicines, such as vancomycin and one or more additional antibiotics. When choosing an antibiotic to treat a serious infection, the MIC is the key predictor. Many investigations in recent years have found a link between vancomycin therapy failure and MIC values of 1.5 or $2 \mu\text{g/ml}$ which are within the range of clinical laboratory standards institutes (CLSI).^[6]

In the current study maximum numbers of MRSA were isolated from pus sample 80(90%) followed by 2(2.2%) from blood, 5(5.5%) from Ear swabs, and ET (2.2%) samples. Similar findings has been reported by Dimple Raina et al., where 78% of isolates from the pus sample.^[7] The frequency of isolating maximum rate of MRSA from pus also reported by Tiwari et al.(68%) in Varanasi, Mallick SK and Basak et al., in Maharashtra (51.8%), which were resistant to penicillin and sensitive to vancomycin and linezolid.^{[8], [9]} Rao B. N et al., in Andhra Pradesh (64%) and Dar JA et al. in Aligarh reported highest (n151;35.5%) percentage of MRSA found in pus specimens followed by sputum and throat swabs.^{[10], [11]}

The incidence of MRSA strains in clinical samples varies in each area of India. This variance could be related to the selective use of antibiotics to battle the infection, or it could be related to MRSA screening of patients and health care personnel.^[3]

Vancomycin MICs of MRSA strains were determined using the Estrip test and the Vitek 2 method (MIC measured in $\mu\text{g/ml}$) in this study. Using both approaches, all MRSA strains were determined to be susceptible to vancomycin ($\text{MIC} \leq 2 \mu\text{g/ml}$). In our review, the MIC of vancomycin by the Estrip test was in the range of 0.5-2 $\mu\text{g/ml}$, similar to and correlating with the studies of Anitha T. K et al. (2019), Himani et al. the (2018) and Eeshita (2016) are very good. In their studies, the MIC range of vancomycin was 0.52 g/ml.^{[2],[12],[13]}

The present study with lowest MIC $0.5 \mu\text{g/ml}$ showed by Vitek-2 method in 58.8% compared to 4.4% by E-strip method followed by 11(12.6%) of the isolates showed the MIC range of $1.5 \mu\text{g/ml}$ by E-strip test, which is comparable to the study of Brandon J. et al, where 35 isolates with an MIC of $0.5 \mu\text{g/ml}$ via vitek 2 while only 1 isolate (1.3%) having an MIC at this level according to E-test. Further, 50 isolates with mics of $1.5 \mu\text{g/ml}$ via E-test method, where no isolates with MIC at this level by vitek 2 system in the study

of Brandon j. et al., which is similar to the present study.^[13] In the study of Daiana C. S. Rodrigues et al, vancomycin MIC with 0.5µg/ml showed by 42 MRSA isolates out of 51 via vitek 2, where E-test detected only 1 isolate with MIC at 0.5µg/ml. Moreover, in their study, 18% MRSA with vancomycin MIC 1µg/ml by E-strip method and 27% by Vitek-2 method, which is comparable to our study with higher vancomycin MIC 1µg/ml observed in 82.2% isolates by vancomycin E-strip method compared to 37.7% by Vitek-2 method.^[14]

In current study, highest vancomycin MIC was 2µg/ml by Vitek-2 method for 2.2% where no isolates showed MIC upto 2µg/ml by E-strip method which can be compare to the study of behara et al., where all the MRSA strains with MIC lower than 2µg/ml by E-test method including those isolates having vancomycin MIC ≥2µg/ml by Vitek 2 method.^[15]

To summarize the findings of present investigation, which illustrate that there was substantial conflict amongst vancomycin MICs when correlating E-test results to Vitek 2 results, but all isolates were vancomycin sensitive by both the methods. According to earlier studies, E-test frequently reports MICs higher than 1µg/ml, even among isolates with MICs as low as 0.5µg/ml by Vitek2 system. It is very rare getting vancomycin MIC at ≥2µg/ml by Vitek while no isolates having MIC at this level with E-strip test method.

Conclusion

In this study we conclude that in the determination of vancomycin MIC by Vitek-2 method and E-test method, all the MRSA isolates were confirmed as VSSA by both methods. The performance of E-test is cheaper, and easiest to determine the vancomycin MIC when compare to other methods. This method can also be used as routine laboratory practice or as alternative method where Vitek 2 system or other methods are not available. Higher vancomycin MIC may be the result of inappropriate and infrequent use of vancomycin in MSSA infection or in MRSA infection with lowest vancomycin MIC values. Vancomycin is still remained the corner stone of treating MRSA infection. MRSA isolates with higher MIC values (even in the susceptible range) appeared more frequently, leading to vancomycin treatment failure. The higher vancomycin MICs in isolates of MRSA have become a matter of concern, and further studies will help detect significant MRSA infections.

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Ethical Clearance: Institutional Ethics committee approval was obtained from JSS Medical college, Mysore.

Conflict of Interest: No potential conflict of interest relevant to this article reported

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Study of Perinatal Outcome in Oligohydramnios in third Trimester of Pregnancy in Tertiary Care Hospital

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Abstract

Introduction: Oligohydramnios, often due to impaired placental function, has been associated with an increased risk of caesarean delivery for fetal distress, low Apgar score, post maturity and high perinatal morbidity and mortality.

Material and methodology: The prospective Longitudinal study was carried out over the period of two years in the Department of Obstetrics and Gynaecology of Rural Medical College, Loni. 170 pregnant women in 3 trimester of pregnancy, presenting clinically as oligohydramnios with AFI less than 5cm and intact membranes; were included in the study. All cases were evaluated on indoor basis.

Results: In the present study, Eight babies were admitted in NICU for further management, five babies gestational age >37 weeks and associated with asymmetrical IUGR they were kept in NICU for birth asphyxia (APGAR<7 at birth) and birth weight was <2kg. all were delivered by caesarean section

Conclusion: All cases of Oligohydramnios rise suspicion about perinatal outcome. Unessessary Intervation in the form of Induction of Labour can result into increased operated intervention.

Keywords: Oligohydramnios, maternal outcome, Neonatal care, Oligohydramnios

Introduction

Oligohydramnios, often due to impaired placental function, has been associated with an increased risk of caesarean delivery for fetal distress, low Apgar score, post maturity and high perinatal morbidity and mortality. ^{1,2}Thus, it is not entirely clear weather the adverse perinatal outcome merely reflect the sequels of other associated high risk conditions or if reduced amniotic fluid volume itself contributes to the adverse outcome. ³ Casey and coworkers ¹reported an incidence of oligohydramnios as 2.3% in their study of more than 6400 pregnancies, at Parkland Hospital. Oligohydramnios can be diagnosed clinically on

OPD basis as fetal parts can be felt more easily and prominently. As many cases are associated with intrauterine growth restriction, the fundal height is less than the corresponding weeks of amenorrhoea.⁴

Intrapatum assessment of amniotic fluid index has been considered as the ideal admission test because, regardless of the causes of oligohydramnios, an amniotic fluid index of ≤ 5 cm in early labour has been found to be associated with poor perinatal outcome. chronic oligohydramnios is associated with poor prognosis. The squeals of chronic oligohydramnios are, Fetal Demise, Pulmonary Hypoplasia, Fetal Demormities and Skeletal Deformities. Facial and

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skeletal deformities are due to the restriction of fetal movement with oligohydramnios. Oligohydramnios adversely affect fetal lung development, resulting in pulmonary hypoplasia that typically leads to death from severe pulmonary insufficiency. The proposed study was carried out at tertiary care centre, where many high risk cases are referred for expert management.^{5,6,7} Before the advent of obstetric USG, reduced liquor volume was suspected on clinical grounds. With wide spread use of USG in obstetrics more and more cases of oligohydramnios are detected, before complications arise.

Material and methods

The prospective Longitudinal study was carried out over the period of two years in the Department of Obstetrics and Gynaecology of Rural Medical College, Loni. 170 pregnant women in 3 trimester of pregnancy, presenting clinically as oligohydramnios with AFI less than 5cm and intact membranes; were included in the study. All cases were evaluated on indoor basis.

Depending upon the clinical presentation, necessary investigations were performed. Investigations were done to confirm the diagnosis, to find out the cause of oligohydramnios, to know the severity of oligohydramnios and to assess the maternal and fetal wellbeing. Considering the increased maternal and fetal risk, associated with continuation of pregnancy; induction or augmentation of labour was done at appropriate time in maternal and fetal interest.

Decision regarding mode of delivery (vaginal/abdominal) was individualized, depending on clinical findings, associated high risk factors and severity of oligohydramnios. Cases which were kept for vaginal delivery were closely monitored by using continuous electronic fetal monitor, for evidence of fetal heart rate abnormalities.

The epidemiological information will be recorded in a structured proforma. Information regarding Risk factors will be noted in proforma.

Information on maternal and perinatal outcome will be collected from the individual case sheet of the woman or from the registers maintained in the labour room of the Pravara Rural Hospital.

Data collected on important variables will be analyzed by using appropriate statistical test.

Results

Table 1: Significant Correlations with APGAR Score

Compared To	Rho (P Value)	Interpretation
Birth Wt	0.346 (<0.001)	There is positive correlation with birth weight & APGAR score
Congenital Anomaly	-0.203 (0.008)	There is negative correlation between APGAR score and presence of RDS or congenital anomalies
Rds	-0.173 (0.02)	

Table 2: Significant Correlations with Oligohydramnios

Compared To	Rho (P Value)	Interpretation
Post Date	0.356 0.001	Oligohydromnios is positively correlated with presence of post date, IUGR, PIH & other complications.
Iugr	0.231 0.002	
Pih	0.279 0.002	
Other Complications	0.220 0.004	

Table 3: Significant Correlations with IUGR

Compared To	RHO (P Value)	Interpretation
Gestational Age	-0.333 0.001	Iugr Is Negatively Correlated With Gestational Age, Afi, Weight On Usg, Apgar Score And Positively Correlated With Presence Of Rds.
USG WT	-0.418 0.001	
AFI	-0.164 0.03	
APGAR	-0.411 0.001	
RDS	0.279 0.001	

Table 4: Other Significant Correlations

Compared To	RHO (P Value)	Interpretation
Age : Parity	0.353 (p<0.001)	Positive correlation
AFI: Vaginal Delivery	0.436 (p<0.001)	Higher AFI has better chance of vaginal delivery
AFI: APGAR	0.227 (0.004)	Higher the AFI better the APGAR score
LSCS: Live Birth	0.211 (0.04)	Positive correlation
Anomaly : Anhydramnios	0.308 (p<0.001)	Positive correlation
Vaginal Delivery: APGAR At 5 Mins	-0.207 (P<0.007)	Those undergoing vaginal delivery are likely to have lower APGAR at 5 mins as compared to LSCS

Discussion

Perinatal mortality is markedly increased in patients with oligohydramnios. The lack of amniotic fluid allows compression of fetal abdomen, which limits the movement of the diaphragm. In addition to chest wall fixation, decreased liquor amnii leads to pulmonary hypoplasia .⁷

Chamberlain and co-workers⁸ calculated the gross and corrected perinatal mortality rate in patients with decreased qualitative amniotic fluid volume and found it to be 188/1000 and 109/1000 respectively Severe oligohydramnios, in which the largest vertical pocket of amniotic fluid measured less than 1 cm, was associated with gross perinatal mortality rate of 133/1000 in a population of high risk referral cases in a study done by Bastide et al⁸

In the present study, Eight babies were admitted in NICU for further management, five babies gestational age >37 weeks and associated with asymmetrical IUGR they were kept in NICU for birth asphyxia (APGAR<7 at birth) and birth weight was <2kg. all were delivered by caesarean section.⁹

Two cases for meconeum aspiration and one for birth asphyxia. among eight cases only one delivered

by vaginally delivery. Maternal high risk factors associated with these cases were Anhydramnios (n=1), prematurity(n=1), intrauterine growth restriction (n=5),pregnancy induced hypertension (1) Considering the amniotic fluid index, it was 5cm in 1 case,4cm in 1case,2cm in five and anhydramnios in one cases.5 cases delivered by caesarean section for IUGR with severe oligohydramnios one for anhydramnios and one for PIH with severe oligohydramnios, one delivered by vaginally. three babies was low birth weight and five babies. premature with intrauterine growth restriction, No Induction of labour was done. One baby was 1.2 kg with Apgar score of 7 at 5 minute with meconium aspiration. Baby was admitted to NICU for further management Baby was given intravenous antibiotics and put on O₂ by hood, after 3 days baby discharged with mother in healthy condition. In one baby anhydramnios was observed and baby admitted to NICU for meconium aspiration syndrome with APGAR 7 at 5 min baby observed for 24 hours and shifted to mother side in healthy condition. Two intrauterine death due to anhydramnios and post date with 2cm AFI, baby was macerated with peeling of skin.

Conclusion

All cases of Oligohydramnios rise suspicion about perinatal outcome. Unessessary Intervation in the form of Induction of Labour can result into increased operated intervention.

Ethical clearance

For present study ethical clearance was obtained from our IEC , Pravara Institute of Medical Sciences (DU) Loni .

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Probiotics Efficacy and Safety as add-on Therapy to Metformin in Type 2 Diabetes Mellitus

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Abstract

Background: Insulin secretion is decreased, and peripheral insulin sensitivity is diminished, resulting in type 2 diabetes mellitus. Diet, oral antihyperglycemic medications, and insulin are all modalities for treatment.

Objective: The goal of this study was to compare the efficacy of probiotics as an add-on treatment to metformin in patients with Type 2 Diabetes Mellitus.

Methods: The study participants were randomly allocated to one of two groups, Group A or Group B, using a computer-generated randomization chart, with each group consisting of 75 patients. **Group A** - For 12 weeks, patients in this group were administered Tab. Metformin 500 mg twice daily with meals. **Group B** - For 12 weeks, patients in this group were administered Tab. Metformin 500 mg twice daily with meals and Cap. Probiotics 1 capsule twice daily with meals. At the culmination of the second, fourth, eighth, and twelfth weeks, all patients were evaluated. Fasting and postprandial blood glucose levels were measured at each visit. The HbA1c test was performed at the end of the 12th week.

Results: The male predominance was seen with males 57% and females 43% in the group A and the male : female ratio was 1.34:1. In Group B males were 55% and females were 45%. The male: female ratio was 1.20 : 1. The mean HbA1C slightly reduced since the start till the end of the study. A total of 37% of the patients experienced minor self-limiting side effects in group A as compared to 6.66% of Group - B.

Conclusion: In treatment for type 2 diabetes mellitus, probiotics as an add-on therapy with metformin was observed to lower fasting blood glucose, postprandial blood glucose, and HbA1c levels when compared to metformin alone. In terms of effectiveness, probiotics have shown no substantial significant outcomes in combination therapy. However, the probiotics study group had fewer reported gastrointestinal adverse effects associated with metformin treatment.

Keywords: Hyperglycaemia, Metformin, Probiotics, T2DM

Introduction

Diabetes mellitus (DM) is a chronic metabolic condition marked by persistent hyperglycaemia. It could be due to a lack of insulin secretion, resistance to insulin's peripheral actions, or both.¹ Chronic hyperglycaemia, when combined with other metabolic irregularities, can impair numerous organ systems, resulting in chronic, progressive, and life-threatening health consequences, the most common

of which are micro and macrovascular complications, which increase the risk of cardiovascular disease by 2- to 4-fold.²

Diabetes is typically categorised into three categories based on aetiology and clinical presentation: type 1(T1DM), type 2(T2DM), and gestational diabetes (GDM). Other, less prevalent kinds of diabetes include monogenic and secondary diabetes.

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T2DM is the most common type of diabetes, accounting for about 90% of all cases. Insulin resistance is defined as a decreased insulin response in T2DM patients. Because insulin is ineffective in this situation, more insulin must be produced to maintain glucose homeostasis. Insulin production, on the other hand, decreases over time, leading to T2DM.

T2DM is most usually prevalent in those over the age of 45.³ Despite this, it is becoming more common in children, adolescents, and younger adults as a consequence of rising obesity and physical inactivity.

Regardless of the fact that many drugs have been developed to maintain glycaemic control and regulate blood glucose levels, whether through increased insulin production and utilisation, suppressed glucose production and absorption, blocking urine glucose re-absorption and increasing glucose excretion in urine, or a combination of these, these drugs may cause a variety of side effects. Sulphonylureas, for example, have a risk of causing kidney failure.⁴

Metformin is an oral biguanide that reduces gastrointestinal glucose absorption and hepatic glucose production while enhancing peripheral insulin sensitivity. It also has a significant impact on lipid profiles in the blood.⁵

Probiotics modulation of the gut microbiota may be useful in the prevention and control of diabetes, according to clinical data.⁶ Probiotics are living microorganisms that provide a health benefit to the host when given in adequate amounts. These microorganisms are physiologically present in a healthy human body, and they may also be received in the form of over-the-counter dietary supplements. Probiotics, particularly lactobacillus species, have been reported to be effective in the treatment of type 2 diabetes in recent years.^{7,8}

Materials and Methods

Type of study: Randomized Prospective observational study.

Study setting: Department of Pharmacology, Osmania Medical College, Koti, Hyderabad.

Study Duration: May 2019 to January 2020

Sample size: 150 Patients diagnosed with T2DM

Study drugs: Oral drugs were administered

- Tab. Metformin 500 mg
- Cap. Probiotics

Inclusion Criteria:

- All patients diagnosed with T2DM

Exclusion Criteria

- Pregnant women
- Type 1 Diabetes mellitus
- Other anti-diabetic drugs
- Unwilling to give informed consent

A comprehensive medical and drug history was obtained, followed by a thorough clinical examination and laboratory tests that included fasting and postprandial blood glucose, HbA1C, and basic blood tests.

The study participants were randomly allocated to one of two groups, Group A or Group B, using a computer-generated randomization chart, with each group consisting of 75 patients.

Group A (Control group) - For 12 weeks, patients in this group were administered Tab. Metformin 500 mg twice daily with meals.

Group B (Study group) - For 12 weeks, patients in this group were administered Tab. Metformin 500 mg twice daily with meals and Cap. Probiotics 1 capsule twice daily with meals.

At the culmination of the second, fourth, eighth, and twelfth weeks, all patients were evaluated. Fasting and postprandial blood glucose levels were measured at each visit. The HbA1c test was performed at the end of the 12th week. Throughout the trial, adverse events were also monitored.

The decrease in fasting blood glucose, postprandial blood glucose, and HbA1c at the conclusion of 12 weeks was used to determine effectiveness.

The safety assessment was based on spontaneously reported adverse events and changes in laboratory results following the study.

Statistical Analysis: The data was statistically evaluated using SPSS 22 software. The data was analysed using the mean standard deviation method. The student independent t test was used to compare quantitative data between the two groups, while the Chi square test was utilised to compare qualitative data.

Observation and Results

A total of 150 patients were allocated in two groups with 75 patients each.

The male predominance was seen with males 57% and females 43% in the group A and the male : female ratio was 1.34:1. In Group B males were 55% and females were 45%. The male: female ratio was 1.20 : 1.

In group A the majority of the patients belonged to the age group of 51 to 60 yrs with 54.66% followed by 40 to 50 yrs in 44% of the cases and the least belonged to the age group of >60 yrs in 1.33% of the cases. The mean age was 51.06 ± 5.42 yrs.

In group B the majority of the patients belonged to the age group of 51 to 60 yrs with 49.33% followed by 40 to 50 yrs in 48% of the cases and the least belonged to the age group of >60 yrs in 2.66% of the cases. The mean age was 50.90 ± 6.24 yrs.

Table 1: Distribution based on FBS

Fasting blood glucose	Control	Study	p-value
	Mean ± SD	Mean ± SD	
Baseline	133.89 ± 3.49	133.41 ± 4.39	0.976
Week 2	124.91 ± 3.19	122.91 ± 4.19	0.898
Week 4	112.31 ± 5.12	113.11 ± 5.29	0.957
Week 8	103.91 ± 5.39	103.61 ± 6.49	0.983
Week 12	94.81 ± 5.59	93.31 ± 5.31	0.912

Group - A : The Mean FBS reduced from baseline 133.89 ± 3.49 to 94.81 ± 5.59 at the end of week 12.

Group - B : The Mean FBS reduced from baseline 133.41 ± 4.39 to 93.31 ± 5.31 at the end of week 12.

At the end of the 12-week study, there was no statistically significant difference in fasting blood glucose decrease between the group A and group B.

Table 2: Distribution based on PPB

Post prandial blood glucose	Control	Study	p-value
	Mean ± SD	Mean ± SD	
Baseline	227.29 ± 8.39	224.49 ± 9.21	0.895
Week 2	216.39 ± 8.69	210.19 ± 7.81	0.764
Week 4	200.49 ± 8.09	198.39 ± 7.29	0.916
Week 8	188.21 ± 5.91	187.51 ± 7.81	0.971
Week 12	179.71 ± 6.49	175.01 ± 10.15	0.802

Group - A : The Mean PPB reduced from baseline 227.29 ± 8.39 to 179.71 ± 6.49 at the end of week 12.

Group - B : The Mean PPB reduced from baseline 224.49 ± 9.21 to 175.01 ± 10.15 at the end of week 12.

At the end of the 12-week study, there was no statistically significant difference in Post prandial blood glucose decrease between the group A and group B.

Table 3: Distribution based on Haematological parameters

Parameter	Group	Baseline	End of 12 th week
		Mean ± SD	Mean ± SD
Haemoglobin	Group - A	11.55 ± 1.34	11.67 ± 1.33
	Group - B	11.65 ± 1.55	11.46 ± 1.35
Total Count	Group - A	8260.59 ± 1931.84	8338.59 ± 1812.70
	Group - B	9013.79 ± 2946.75	8896.95 ± 2892.95
Urea	Group - A	21.63 ± 6.09	21.65 ± 5.75
	Group - B	20.40 ± 5.35	19.77 ± 5.19
S. Creatinine	Group - A	0.62 ± 0.21	0.62 ± 0.21
	Group - B	0.69 ± 0.16	0.65 ± 0.16
Total Cholesterol	Group - A	165.50 ± 21.91	162.65 ± 20.74
	Group - B	161.52 ± 22.03	159.29 ± 22.09
HDL	Group - A	45.85 ± 4.86	44.83 ± 4.40
	Group - B	44.95 ± 3.75	44.48 ± 3.95
LDL	Group - A	99.81 ± 24.65	98.71 ± 24.67
	Group - B	112.13 ± 15.55	111.85 ± 15.51
TGL	Group - A	161.89 ± 25.55	160.49 ± 24.59
	Group - B	174.64 ± 12.33	173.45 ± 12.75
Total Bilirubin	Group - A	0.51 ± 0.19	0.46 ± 0.20
	Group - B	0.40 ± 0.16	0.34 ± 0.15
SGOT	Group - A	22.81 ± 5.65	22.26 ± 5.15
	Group - B	22.10 ± 4.65	21.90 ± 4.15
SGPT	Group - A	22.85 ± 5.95	22.88 ± 5.35
	Group - B	24.95 ± 4.79	24.64 ± 4.15

Parameter	Group	Baseline	End of 12 th week
		Mean \pm SD	Mean \pm SD
Na	Group - A	136.25 \pm 4.25	136.08 \pm 3.95
	Group - B	139.55 \pm 4.29	138.26 \pm 4.35
K	Group - A	3.99 \pm 0.35	3.95 \pm 0.35
	Group - B	4.25 \pm 0.45	4.15 \pm 0.45

In both groups A and B, there were no substantial variations between baseline and end-of-study values.

HbA1C:

The mean HbA1C slightly reduced since the inception from 6.77 till the end of the study, 6.41 in Group A

The mean HbA1C slightly reduced since the inception from 6.71 till the end of the study, 6.39 in Group B.

Table 4: Distribution based on Adverse effects

Adverse effects	Group A	Group B
Abdominal discomfort	5(6.66%)	3(4%)
Flatulence	3(4%)	2(2.66%)
Diarrhoea	9(12%)	0(0%)
Nausea	5(6.66%)	0(0%)
Indigestion	3(4%)	0(0%)
Metallic taste	3(4%)	0(0%)
Total	28(37.33%)	5(6.66%)

Around 37% of the patients experienced minor self-limiting side effects in group A as compared to 6.66% of Group - B.

Discussion

Probiotics have been shown to be beneficial in disorders such as infective diarrhoea, chronic inflammatory bowel disease, lactose intolerance, and allergies, and their potential in diabetes has been studied. It has been demonstrated that there is a correlation between pathogenic microorganisms and persistent low-grade inflammation. The processes through which inflammation causes insulin resistance are also well documented. Clinical research have demonstrated that using probiotics to restore normal gut flora has resulted in improvements in glycaemic indices.

The most commonly administered probiotics in these studies were Lactobacillus and Bifidobacterium species.^{9,10} Because each bacterium has a unique method of action, using numerous species is preferred until trials identify a single strain. When probiotics were utilised for a modest to considerable length of time, the effectiveness increased (around 12 weeks). However, in several experiments, probiotics had no effect on glycemic indices, yielding contradictory results. This might be due to subtherapeutic dosages or a short research duration. The mean FBS, PPB, HbA1c levels were considerably lower in both the groups. However, there was no statistically significant difference in HbA1c decrease between the two groups.

Study	Probiotics used	Participant age	Duration	Outcome
Mazloom et al ¹¹	L. acidophilus, L. bulgaricus, L. bifidum, L. casei	25 - 65yrs	6 weeks	Non-significant declining trend in the level of TG, MDA, and IL-6 and insulin resistance
Ejtahed et al ¹²	Yogurt containing L. acidophilus LaS, B. lactis Bb12	30 - 60 yrs	6 weeks	Improved fasting blood glucose and antioxidant status
Moroti et al ¹³	L. acidophilus, B. bifidum, fructooligosaccharides	50 - 60 yrs	30 days	Significant increase in HDL and a significant decrease of glycaemia
Andreasen et al ¹⁴	L. acidophilu	55 - 62 yrs	4 weeks	Preserved insulin sensitivity, but did not affect the systemic inflammatory response
Asemi et al ¹⁵	L. sporogenes and inulin as prebiotic 35-70	35-70 yrs	6 weeks	Significant effects on serum insulin, hs-CRP, uric acid, and plasma total GSH levels
Tonucci et al ¹⁶	L. acidophilus La-S, B. animalis subsp lactis BB-12	35 - 60 yrs	6 weeks	Improved glycaemic control, decrease in inflammatory cytokines (TNF-a and resistin) and increase in acetic acid
Firouzi et al ¹⁷	Lactobacillus and Bifidobacterium	30-70 yrs	12 weeks	Modest improvement in HbA1c and fasting insulin

The haematological parameters were unaltered by probiotics. In contrast to metformin monotherapy, the study group was depicted to have less side effects. The study group had less reported gastrointestinal adverse effects related with metformin medication, which was statistically significant. In both groups, there were no severe side effects.

Despite limited research, the use of probiotics as add-on therapy is recommended, owing to the significant preclinical and clinical evidence in treating diabetes, as well as their favourable tolerability profile. Further studies should determine the best strain, therapeutic dosage, and study period for the optimum outcome.

Conclusion

In treatment for type 2 diabetes mellitus, probiotics as an add-on therapy with metformin was observed to lower HbA1c, fasting blood glucose and postprandial blood glucose levels when compared to metformin alone. In terms of effectiveness, probiotics have shown no substantial significant outcomes in combination therapy. However, the probiotics study group had fewer reported gastrointestinal adverse effects associated with metformin treatment.

Ethical Clearance: The ethical clearance was obtained from the Osmania medical college and hospital institutional ethics committee prior to the commencement of the study

Conflict of interest: Nil

Source of Funding: Self

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A Cross- Sectional Study of Prevalence of Substance Use and Its Associated Factors Among Late Adolescents in Gadag city.

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Abstract

Background: Substance use is a growing public health problem in India especially among adolescents. It has serious effects on overall wellbeing. The onset of substance abuse most often stems in adolescents and hence it is important to know the prevalence of substance use to take preventive steps to protect their health.

Objective: To determine the prevalence of substance use and its associated factors among college going late adolescents of Gadag city. 2. To assess the attitude of adolescents regarding substance use.

Materials and Methods: This cross-sectional study was conducted among college going late adolescents of Gadag city from Jan 1st 2018 to March 31st 2018 in 250 subjects from randomly selected 3 colleges of Gadag district. Data was collected by using predesigned semi-structured questionnaire.

Results: Overall prevalence of Substance use was 35.2%. Most commonly used substance was alcohol (27.8%). Mean age of initiation of substance use was 16.6 ± 0.7 years. Gender, parents education and addicted member in the family to substances were statistically significant associated factors. Among substance users, 60% have positive attitude regarding substance use.

Conclusion- Prevalence of substance use was high and hence health education and other interventions to prevent substance use has to be undertaken.

Keywords: Adolescent, substance use, tobacco, alcohol

Introduction

Adolescence is a transition from childhood to adulthood. This is a period of intensive biological and sexual growth, emotional and psychosocial maturation. In this period they want to identify themselves, to experiment, to try out certain behaviours, because of curiosity, desire to imitate someone or self-assertion¹⁻⁴. In this period adolescents are prone to risky behaviour. The most common risky

behaviour among adolescents is substance use like smoking cigarettes, alcohol consumption and illicit drugs use⁵.

In developing countries like India, by the time they reach adolescence, the young people are already exposed to various stresses such as competition in the fields of education and employment likewise, alongside changing roles in the family and society, new-found responsibilities, and a changing identity, physically, mentally, and emotionally.⁶

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According to a prevalence study, 13.1% of the people involved in substance abuse in India are below 20 years of age⁷. A clinic-based survey revealed that 63.6% of the substance users seeking treatment were introduced to drugs at a young age when they were 15 years or younger⁸.

Early initiation of drug use is often associated with poor prognosis and lifelong pattern of disturbed behaviour. Drugs can have long-lasting effects on the developing brain and may interfere with positive family and peer relationships and school performance^{9, 10}. So it is important to know the substance use and attitude towards it among late adolescents to bring some intervention in action. In our study we are seeking information on attitude towards substance use and their practices as well as factors associated for the same at Gadag city.

Objectives

1. To determine the prevalence of substance use and its associated factors among college going late adolescents.
2. To know the attitude of adolescents regarding substance use.

Methodology

This is a cross sectional study conducted from January to April 2018 among students aged 17-19 years of randomly selected 3 colleges of medical, technical and ayurvedic college at Gadag city. Based on the study done in an urban area in Gujarat¹², required sample size was calculated in Open Epi version 2 software taking, absolute allowable error (d) = 5% , $p=18.86\%$ which was 237 and a total of 250 subjects data was collected. . The study was conducted after getting ethical clearance from the college. All the students aged 17-19 years who gave consent for study were included and those who were not present during 3 consecutive visits of the survey were excluded from the study. After taking informed consent, data was collected using Predesigned, pre-tested, semi-structured questionnaire through interview technique. The questionnaire included questions on socio demographic information, attitude and practices about substance use.

Statistical data analysis was done by using Microsoft Excel, Open Epi software. Percentages, Pearson's Chi-square test or Fisher's exact test were used wherever applicable. For all the statistical tests, " P " < 0.05 was considered statistically significant.

Results

In our study overall prevalence of substance use was 35.2%. Most commonly used substance was alcohol (20.4%) followed by cigarettes (4.4%) and tobacco (2.4%) and least was nicotine use (1.2%). 6.8% of the adolescents were multiple substance users (Figure 1). Among the prevalence of individual types of substance used, alcohol (27.8%) was found to be the most consumed one followed by cigarettes (11.6%) and tobacco (2.8%) and nicotine use (1.2%). Majority of the alcohol users consumed beer followed by brandy. Among cigarettes filtered ones, tobacco in the form of chewing and nicotine in the form of gum was used most commonly.

Majority of the times, substance use was done occasionally like mainly during party celebrations among 39.8% of the study subjects followed by once a week (22.7%) as shown in Figure 2. Mean age of starting substance use was 16.6 ± 0.7 years.

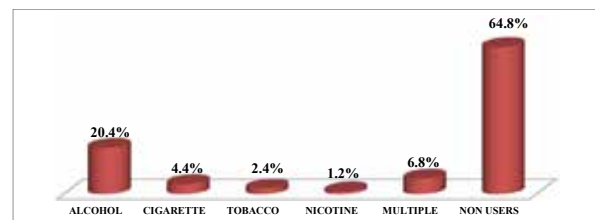


Fig 1: Distribution of Study Subjects by Proportion of Substance use

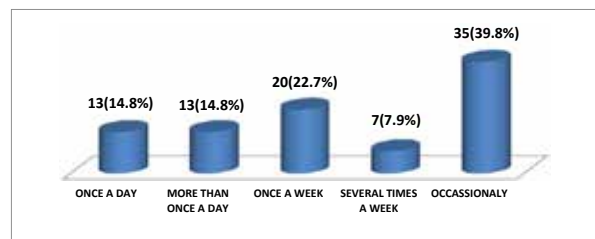


Fig 2: Distribution of Study Subjects by Frequency of Substance use

In our study we have collected information among medical, technical and ayurvedic college students. Substance use was found to be more among those study subjects who were 19 years old (35.4%), male gender (49.1%) and studying in medical college (50.5%). Majority of the students belonged to Hindu religion (35.4%). According to socio-economic status, substance use was high among study subjects belonging to class 1 (39%) followed by class 3 (37%). Most of the substance users among the study subjects

belonged to nuclear family (37.4%) and family size with less than 4 members (38%) followed by 4 to 7 members in the family (35.5%). It was found that in majority of substance users i.e. 68% had addicted person to substances in the family. Majority of the substance users parents education that is Father's education (66.7%) and mother's education (62.5%) was primary school education. Statistically significant association was found between substance use and gender, student's educational course, parent's educational status, and addicted person in the family. 95.2% students received information on substance use mainly from media followed by friends and family.

Among substance users, 28.3% students had sleep disturbance, 25% had decrease in efficiency of work and 27.3% had disputes under the influence of substance use. 86% of the students complained of having either physiological or psychological side effects. In physiological side effects drymouth, miosis, constipation, diarrhea and mydriasis were reported respectively and psychological side effects like aggressiveness, euphoria, anxiety followed by hallucination and memory loss were reported after starting substance use. According to attitude of the subjects for substance use, 60 % of the substance users did not feel guilty for substance use (Figure 3).

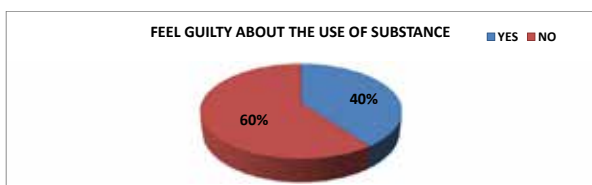


Fig 3: Distribution of Study Subjects According to Attitude for Substance Use

In the present study, majority of the students initiated substance use for the first time for curiosity (50%) followed by family or relationship dispute (19.3%) and joy seeking (18.2%) as shown in Table 1.

Table 1: Distribution of Study Subjects by reasons for substance use

Reason for the Use of Substance for the 1 st Time	N(=88)	%
Curiosity	44	50
Memory Improvement	4	4.5
Joy Seeking	16	18.2
Family/Relationship Disputes	17	19.3
Others	7	8

Discussion

In our study overall prevalence of all types of substance use was high (35.2%) and similar results were reported in the study conducted by Prashant et al.¹¹ and Tanusri et al.¹⁷ but multiple substance use reported was higher in Prashant et al.¹¹, study compared to our study. In other studies conducted at Gujarat¹² and Uttar Pradesh¹³ showed less prevalence compared to our study and more prevalence than our study was reported at Bangalore¹⁴ and Delhi¹⁵.

We found the most commonly used substances were alcohol and tobacco in their various forms and in other studies frequency of tobacco consumption was more compared to alcohol¹¹⁻¹⁵. In studies conducted by Tanusri et al,¹⁷ and Lisa et al,¹⁶ Guthka was consumed by majority of the adolescents. Multiple substance use was reported high in other studies compared to our study^{5,11}. This might be due to their easy availability.

Mean age of initiation of substance use was similar to our study in a study done by Lisa et al¹⁶ but in other studies it was less^{11,13-15,17}. In a study by Jain et al¹⁸ found curiosity as a reason for starting substance use in 68% of the cases and in our study also we found the same result¹⁵. But in other studies peer pressure was found to be the reason for initiating substance use^{11,14,15}. This difference may be due to the different study setting and different social environment.

our study we have considered late adolescents age group as highest prevalence is noted among this population. We found a decreasing trend in the initiation of substance with the increasing age similar to the study conducted by Stockings et al⁸. The initiation of substance use at a young age is a matter of concern as earlier the age at which student experiment with the first substance, the higher are the rates of addiction and the greater the risk of suffering from health problems in adulthood¹⁹.

In our study we found statistically significant association with substance use and gender and similar results were reported by Tanusri et al¹⁷. In other studies education of the study subjects were found to be significantly associated with substance use^{11, 15, 17}. Studies conducted among different professional education are rare and in our study it was found to be statistically significant.

Parent's educational status was an influencing factor for substance use in other study by Prashant et al¹¹, and similar result was found in our study and it was noticed that as the parental educational status

increased the frequency of substance use decreased among adolescents. In our study we have found that students who were using substances were reported to have more frequency of an addicted person to substances in the family compared to nonusers of substances and it was found statistically significant, whereas in other studies parental and peers and siblings substance use were reported to be associating factors^{11,17}.

Many community based studies on prevalence of substance use have been conducted in India but studies among late adolescents of professional courses are very rare. The attitudes towards quitting the substances could not be assessed which was an important limitation of the study. Subjects' expenditure on substances and whether subjects live with their parent's information were also limitations. Interventional studies of health education and counselling impact on substance users and qualitative studies on substance use are the important future research areas.

Conclusion and recommendations

The prevalence of substance use was high among our study population. Most commonly used substance was alcohol. Majority of them have positive outlook about substance use. Curiosity for initiation of substances and party occasions are the reasons for substance use. Initiation of substance use for first time was found in late adolescent period. Sex, student's educational courses, parental educational status and presence of any addicted person in the family were potential associating factors.

Educating parents will help in decreasing substance use among adolescents as well as use of media for prevention can be used. Health education and counselling activities have to be undertaken to bring about such changes in their lifestyle. Present day programmes like nashamukti abhiyan have to be strengthened through peer education and health care facilities should be made easily accessible to these vulnerable groups.

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Study of trimester wise effect of hypothyroidism in pregnancy and its materno- fetal outcome

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Abstract

Introduction: Pregnancy is associated with a number of physiological and hormonal changes that result in significant but reversible alterations in thyroid function tests (TFTs). Production of thyroid hormones and iodine requirement each increases by approximately 50% during pregnancy.

Methodology: All the patients coming to OPD for regular antenatal visits, after obtaining the gestational age and informed consent were randomly selected for the study. The patients fulfilled all the inclusion criteria. A detailed history was taken regarding, The symptoms, and signs of thyroid disorders, menstrual history, obstetric history, past medical history, family history and personal history.

Results : In our study , while we analysed , trimester wise effect of hypothyroidism in pregnancy and it's materno-fetal outcome , we found , mothers who were detected with thyroid disorder in first trimester were more with pregnancy associated complications (45%) as compared to second trimester (21%) and third trimester (only 3%)

Conclusion: From this study , we conclude that maternal hypothyroidism is associated with a variety of neonatal and pregnancy related adverse events like abortion,fetal growth restrictions, Oligohydramnios, gestational hypertension preterm delivery,operative delivery.

Keywords: maternofetal complications, third trimester , hormonal changes , pregnancy

Introduction

Pregnancy is associated with a number of physiological and hormonal changes that result in significant but reversible alterations in thyroid function tests (TFTs). Production of thyroid hormones and iodine requirement each increases by approximately 50% during pregnancy.¹ The various other changes in TFT during pregnancy include - increase in serum free thyroxine (FT4), reciprocal decrease in thyrotropin (TSH) due to the thyrotropic activity of human chorionic gonadotrophin during the first trimester.¹ There is increased sialylation of thyroid hormone,

mediated by oestrogens and reduced clearance of thyroxine-binding globulin which results in increased levels of total T4 and T3². However, many factors such as ethnicity, age, manufacturer's methodology, iodine status of the reference population and calculation method may affect the establishment of reference intervals for TFTs. Since reference range for hypothyroidism needs to be gestational age specific, there is need to establish trimester-specific thyroid levels for its effects on maternal and fetal outcome. In India, limited data is available over trimester-specific thyroid hormones level during pregnancy.^{3, 4, 5} With this objective present work was planned to study of

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trimester wise effect of hypothyroidism in pregnancy and its materno fetal outcome.

Methodology

This was a longitudinal study with sample size - Total 114 hypothyroid pregnant females selected for the study. Sample size was determined by taking prevalence as 2%, at 95% CI and acceptable errors of 5%, using WINPEPI Software Material required - blood sample and syringe 5cc .

The main source of data for the study is patients from DY PATIL MEDICAL COLLEGE, All pregnant women coming for routine antenatal checkups.

Patient selection

Inclusion Criteria

- Singleton Pregnancy
- Primigravida/Multigravida
- Know case of hypothyroidism on treatment
- Cases with Recurrent pregnancy loss

Exclusion Criteria

- known case of hyperthyroidism
- Patients with thyroid tumors

All the patients coming to OPD for regular antenatal visits, after obtaining the gestational age and informed consent were randomly selected for the study. The patients fulfilled all the inclusion criteria.

A detailed history was taken regarding, The symptoms, and signs of thyroid disorders, menstrual history, obstetric history, past medical history, family history and personal history.

A thorough general physical examination followed by examination of Cardiovascular system(CVS), Respiratory system(RS), Central nervous system(CNS), Per abdomen and local thyroid gland examined and findings noted.

Patients are sent for TSH,FT3 and FT4 levels and haematological parameters to be checked. Patients with deranged thyroid function tests are followed up and assessed for maternal and fetal outcome

Ultrasonography is done to monitor fetal growth and development in second and third trimester.

At the end, the trimester wise obstetrics outcome and perinatal outcome of the pregnancy noted.

All the information collected is kept confidential and will be used only for research purposes. Ethical clearance was obtained from the Institutional Ethics Committee.

Results

In present study mean age of patients was 25.56 years, while maximum patients - 97 patients (85%) were in range of 20 - 30 years of age. 11 patients (10%) were above 30 years of age while only 6 patients (5%) were below 20 years of age.

In the present study maximum patients were primigravida; minimum were fourth gravida. 64 patients of 114 were primigravida, 38 patients were 2nd gravida, 10 patients were 3rd gravida, and 2 patients were 4th gravida in our study.

In our present study 89 patients (78%) had no history of previous abortion, while 25 patients (22%) have history of previous abortion.

Among them 22 patients(19%) had previous 1 abortion, 2 patients (2%) had previous 2 abortions, 1 patient(1%) had 3 abortions prior to the present pregnancy.

In this study 111 patients(97%) had singleton pregnancy while 3 patients (3%) had twin gestation.

The study shows that hypothyroidism was detected by screening during the present pregnancy in 35 patients (30.7%); and in 79 patients (69.3%) it was detected prior to present pregnancy. In our study 10 patients (29%) had hypothyroid detected in first trimester,16 patients (46%) during second trimester,and 9 patients (25%) during third trimester in present pregnancy.

In our study we found 87 patients (76%) with overt hypothyroidism and 27 patients (24%) with Subclinical hypothyroidism

Table 1: Table showing distribution of patients according to the complications of pregnancy

Pregnancy complications	Number of patients	Percentage
Cholestasis of pregnancy	1	1
FGR & Oligohydramnios	13	11
GDM	2	2
Oligohydramnios	13	11
Oligohydramnios & PIH	2	2
PIH	5	4

Pregnancy complications	Number of patients	Percentage
Thrombocytopenia of pregnancy & PIH	1	1
No complications	77	68
	114	100

The present study shows that 13 (11%) pregnant hypothyroid women were having Fetal growth restriction and Oligohydramnios; 13 (11%) pregnant hypothyroid women had Oligohydramnios; and 2 (2%) pregnant hypothyroid women has Oligohydramnios and gestational hypertension; 5 (4%) pregnant hypothyroid women had gestational hypertension; 2 (2%) pregnant hypothyroid women had GDM; 1 (1%) pregnant hypothyroid women had cholestasis of pregnancy and 1 (1%) pregnant hypothyroid women had Thrombocytopenia of pregnancy; while 77 (68%) pregnant hypothyroid women had no associated complications.

Table 2: Labour complications - distribution of patients

Labour complications	Number of patients	Percentage
Prolonged labour	10	9
PPH	7	6
Nil	97	85
	114	100

In the study we saw prolonged labour in 10 (9%) patients; Postpartum hemorrhage in 7 (6%) patients; and 97 (85%) patients had no complications during labour.

Table 3: Fetal outcome - distribution of patients

Fetal outcome	Number of patients	Percentage
Low birth weight	17	15
Normal	97	85
	114	100

85% (n=17) of babies born to hypothyroid mothers has normal weight and 15% (n=97) of babies had low birth weight.

Kalpna Mahadik et al^[89] reported, 31.6% had LBW babies, and the association between LBW and hypothyroidism was significant ($p=0.001$).

Table 4: Neonatal hypothyroidism - distribution of babies

Neonatal hypothyroid	Number of babies	Percentage
YES	2	2
NO	112	98
	114	100

Neonatal hypothyroidism was detected in 2 babies born to hypothyroid mothers, and was not detected in 112 babies.

Table 5: Trimester wise effect of hypothyroidism in pregnancy and it's Materno-Fetal outcome.

Gestational week - Thyroid detected	Pregnancy associated complications (%)	labour complications (%)	Low birth weight	NICU admission (%)
First trimester (N=10)	45	22	30	35
Second Trimester (N=16)	21	15	22	24
Third trimester (N=9)	3	2	4	6

In our study, while we analysed, trimester wise effect of hypothyroidism in pregnancy and it's meterno-fetal outcome, we found, mothers who were detected with thyroid disorder in first trimester were found more with pregnancy associated complications (45%) as compared to second trimester (21%) and third trimester (only 3%).

Discussion

In the present study a total of 114 hypothyroid pregnant females were recruited and followed up throughout the pregnancy till delivery. The aim was to study the trimester wise effect of hypothyroidism in pregnancy and it's meterno fetal outcome.

In our study , while we analysed , trimester wise effect of hypothyroidism in pregnancy and it's meterno-fetal outcome , we found , mothers who were detected with thyroid disorder in first trimester were found more with pregnancy associated complications (45%) as compared to second trimester (21%) and third trimester (only 3%) .

Similar pattern was observed in labour complications , where in first trimester was seen maximum (22%) , while in second trimester (15%) , while in third trimester only 2% .

When we studied Fetal outcome in hypothyroid mothers,babies born with low birth weight , in first trimester , it was seen in 30% , in second trimester it was 4% , no low birth weight babies were born to mothers detected with hypothyroid in third trimester.

NICU admission required in babies with maternal hypothyroid since first trimester was found in 35% , in the second trimester was reported in 24% , while in third trimester , it was reported only in 6% .

Maraka S et al reported, thyroid hormone treatment was associated with decreased risk of pregnancy loss among women with Subclinical hypothyroidism, however, the increased risk of other pregnancy related adverse outcome calls for additional studies evaluating safety of thyroid hormone treatment in this patient population.⁶

In our study, 17(15%) babies were found with low birth weight, 2(2%) babies were found with neonatal hypothyroid, 44(39%) babies required NICU admission, Neonatal Hyperbilirubinemia was seen in 38(33%) babies.

Kalpna Mahadik et al observed, 31.6% had LBW babies, and the association between LBW and hypothyroidism was significant ($p=0.001$). NICU admission 42.1% was significantly associated with hypothyroidism ($p=0.000$). Risk of delivery of LBW babies is 6.3 times higher in women with hypothyroidism (95% CI=2.03-19.5) than in women with euthyroidism. Risk of NICU admission were 0.14 times (95% CI=0.048-0.39) higher in babies born to women with hypothyroidism compared to those born to women with euthyroidism.⁷

Fisher DA et al observed that neonatal or fetal hypothyroidism secondary to transplacental transfer of maternal auto-antibodies is very rare,1 in 180,000 neonates or ~2% of babies with congenital hypothyroidism.⁸

In our study , while we analysed , trimester wise effect of hypothyroidism in pregnancy and it's meterno-fetal outcome , we found , mothers who were detected with thyroid disorder in first trimester were more with pregnancy associated complications (45%) as compared to second trimester (21%) and third trimester (only 3%) .

Similar pattern was observed in labour complications , where patients with hypothyroid since first trimester (22%) had labour complications ,in hypothyroid since 2nd trimester (15%) had labour complications, hypothyroid since third trimester, only 2% had complicated labour.

With low birth weight , in first trimester , it was seen in 30% , second trimester was 4% , while no low birth weight babies in third trimester group.^{8,9}

NICU admission was required by 35% babies born to hypothyroid mothers since first trimester,while in second trimester , it was reported in 24% , while in third trimester , it was reported only in 6% . In our study, 33% delivery was Vaginal delivery, while 55% were reported as LSCS with 12% reported abortion. While correlation of type of delivery & association of hypothyroid disease, we found higher number of LSCS and abortion were reported in clinically diagnosed cases rather than sub clinical cases. While correlation of type of delivery & association of hypothyroid disease, we found higher number of preterm delivery were reported in clinically diagnosed cases rather than sub clinical cases.

Maraca et al reported, thyroid hormone treatment was associated with decreased risk of pregnancy loss among women with Subclinical hypothyroidism, however, the increased risk of other pregnancy related adverse outcome calls for additional studies evaluating safety of thyroid hormone treatment in this patient population.¹⁰ Thyroid disorders are common in women of childbearing age, and are the most common endocrine disorders after diabetes in these years. The prevalence of thyroid disease in pregnancy and its maternal and child complications in pregnant women varies widely in different regions depending on many factors. To date, there are very few studies of thyroid function and pregnancy in India associated with maternofetal effect.¹¹ Complications of hypothyroidism during pregnancy, in mother and fetus are well established. For these reasons, it is important to use appropriate strategies to identify women at risk of these side effects and to use

diagnostic tools for early detection and start effective treatment. Thus this study aims to determine the prevalence of thyroid disease during pregnancy and its effects on maternal and child health care in India. Although targeted testing is often made, the latest evidence seems to suggest that universal testing may be a better option. So, routine tests, early confirmation of diagnosis and immediate treatment along with regular postnatal follow-up, is necessary to ensure positive outcomes for both mother and baby.¹²

Conclusion

From this study, we conclude that maternal hypothyroidism is associated with a variety of neonatal and pregnancy related adverse events like abortion, fetal growth restrictions, Oligohydramnios, gestational hypertension preterm delivery, operative delivery.

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Ethical Clearance: We obtained Institutional Ethics Clearance from our IEC, DYPMC.

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Surgical and Oncological Outcomes of Extremity soft Tissue Sarcoma following en bloc Resection of the Neurovascular Bundle

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Abstract

Purpose: Vascular involvement is a major limitation in attaining limb salvage with negative margins for managing soft tissue sarcomas (STS). The study evaluated surgical and oncological outcomes of vascular resection and reconstruction during the management of extremities STS.

Methods: The study involved 60 patients with STS treated with limb-sparing surgery divided into two groups; the Reconstruction Group (n=30) needed vascular reconstruction (VR) due to vascular involvement, and the Non-reconstruction Group (n=30) did not require vascular resection. All patients were followed up for at least one year to compare surgical and oncological outcomes.

Results: Vascular reconstruction involved a major artery and vein (n=16), a major artery alone (n=13), or a major vein alone (n=1). Most patients (n = 22) had VR with a saphenous vein graft. An artificial Gore-Tex graft was used in the other cases. A primary vascular repair was possible for the femoral artery in 3 more patients. Major wound complications, DVT, and persistent severe edema were more frequent in the Reconstruction Group (p = 0.004, 0.015, and 0.001, respectively). Amputation was eventually required in 17% of the reconstruction group and a single patient in the non-reconstruction group. The overall survival (OS) at 18 months was apparently higher in the Reconstruction group (85.9%) than the non-reconstruction group (64.7%, p = 0.063). On multivariate analysis, age at diagnosis and surgical margin were the independent factors affecting OS. The functional outcome of both groups was similar (p= 0.676).

Conclusion: En-bloc resection of major vascular structures with the tumor and reconstruction has proven to be a feasible option in limb-salvage surgery. Vascular resection en bloc with limb sarcoma in locally advanced disease increases the safety of the surgical margins and gives comparable life expectancy and RFS to limb sarcoma patients with early disease who were treated with resection without vascular involvement. However, it keeps the advantage of having preserved functioning limb.

Keywords: soft tissue sarcoma, vascular resection, negative margin

Introduction

Soft tissue sarcomas (STSs) can arise anywhere in the body, but extremities are the most common primary sites accounting for 60% of the cases¹.

Traditionally, STSs of the extremities were treated with amputation, especially for tumors close to the vascular bundle². In nearly all patients, surgery is the primary local therapy. The therapeutic goals in treating extremity STS are survival and prevention

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of local recurrence with minimal morbidity and maintaining function³. Limb salvage surgery was proved feasible with adequate free margins in most patients with STS of the limbs⁴ with better functional outcomes⁵. However, vascular involvement is a major limitation in attaining limb salvage with negative margins. Therefore, vascular resection and reconstruction became a critical element of surgical removal of STSs infiltrating or enclosing a major vessel⁶.

Few studies are available in the literature reporting the outcome of limb salvage surgery with vessel reconstruction in cases of STS. This study aimed to evaluate the surgical and oncological outcomes of vascular resection and reconstruction during the management of extremities STS.

Patients and Methods

A prospectively collected database of 60 patients treated at National Cancer Institute, Cairo University for a primary or locally recurrent STS of the extremity. All patients were treated with limb-sparing surgery and were divided into two groups. The first group, Reconstruction Group (n=30), needed vascular reconstruction due to vascular involvement. Vessel resection was necessary to obtain adequate oncological surgical margins. The Non-reconstruction Group (n=30) did not require vascular. All patients were followed up for at least one year or to the time of death.

Comparison for Surgical and Oncological Outcome

The two groups were compared regarding demographic criteria, tumor characteristics, treatment modalities, surgical outcome, and oncological outcome.

The functional outcome of surgery was evaluated by the Toronto Extremity Salvage Score (TESS)⁷.

Results

The tumor size was larger in the Reconstruction Group but not statistically significant (p=0.055). Most tumors were histologically graded 2 or 3. Malignant fibrous histiocytoma and synovial sarcoma were the most common histological diagnoses.

In the Reconstruction Group, 16 patients had both a major artery and vein resected together en bloc with the tumor, 13 had a major artery removed, and one required excision of only a major vein with the tumor. Vessels resected and reconstructed were the common

femoral (n = 14), superficial femoral (n = 8), popliteal (n = 4), axillary (n = 2) and brachial (n =1). Most patients (n = 22) had vascular reconstruction with a saphenous vein graft for both the artery and vein (n = 9) or the artery alone (n = 9). In four cases, the artery was reconstructed with an artificial Gore-Tex graft, and the vein was replaced with a saphenous vein graft. The artery alone was replaced with a Gore-Tex graft in another four patients. A primary vascular repair was possible for the femoral artery in 3 more patients. At the same time, associated femoral veins were ligated without reconstruction. Also, another patient had the femoral vein resected only without reconstruction, and these patients developed DVT and severe edema, which resolved with therapeutic anticoagulation. In addition to the vascular resections, four patients required resection of major motor nerves (Table 1).

Table 1 shows a comparison of surgical and oncological outcomes in the two groups. Persistent severe or very severe postoperative limb edema was more frequent in the Reconstruction group (p = 0.001).

Table 1: Treatment outcomes in the two studied groups

	Reconstruction Group (n = 30)	Non-reconstruction Group (n = 30)	p value
Margin			0.115
R0 > 1 cm	18 (60.0%)	10 (33.3%)	
R0 < 1 cm	8 (26.7%)	14 (46.7%)	
R1	4 (13.3%)	6 (20.0%)	
Muscle transfer	13 (43.3%)	5 (16.7%)	0.024
Motor nerve resection	4 (13.3%)	0 (0.0%)	0.112
Deep Vein Thrombosis	11 (36.7%)	3 (10.0%)	0.015
Significant edema	26 (86.7%)	6 (20.0%)	< 0.001
Wound complications	20 (66.7%)	9 (30.0%)	0.004
Hospital stay (days)			0.067
≤ 7	14 (46.7%)	21 (70.0%)	
< 7	16 (53.3%)	9 (30.0%)	

Data are presented as number (%)

The limb salvage rate of the Reconstruction Group was 83%, as five patients ultimately underwent amputation. All of them received preoperative radiation. Two patients experienced severe wound

infection despite initial local flap coverage in the distal thigh. This led to osteomyelitis and compromised function of the GSV grafts for arterial replacement and required an above-knee amputation. Two patients experienced a rupture of the iliofemoral vascular repair after repeated wound complications. The last patient had a compartment syndrome developed peri-operatively, likely because the saphenous vein graft used for reconstruction was too small in diameter compared with the size of the autogenous common femoral vein, thus essentially creating a relative outflow obstruction and, finally, breakdown of the vascular anastomoses that necessitated a hip disarticulation. A single patient in the Non-reconstruction group needed amputation due to local recurrence fixed to the bone.

Survival and effect of different prognostic factors

The median follow-up period was 17 months (range: 2-28 months). The overall survival (OS) at 18 months was higher in the Reconstruction group (85.9%) than the Non-reconstruction group (64.7%), but the difference was not statistically significant (p = 0.063). On multivariate analysis, age at diagnosis and surgical margin were the independent factors affecting overall survival (Table 3).

Table 2: Factors affecting overall survival of the whole studied group (n=60)

Prognostic factor		n	No. Died	OS at 18 m (%)	p-value
Treatment type	Reconstruction	30	3	85.9	0.063
	No Reconstruction	30	10	64.7	
Age (years)	> 50	23	8	63.2	0.056
	≤ 50	37	5	90.0	
Sex	Female	27	6	74.3	0.878
	Male	33	7	78.9	
Size (cm)	≤ 10	27	3	91.7	0.017
	> 10	33	10	67.8	
Location	Thigh	28	5	83.1	0.572
	Others	32	8	77.3	
Pathological type	MFH	22	8	71.0	0.120
	Synovial	16	2	81.8	
	Other	22	3	87.8	
Grade	Grade 1-2	29	3	88.2	0.026
	Grade 3-4	31	10	70.4	
Previous unplanned excision	Yes	16	5	64.2	0.190
	No	44	8	84.5	

Prognostic factor		n	No. Died	OS at 18 m (%)	p-value
RTH	Postoperative	42	6	88.4	0.006
	Preoperative	15	7	52.5	
Margin	R0 > 1 cm	28	1	96.4	0.006
	R0 < 1 cm	22	7	79.5	
	R1	10	5	33.8	
Muscle flap	Yes	18	5	60.9	0.202
	No	42	8	86.0	
Limb Fate	Limp salvage	54	11	82.8	0.475
	Amputation	6	2	50.0	

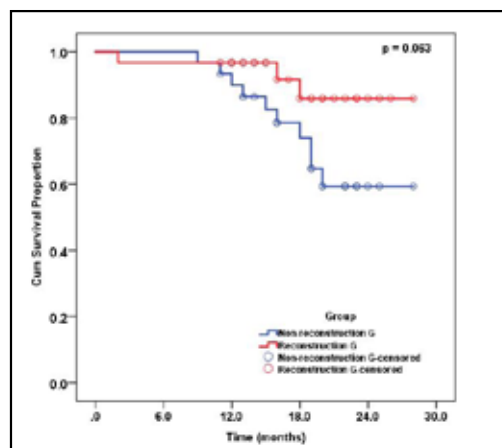
OS: Overall survival, MFH: malignant fibrous histiocytoma, RTH: Radiotherapy

Table 3: Multivariate analysis of factors affecting overall survival

	B	p-value	HR	95%CI
Age	1.293	0.026	3.65	1.16-11.41
Margin		0.018		
Margin (R0 < vs. R0 > 1 cm)	2.473	0.021	11.86	1.45-97.20
Margin (R0 < vs. R1)	3.156	0.005	23.47	2.62-210.34

B: regression coefficient, HR: Hazard ratio, CI: Confidence Interval

Figure 1: Overall survival of Reconstruction and Non-reconstruction groups



The RFS of the two groups were slightly different but without statistical significance (p = 0.155). Large tumor size, advanced grade, previous unplanned surgery, preoperative radiotherapy, positive surgical margin, and muscle flaps were associated with worse RFS (Table 4). Multivariate analysis was invalid due to the small number of events in some subgroups.

Table 4: Factors affecting recurrence-free survival of the whole studied group (n=60)

Prognostic factor		n	No. Recurrences	RFS at 18 m (%)	p-value
Treatment type	Reconstruction	30	5	83.0	0.155
	No Reconstruction	30	10	71.0	
Age (years)	> 50	23	7	73.8	0.445
	≤ 50	37	8	79.0	
Sex	Female	27	7	78.8	0.795
	Male	33	8	75.4	
Size (cm)	≤ 10	27	4	87.7	0.045
	> 10	33	11	67.8	
Location	Thigh	28	6	78.7	0.454
	Others	32	9	75.8	
Pathological type	MFH	22	5	79.2	0.856
	Synovial	16	5	78.8	
	Other	22	5	73.6	
Grade	Grade 1-2	29	3	87.8	0.005
	Grade 3-4	31	12	67.0	
Previous unplanned excision	Yes	16	9	43.9	< 0.001
	No	44	6	89.5	
RTH	Postoperative	42	6	86.5	< 0.001
	Preoperative	15	9	45.7	
Margin	R0 > 1 cm	28	1	95.0	< 0.001
	R0 < 1 cm	22	4	95.2	
	R1	10	10	0.0	
Muscle flap	Yes	18	8	52.5	0.010
	No	42	7	86.7	
Limb Fate	Limp salvage	54	12	79.6	0.202
	Amputation	6	3	53.3	

RFS: Recurrence-free survival, MFH: malignant fibrous histiocytoma, RTH: Radiotherapy

The functional outcome of both groups was similar. The median postoperative TESS score range was 65 (range: 35-100) in the Reconstruction Group compared to 59 (range: 40-100) in the Non-reconstruction Group ($p= 0.676$).

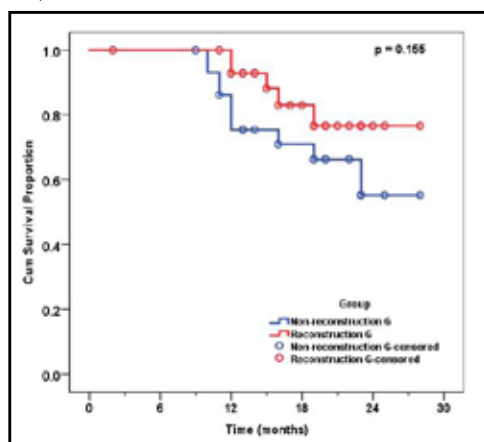


Figure 2: Recurrence-free survival of Reconstruction and Non-reconstruction groups

Discussion:

The treatment goals of extremities STSs are long-term survival, avoiding recurrence, and maintaining function. Thus, limb-sparing surgery plus radiotherapy is the optimal choice. Invasion of large vascular structures creates a major challenge in managing these cases to assure safe excision with adequate surgical margins while maintaining a sufficient vascular supply of the limb. In this study, the amputation rate was higher in patients requiring vascular resection and reconstruction. This higher risk of amputation was associated with a significantly higher rate of wound complications. Two-thirds of the reconstruction group had major wound complications compared to 30% of the control group. Furthermore, resection of major vessels leads to loss of collateral vessels and interruption of lymphatic vessels. This causes further impairment of wound perfusion and increases postoperative edema⁸. Meta-analysis has shown that wound complication rates varied from

17.6% to 48%⁹. In one series, wound complications were recorded in 43.3%. It was more common in cases of vascular reconstruction (34.5% vs 15.3%; $p = 0.05$)¹⁰.

Deep venous thrombosis was significantly more common in the reconstruction group ($p=0.015$). This complication may be another factor contributing to the higher rate of amputation. It has been shown that patients undergoing vascular surgery are at a higher risk of developing perioperative DVT¹¹. Patients with STSs may be at increased risk of DVT due to malignancy and poor functional independence.¹²

It is crucial to note that all five patients who fared to have an amputation received preoperative radiotherapy. Major wound complications were a common precipitating factor in four cases. It is believed that radio- and chemotherapy may inhibit wound healing by preventing collagen synthesis¹³. It is known that previous radiotherapy in flap procedures may affect vascular availability¹⁴. Preoperative radiotherapy is often associated with higher rates of wound complications when surgery is done after the standard dose of 50 Gy¹⁵. In a multicenter randomized trial, major wound complications were recorded in 35% of patients treated with preoperative RT¹⁶. This risk is increased in lower extremities sarcomas adjacent to major neurovascular structures¹⁷.

Yet, the current study has shown a relative survival advantage in the vascular reconstruction group. Thus, we believe that limb-salvage surgery followed by reconstruction of the vascular defect is the best alternative in cases involving vascular structures. The guidelines of this type of surgery need to be standardized. In a trial for guiding surgical management of STSs, Schwarzbach et al.¹⁸ suggested their classification of vascular involvement pattern. They proposed arterial and venous reconstruction in type I involving both major arteries and veins if collateral venous drainage was impaired. Arterial reconstruction will be enough with adequate venous drainage. In the current study, 16 patients were classified as Type I, while 13 were Type II.

It was found that venous resection without reconstruction leads to limb edema and discoloration^{19,20}. However, venous reconstruction did not reduce limb edema in other studies^{21,22}. In the current series, we have performed venous

reconstruction in 13 patients with a saphenous vein graft. Many reports support this approach of attempting venous reconstruction in all cases, especially when the collateral flow is unclear^{23,24}. The rate of postoperative edema may correlate with the degree of disruption of venous collaterals at the time of resection²⁵.

An important limitation of this study is that it is not a typical comparative one as randomization is not possible. The patients in the non-reconstruction group did not require any type of vascular manipulation. However, we supposed that a comparative group is a better way to show the impact of vascular resection and reconstruction on outcome of treatment of STSs. In conclusion, limb-salvage surgery of extremities STSs is an effective treatment option achieving negative margins in most cases. Vascular resection and reconstruction were associated with more postoperative wound complications, DVT, and severe limb edema. Also, amputation was more frequent after vascular reconstruction. Overall survival was better after reconstruction but with no statistically significant difference.

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Fertility Preservation in Young Breast Cancer Patients: a Concept Analysis

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Abstract

The purpose of this study was to clarify and analyze the concept of fertility preservation in young breast cancer patients. As the reproductive age of women increases and the number of young cancer patients increases, there is an uncertain situation in which young cancer patients diagnosed with breast cancer may lose fertility in the course of cancer treatment. Fertility preservation is a widely used concept. It is necessary to clarify the meaning and concept of fertility preservation in young breast cancer patients in order to reduce confusion in the selection of cancer treatment and fertility preservation. For this study the process of Walker & Avant's analysis was used. Eleven studies from electronic data bases met criteria for selection. Fertility preservation can be defined by the following attributes 1)basic human desire 2)voluntary choice according to the individual's point of view 3)change of perception through consultation. The antecedents of fertility preservation consisted of: 1)Appropriateness of providing information 2)differences in individual values 3)socio-environmental factors. The consequences occurring as a result of fertility preservation were: 1)improvement distress and 2)enhancement of quality of life. Results of this analysis provides a theoretical framework for oncology medical staff to better understand fertility preservation in young breast cancer patients, to improve quality of life.

Keywords: fertility preservation, breast neoplasm, concept analysis, young adult

Introduction

A woman's view of fertility changes throughout her life. Changes in a woman's body along with time leading to menarche, pregnancy, and menopause are most pronounced. However, when a woman is diagnosed with infertility or has an unwanted pregnancy, it is considered distressing. The number of unmarried young cancer patients is increasing because of the increase in women's reproductive age and advances in medical technology, which in turn is also leading to a higher cancer survival rate. Naturally, preservation of fertility after cancer treatments is emerging as an important issue for young female cancer patients¹⁻⁴. In 2006, the American Society of Clinical Oncology presented a guideline stating that patients receiving cancer treatment for the first time should receive sufficient explanations about the possibility of infertility and methods of

preserving fertility. Although medical staff focuses on cancer treatment itself when diagnosing cancer, the completely revised American Society of Clinical Oncology guideline⁵ emphasized that a sufficient explanation of fertility should be provided to the patients before starting any treatment. According to the ranking of cancer incidence among women according to age group in Korea published by the Ministry of Health and Welfare in 2018⁶, breast cancer had the second-highest incidence rate of 5.1% after thyroid cancer, among 15-34-year-old patients, whereas its incidence rate in 35-66-year-old patients was 77.6%⁶. An important characteristic of breast cancer in Korea is that it increases at a high rate of 6.1% every year. The total number of breast cancer patients per 100,000 female population is continuously increasing; in 2000, it was 26.3; in 2012, it was 76.8; and in 2017, it was 103.0⁷. In Western

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countries, the proportion of premenopausal women with breast cancer is very low, and the incidence increases with age. The figure is more than twice as high as in Korea^{6,7}. With improvement in cancer treatment, in particular, the 5-year survival rate for breast cancer improved to 93.3%, which is higher than that of other female cancers, i.e., 75.2% for gastric cancer and 80.5% for cervical cancer⁷. Given the characteristics of Korean breast cancer, which occurs frequently in young women under the age of 40 and has a high incidence and survival rate, it is necessary to minimize the side effects that occur in the course of cancer treatment and to improve the quality of life by preserving and recovering body functions⁷.

Chemotherapy is an important cancer treatment, and high-dose chemotherapy causes ovarian dysfunction, with a risk of about 92%, regardless of age³. Young female cancer survivors are anxious and stressed about the possibility of infertility, hoping to be able to become parents after treatment^{4,5}. Preservation of fertility is very important because the number of young cancer patients who are of childbearing age is increasing, and preservation of fertility is one of the most important parts of life after cancer treatment⁸. In a study of young breast cancer survivors under 40 years of age, 12% considered fertility preservation as a factor in determining treatment, and it was reported that after diagnosis, about 53% attempted pregnancy⁹. Women diagnosed with cancer, on the other hand, may be preoccupied with survival and be unaware of the potential future fertility impairment¹⁰. When chemotherapy and hormone therapy are started, a woman's fertility may decrease, and she may not have the opportunity to give birth in the future. Therefore, sufficient discussion about the fertility of young women should be made before starting treatment^{2,4}. According to a study on female cancer patients of childbearing age if they received professional advice from a medical team about their fertility before treatment, they had less regret and a higher quality of life, even if their fertility was decreased¹¹. However, in a telephone interview study of young African-American breast cancer survivors under the age of 45 years, 45% of respondents said they wanted to have children at the time of breast cancer diagnosis, but 50% of them were not informed about their fertility at all¹².

The purpose of this study is to accurately recognize the meaning of fertility for breast cancer patients by clearly defining the meaning and concept of fertility

preservation in young breast cancer patients who are in an uncertain situation where they can lose their fertility during cancer treatment. This study was also conducted to reduce the confusion in choosing cancer treatment and to preserve fertility and to help determine fertility preservation. Therefore, based on the conceptual analysis framework of Walker and Avant¹³ this study will unify the concepts through a systematic conceptual analysis of fertility in young breast cancer patients and provide a clear theoretical basis. The purpose of this study is to clarify the conceptual attributes of fertility preservation in young breast cancer patients and to prepare a theoretical basis. This study used the conceptual analysis procedure of Walker and Avant.

Materials and Method

1. design

This study was conducted using the previous study and literature search method. The conceptual analysis of "preserving fertility in young breast cancer patients" was carried out according to the conceptual analysis procedure of Walker and Avant¹³. The detailed process is as follows:

- First, select a concept.
- Second, establish the purpose of conceptual analysis.
- Third, check the scope of use of the concept.
- Fourth, determine the properties of the concept.
- Fifth, present model examples.
- Sixth, present additional examples.
- Seventh, identify the antecedent factors and results.
- Eighth, determine the definition of empirical reference.

2. Subjects

The scope of the literature review for this study is limited to dictionary definitions of "breast cancer" and "preservation of fertility," theories related to fertility, and previous studies. For literature searches in Korea, journals and dissertations retrieved from the Korea Education and Research Information Service (www.riss4u.net) were used for analysis, and for overseas literature, papers retrieved from PubMed, CINAHL, and PsycInfo were used for analysis. The study

period considered was the last 15 years, i.e., from January 1, 2006, to June 30, 2021, and the keywords were “young breast cancer or breast neoplasm” and “fertility preservation.” There were 4 cases in RISS, 684 cases in PubMed, 94 cases in CINAHL, and 62 cases in PsycInfo. Results, excluding 130 publications, that were duplicated out of a total of 844 searched materials, publications that were evaluated to be completely irrelevant to the purpose of the research according to certain criteria, and 679 publications that were written in languages other than Korean and English, or 35 whose original text was not accessible, were confirmed. Among them, the full texts of 19 documents, excluding 16 documents that did not meet the criteria, were examined by checking the abstract, and a total of 8 documents that did not meet the criteria were excluded; thus, a total of 11 documents were used for the final analysis (Figure 1). Literature that met the following criteria was excluded from the study.

- Documents related to fertility in male and gynecological cancer patients, and data on the experience of medical staff in preserving fertility rather than patients
- Data on drug treatment regimens and treatment guidelines for the preservation of fertility in breast cancer patients.
- In the process of reading the entire text, some materials are judged to be of too low relevance to the research topic.

After reviewing the literature related to the preservation of fertility in young breast cancer patients, in order to understand and appreciate the various uses of the concept of fertility, in addition to studies dealing with fertility, Korean and English dictionaries, life sciences, neuroscience, psychology, public health, and sociology research literature was additionally reviewed. In addition, literature dealing with theories related to the concept of fertility was searched and utilized by referring to references from previous studies.

3. Data Collection and Analysis Methods

The researcher confirmed how the concept of fertility preservation in young breast cancer patients was used within the selected literature. After that, each data table was created, and systematic and reliable conceptual analysis was made possible by extracting and describing the types of documents and the

meanings and attributes of concepts. The data table was independently prepared by two researchers, and after discussion and agreement, the reliability and validity of the study were secured by selecting and analyzing data and extracting the meaning and attributes of concepts. This process was repeated three times until the two researchers reached a full consensus. The purpose of preparing the prepared datasheet is not to reach a final judgment, but to conduct a comprehensive review in the process of first reviewing the literature. After that, the decisive attributes of the concept were identified; model cases, additional cases, antecedent factors, and results were derived; and theoretical definitions were derived by organizing them.

Results

1. Scope of use of fertility preservation in young breast cancer patients

1) Dictionary definition

Merriam-Webster's dictionary defines fertility as “the ability to produce young,” “the Dictionary, “fertility means productiveness, meaning the number of births distinct from the capability to bear, and fecundity means “capability to bear children”¹⁷. In other words, fertility is a concept that includes fecundity, where the idea of the number of progeny is included, whereas fecundity means the quality of reproduction without the concept of number, and it was confirmed that fertility is a larger concept than a fecundity.

2) Scope of use of the concept

(1) Use of concepts in other academic fields

Demographers used the term fertility to indicate the pregnancy power, meaning the number of children born in a country, and they used this term “fertility” to estimate demographic change with the number of children born¹⁸. In psychology and research, fertility is also used as a concept of the ability to reproduce many offspring. Fertility refers to a woman's health status, such as age, waist and hip ratio, and body fat distribution when a man chooses a mate, which was considered an indicator of fertility¹⁹. In medicine, fertility is the ability to become pregnant, and in the case of young cancer patients, many medical treatments are being studied to preserve fertility before and during cancer treatment. In the case of young female cancer patients, ovarian

function deteriorates because of treatment such as chemotherapy, and once the ovarian function has degenerated, it cannot be restored. In the case of the aforementioned patient group, fertility is likely to decrease significantly during the cancer treatment process, so research on fertility preservation methods is ongoing²⁰. The method of preserving fertility in female cancer patients currently being applied in clinical practice varies depending on marital status. Married women use the embryo cryopreservation method, which involves fertilizing and freezing the sperm and oocytes of their spouses. For unmarried women, the oocyte freeze-preservation method is used. Since both require a superovulation induction process for oocyte collection, cryopreservation of ovarian tissue is used to separate and preserve ovarian tissue when emergency chemotherapy is needed, such as in the case of leukemia^{3,8}.

(2) Use of concepts in nursing literature

A woman's fertility depends on changes in her life and environment, and it may be something she wants, but it is also used as a negative concept that she does not want and has to²¹. For example, regardless of the stage of mental maturity, with the onset of menstruation, a woman's body is ready for childbirth, but a woman must keep herself from becoming pregnant until menopause outside of family planning²². For this reason, "fertility" can be used as an opposing concept depending on the situation, such as women who are not planning to become pregnant should be careful not to become pregnant during intercourse, even though they can become pregnant²¹.

Biologically, the desire to be a parent is an important part of cancer survivors' lives and affects their lifelong health and quality of life²³. Fertility is an important area of interest for young female cancer patients²⁴. The preservation of fertility serves as a hope for cancer patients, and it causes major distress when fertility is lost^{1,10,24}. However, young female cancer patients have to make decisions about fertility preservation and adjuvant chemotherapy as soon as they are diagnosed. The patients not only do not have enough time to consider fertility preservation, but they may be overwhelmed by the cancer diagnosis itself and not consider the therapeutic effect on fertility after breast cancer treatment^{4,25,26}. Particularly, in the case of unmarried breast cancer patients, fear of hair loss, chemotherapy, and shameful feelings about breast surgery can cause anxiety. Patients are also concerned about whether cancer treatment will affect future

pregnancies and whether fertility treatment may affect cancer treatment and negatively affect medical prognosis²⁵. The level of concern about fertility depends on three factors: the environment, personal values, and expectations. Fertility is of paramount importance and a high priority for patients who have tried to conceive, are young, or have no children^{4,26}. Young patients who consider survival to be the most important priority accept the possibility of infertility and choose to receive cancer treatment immediately²⁶. In a qualitative study of unmarried breast cancer patients, the preservation of fertility is an important issue, but at the same time, uncertainty about fertility, due to the influence of chemotherapy, etc., acts as a major stress factor. In addition, it was very difficult to consult with the medical staff regarding fertility preservation because patients considered it a very sensitive and complex issue²⁷. In addition, compared to men, women's fertility-preserving treatment is more complex and difficult to find practical solutions, so it is difficult for female cancer patients to consult with medical staff first²⁸. They answered that they felt lonely and alienated when having conversations with family members and medical staff on the topic of fertility due to the difficulty of the topic²⁹. Therefore, it is very important for the medical staff to sufficiently discuss with the patient before treatment about the preservation of fertility and to provide accurate information on the method of preserving fertility as it reduces the psychological distress of cancer patients^{8,24,25}. In particular, in nursing, more holistic care can be provided by sharing opinions and explaining experiences about uncertainty regarding fertility after treatment, fears, and concerns about fertility after treatment²⁷. For effective counseling, medical staff also need to receive conversational education such as how to communicate with the patients²⁹.

For young female cancer patients, being able to have children after treatment has many meanings. Preservation of fertility has the greatest impact on improving the quality of life of patients. It makes them feel "healed"; looks at the future positively; becomes a link to reconnect with colleagues, friends, and family; and becomes a stimulant to recover their health^{2,27}.

2. List of tentative criteria and attributes of fertility preservation in young female cancer patients

As a result of examining a wide range of literature in which the concept of fertility preservation in young female cancer patients is used, the following tentative

list of criteria and attributes were identified. This process is the core of conceptual analysis and is a process of identifying the properties of concepts that appear repeatedly in the literature¹³.

1) List of provisional standards

- ① Preservation of fertility can be downplayed as the burden of cancer diagnosis itself²⁵
- ② Treatment to preserve fertility can have a negative effect on cancer survival^{2,30}
- ③ The desire to become a parent affects the quality of life throughout life¹
- ④ Uncertainty increases fear and distress^{24,27}.
- ⑤ Timely and sufficient counseling from medical staff reduces distress^{8,24,25}
- ⑥ Being able to become a parent serves as hope⁴
- ⑦ Uncertain situations make you feel lonely²⁹
- ⑧ The choice of fertility varies according to society, culture, environment, and individual values^{4,23,26,30}

2) Defining attributes

As a result of reviewing the literature on the fertility of young female cancer patients, we find that fertility is a basic human desire and can be voluntarily selected according to an individual’s point of view. It was confirmed that the perception of fertility through

counseling can be differentiated. Therefore, the properties of fertility preservation in young female cancer patients confirmed in this study are as follows (Table 1).

(1) Parenthood is a basic human desire (③,⑥).

(2) Voluntary choice according to individual’s point of view (①,⑧).

(3) Negative psychological changes due to uncertainty (②④⑦).

(4) Change of perception through consultation with medical experts (⑤).

3. Model examples of concepts

A model case is an example in which all the important properties of a concept are included¹³.

K, a 32-year-old woman who was married last year and does not yet have children, accidentally touched a hard lump on her left chest while taking a shower. She came to the hospital and was diagnosed with stage 2 breast cancer after an ultrasound and biopsy. K was so sad that she thought she was going to die right away when the doctor told her that she needed surgery and chemotherapy right away and could not believe that she had this disease. The doctor explained that after the operation, she had to undergo chemotherapy for 6 months and antihormonal drugs for 5 years. She was also told that if she received this treatment, her ovaries could degenerate and lead to infertility. K was

Table 1. Antecedent, Attributes and Consequences of Fertility Preservation in Literature Review

First Author (year)	Research design	Antecedent	Attributes	Consequences
Bártolo A. (2021)	Descriptive study	Partner disclosure of fertility status	Desire to have a biological child	Improve psychosocial Outcome (distress↓)
Camp-Sorrell D. (2009)	Review	counseling	(future pregnancy is) Viable option	Impact long term health and quality of life
Carneiro, MM (2018)	Review	Advances in breast cancer treatment Consultation with a reproductive specialist	Individualized option	Supportive care
Corney, R. (2014)	Qualitative study	Various information by healthcare professional	Option of ART Emotional and practical support	Improve quality of life
Gorman J.R. (2011)	Qualitative study	Timely information	Life circumstances and timing In relation to diagnosis varied	Improve quality of care

First Author (year)	Research design	Antecedent	Attributes	Consequences
Goossens J. (2015)	Qualitative study	Feeling of loneliness	Difficulties in communicating potential fertility loss	improve quality of oncofertility care
Hampe M. E. (2020)	Review	counseling	fertility preservation is not a priority	Improve quality of life
Penrose R.B. (2013)	Review	enduring distress and feeling uncertainty	Lack of information Cancer treatment	Improve distress
Peate M. (2009)	Review	distress	Possibility of losing their fertility after cancer treatment	
Rosen(2009)	Review	Timely information	Desire for biological parenthood	Improve distress

Desperate to be told that she could not have children and thought that not being a mother would be equivalent to giving up on being a woman (a basic human desire). Doctors introduced that she had embryo cryopreservation methods if she wanted to have children, as K and her husband are a young couple without children. The doctor said breast cancer treatment is delayed by about 2 months because the procedure requires an egg collection process. The doctor also warned that superovulation injections administered for oocyte collection could make breast cancer worse and advised her to discuss with her family whether to start breast cancer treatment or choose a fertility-preserving method. K's husband thought that she should receive treatment as soon as possible and become healthy rather than h the possibility of having a child. However, K felt that life without children would be too frightening and meaningless, so she wanted to receive fertility-preserving treatment (a voluntary choice based on her personal point of view). K was worried about whether to choose between chemotherapy and preservation of fertility (psychological changes due to uncertainty). After hearing detailed explanations of fertility preservation methods and experiences from other patients from a breast cancer nurse, she gained confidence that breast cancer can be cured sufficiently even after embryo cryopreservation (recognition change according to the role of medical staff). This childless young breast cancer patient's case includes all four attributes of fertility.

4. Development of additional cases

1) Similar cases

Similar cases are cases in which most of the attributes of the concept of interest are included, but not all of them. This example demonstrates why it cannot be a model case and helps clarify what is considered a concept and what is not, helping to clarify actual concepts and confirm their properties¹³.

A 37-year-old Y, who was diagnosed with breast cancer, asked her doctor if she could have children after 6 rounds of chemotherapy after surgery. Then, the doctor said that she has to take

tamoxifen for 5 years from now and could not become pregnant during the drug treatment period and that there is a very high probability that she will not be able to have children because she is currently amenorrhetic. Y, who thought that she would be able to have a child after chemotherapy (parenting is a basic human wish), claimed that she had not heard enough from the medical staff before starting treatment. She said that her choice would have been different if someone had informed me about it (voluntary choice based on a personal point of view). She expressed that it was difficult and hopeless to accept the fact that she could not have a family and that she could not have children, even though cancer could be treated (negative psychological changes due to uncertainty).

This similar case is a case in which the attribute of change of perception according to the role of medical staff is not included.

2) Related cases

A related case is an example of a concept related to the concept being analyzed, but a case that gives a different idea when closely examined. It is similar to the concept under analysis, and in a sense, is connected to it²⁶.

L, a 28-year-old unmarried woman, visited the hospital with a lump on her chest and was diagnosed with stage 3 breast cancer. She had a large cancer and was told that she could get the surgery after she received prior chemotherapy. The doctor said that ovarian dysfunction may occur as a side effect of chemotherapy prior to chemotherapy and may lead to infertility. In the words of the medical staff, L said that she did not want to become pregnant and that if she wanted a child, she could adopt it later (voluntary choice according to the individual's point of view). It is more important for her to be healed quickly and become healthy than for a child. She was always worried about getting pregnant while having intercourse with her boyfriend, but now she does not have to worry about having an unwanted pregnancy in the future.

In this case, among the properties of fertility preservation, "parenting is a basic human desire," "negative psychological change due to uncertainty," and "recognition change according to the role of medical staff" factors could not be found. In this case, fertility is negative, meaning that it is uncomfortable when having sex with a boyfriend, and parenting is also possible through adoption, one's choice without the attribute of basic human desire. The attribute for fertility preservation includes only the voluntary choice attribute according to an individual's point of view.

3) Opposite case

A counter-example is an example of "what the concept is not." This example helps with the concept because it is easier to say what a concept is not than what it is¹³.

L, 30, unmarried, has a family history of being diagnosed with breast cancer by both her maternal grandmother and mother. When she was 24, her mother was diagnosed with breast cancer. At this time, she also received a BRCA genetic test, and both BRCA I and II were positive. L has been thoroughly self-examination and regular check-ups and has accumulated knowledge through an Internet search for breast cancer diagnosis and prevention since the

age of 24. However, L was diagnosed with stage 2 breast cancer at the age of 33 and heard the news that a Hollywood actor with a BRCA gene mutation, similar to her case, had undergone oophorectomy and mastectomy to prevent breast cancer. She also said that she would undergo ovarian resection in advance.

In this case, among the attributes of preserving fertility, the patient's behavior is determined by information obtained through an Internet search, rather than by consultation with medical staff and voluntary selection according to an individual's point of view. A case in which a patient decides to undergo oophorectomy to prevent the recurrence of breast cancer rather than feeling anxious about preserving fertility during cancer treatment is a case of not thinking about preserving fertility. In this case, "parenting is a basic human desire," "voluntary choice according to an individual's point of view," "negative psychological change due to uncertainty," and "attributes of cognitive change according to the role of medical staff" are not included.

5. Confirmation of antecedent factors and results of the concept

Antecedents are events or ancillary conditions that occur before the occurrence of a concept. After conceptual analysis, checking the antecedent factors and results helps to reflect the social situation in which the concept is commonly used and refine its attributes. Antecedents are things that must happen before a concept occurs, and consequences are events or ancillary conditions that occur after they occur¹³.

1) Antecedent factors

The first antecedent factor for fertility preservation in young breast cancer patients identified through the literature is the adequacy of providing sufficient information on fertility preservation.

Young breast cancer patients often do not receive accurate information about fertility preservation. The reasons are as follows: failing to consider the possibility of future fertility preservation because of the pressure to be diagnosed with breast cancer, lack of time to discuss fertility preservation, and the belief that delaying breast cancer treatment negatively affects cancer treatment. As a result, it can be stated that the provision of information on fertility by medical staff with professional knowledge is a major driving factor^{8,24,25}. The second antecedent factor is the preservation of fertility and parenting, which

is a factor determined by differences in individual values. The desire to have children was found to be influenced by the frequency of partner-supportive conversations among married people^{1,25}. In the case of unmarried breast cancer patients, there is a dilemma in making a choice due to the fear of being rejected by their spouse in the future and the anxiety that if they choose fertility-preserving treatment, the time to receive breast cancer treatment will be delayed²⁷. In the case of young breast cancer patients, the choice of breast cancer treatment or fertility-preserving treatment when diagnosing breast cancer differs according to individual priorities^{2,31}. The third antecedent factor is a socioenvironmental factor. According to this factor, there are social and cultural differences in fertility decisions⁴ Family or spouse's support, which can be seen as one of the social and environmental factors, is an important essential factor when planning on fertility preservation, so it can be said to be a prerequisite for fertility preservation²⁶. In addition, since financial resources are required for the treatment to preserve fertility, financial status can also be said to be a prerequisite for fertility preservation⁸.

The three antecedent factors for fertility preservation in young breast cancer patients are as follows:

1. adequacy of provision of information on fertility preservation^{8,24,25}

2. differences in individual values^{26,29}

3. socioenvironmental factors^{8,9,27}

2) Confirmation of consequences

The decision on whether to preserve fertility in young breast cancer patients is determined by complex and diverse individual factors³². A (2)voluntary choice according to the individual's point of view,

(3) psychological changes due to uncertainty, and

(4) changes in perception according to the role of medical staff navigator role is needed that integrates the role of a counselor to heal various psychological emotions such as anxiety, fear, and sadness, as well as providing medical information on fertility through sufficient information and communication with medical staff before breast cancer treatment. This can increase the satisfaction of breast cancer treatment, lower the distress, and ultimately improve the quality of life(Figure2).

: Improving the quality of life^{2,27,29}

6. Empirical reference

As the last stage of conceptual analysis, it refers to the classification or category of actual phenomena to explain the occurrence of a certain concept⁹. It was found that the important attributes and empirical criteria of fertility in young female cancer patients were the same. They were found as follows:

(1) basic human desire,

Discussion

Treatments for cancer diagnosis include surgery, chemotherapy, and radiation therapy, which cause ovarian dysfunction and lower fertility in women. Recently, as the childbearing age of women for the first child is gradually increasing and also the proportion of young female cancer patients is increasing, it is an important issue to preserve the fertility of young women diagnosed with cancer³. In particular, it is difficult to recover ovarian function, which has been degraded once due to treatment, and it is uncertain whether or not to preserve fertility after treatment. Therefore, this study confirmed the meaning and concept of fertility in young female cancer patients who may lose fertility due to cancer treatment. Therefore, for young women who are single or do not have children, it is very important to provide and understand sufficient information about preserving fertility before cancer treatment^{4,8,26}. As shown in previous studies, fertility is a basic human desire for young breast cancer patients. However, it is uncertain whether fertility can be preserved due to cancer treatment, such as chemotherapy and antiestrogen therapy⁷. Therefore, cancer treatment has been shown to increase fear and distress in young breast cancer patients. However, when the medical staff gave sufficient explanations and discussions about fertility preservation to the patients before treatment, the psychological distress of cancer patients was low⁹. When selecting the treatment after fully knowing about the uncertainty of fertility, it was found that even if the patient lost fertility, the feeling of regret was low and the quality of life was high. In particular, the choice of fertility may vary according to an individual's point of view. If the medical staff's professional counseling and discussion on fertility preservation were done well before treatment, the psychological impact on patients would be relatively low even if they lost fertility. Therefore, pre-consultation with professional medical staff on fertility is very important.

Therefore, this study aims to reduce confusion that may occur in uncertain situations after breast cancer diagnosis through conceptual analysis and understanding of fertility preservation in young breast cancer patients. The application of interventions for fertility preservation, such as the development and application of professional counseling programs for fertility preservation, is thought to ultimately improve the quality of life of young breast cancer patients.

However, this study has limitations in generalizing the results of studies, such as the results were obtained by selecting only Korean and English literature, which were used by viewing the title and abstract. The concept analysis method of Walker and Avant¹³ used in this study has limitations in analyzing concepts appropriate for the nursing phenomenon; thus, various concept analysis methods that combine the theoretical and field steps are needed. Therefore, it is thought that repeated research on the concept of "preserving fertility" is necessary to identify various influencing factors that were not confirmed in this study.

Conclusion

This study is a conceptual analysis study using Walker and Avant's method.

As a result of the analysis, 1) young female cancer patients' fertility is a basic human desire, 2) they experience psychological changes due to uncertainty about fertility before treatment, 3) they can choose to preserve fertility according to the individual's point of view, and 4) it was found that there is a property that can change the perception of whether to preserve fertility depending on the role of the medical staff.

From the above research results, the following conclusions were drawn. First, research related to the development of an intervention program for sufficient education and counseling on the preservation of fertility in young female cancer patients in actual clinical practice is necessary. Second, it suggests conducting a follow-up study to confirm the patient's quality of life results after the application of an educational intervention program on the preservation of fertility in nursing practice.

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A Study to assess the prevalence of Respiratory Morbidity among Petrol Filling Station Employees in New Delhi, India

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Abstract

Good quality natural environment provides basic needs, in terms of clean air and water, fertile land for food production, and energy and material inputs for production. Human health and well-being are intimately linked to the state of the environment. Though several types of environments exist, it is the physical environment which plays an important bearing on health. Occupational environment plays a major role on the health of those exposed to pollutants. The objectives of the study were to:(1) assess the prevalence of respiratory morbidity among petrol filling station employees (2) determine the association between respiratory morbidity among employees with selected demographic and occupational variables. The study was conducted among 40 petrol filling station employees at New Delhi. The study revealed significant association between phlegm with locality ($p<0.05$), breathlessness with age in years ($p<0.001$), chest illness with age in years, employment status, exposure to type of pollutant and number of working days per week ($p<0.05$). The study found adverse effects of workplace exposures on respiratory health and development of respiratory morbidity symptoms among petrol filling station employees.

Keywords: Respiratory morbidity, Prevalence, Petrol filling station employee

Introduction

Health is not something that one possesses as a commodity, but connotes rather a way of functioning within one's environment (work, recreation and living). The work environment constitutes an important part of man's total environment, so health to a large extent is affected by work conditions. Though several types of environments exist, it is the physical environment which plays an important bearing on health¹⁰.

Environmental pollution is a growing problem to mankind. The problem is pertinent in the urban context

as with the present trends half the world's population is living in urban settlements. It is estimated that the problem is most acute in developing countries, where millions suffer and die from respiratory diseases caused by indoor or outdoor pollution. Hence health of urban population deserves urgent attention^{4,5}

Occupational environment plays a major role on the health of those exposed to pollutants. The health hazards get more severe when the duration of exposure increases. This fact is more important in case of traffic cops or enforcers, petrol filling station workers, taxi drivers etc.

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Rapid urbanization, increasing use of automobiles and industrial activities give rise to urban air pollution dominated by oxides of Sulphur (Sox), nitrogen (NOx), carbon (Cox), volatile organic compounds (VOCs) and suspended particulate matter (SPM) in all cities of the world^{8,9}. In urban areas certain occupations like petrol filling station workers, vehicle repairing and servicing are associated with exposure to fumes, vapors, gases, exhausts, dusts and SPM. Vehicular pollution is an important contributor to air pollution in Delhi.

According to the Department of Transport, Government of National Capital Territory of Delhi (2019), total vehicle count estimated at more than 3.4 million, reaching higher at a growth rate of 7% per annum. Air pollution in urban area has health effects on the public as well as on workers specially those working in traffic congested environment, where they are regularly exposed such job-related exposures⁹. Vehicular exhaust is the worst type of exhaust as it is emitted at the ground near the breathing level, and it gives maximum human exposure¹. Respiratory health problems like reduction in pulmonary functions due to such working exposures are relatively unexplored area of research².

Respiratory disorders range from deterioration of pulmonary function, dryness of the throat, coughing, tightness in the chest, wheezing and breathlessness to chronic bronchitis. Workers who are regularly exposed to fuels, gasoline oils, solvents report 30-40% incidence of pulmonary health related problems³. Exposure to petroleum products among certain occupations for a long time significantly affects respiratory system and the symptoms such as breathless ness, chronic cough and wheezing can be observed. Moreover, if the exposure concentration is higher there is a chance of marked systemic pulmonary inflammatory occur⁸.

The inhaled air contains pollutants that adversely affect the respiratory health of the workers. The fuel exhausts release the particles which are extremely fine having large surface area and can transport high rate of toxic compounds including hydrocarbons on their surface. These fine particles are capable of longer retention and have a probability to deposit in greater number and deep into the lungs⁸. COx (Oxides of carbon) and SOx (oxides of Sulphur) can cause multitude adverse effects on a respiratory system like tissue hypoxia, reversible decrease in functions

of lung, constriction of the bronchioles, severe airway obstruction, pulmonary oedema and hypoxemia, while NO₂ (Nitrogen Dioxide) impairs the immune defense mechanism of lungs.

Human lung functionality is evaluated by pulmonary function testing (PFT) and the main type of PFT is spirometry. Spirometry is performed by spirometer; This device employs non-invasive diagnostic techniques for testing and screening of lung functions. These are relatively cheaper and can be performed within minutes. As lung diseases like bronchitis, emphysema and asthma are prevailing and common, spirometry has become an indispensable technique in epidemiology, clinical and occupational settings as well as in industrial Medicine⁶

Hence the early recognition of respiratory illness and preventive measures of susceptible employees with respiratory morbidity need to adapt health promoting behavior in the work place before the chronic impairment develops will prove to be beneficial.

Aim and Objectives

The present study is aimed to assess the occupational exposure and respiratory morbidity among petrol filling station employees in selected Petrol filling stations at New Delhi. The objectives of the study were to: (1) assess the prevalence of respiratory morbidity among petrol filling station employees (2) determine the association between respiratory illness among employees with selected demographic and occupational variables.

Methods and Materials

A total of 40 petrol filling station employees were selected from petrol filling stations at New Delhi. The study was conducted during November 2020. Purposive sampling technique was used to select the subjects. After getting approval from Vardhman Mahavir Medical College Institutional Ethical committee, researcher enrolled the subject after getting their informed consent and data were collected from the samples. Demographic data, Occupational data, Health history and Medical Council Research Questionnaire (MRCQ; developed by Medical Research Council, The United Kingdom, 1986) were administered to assess their respiratory morbidity. The reliability of the tool was assessed by test re-test method and it was found to be feasible ($r = 0.90$)

Discussion and Results

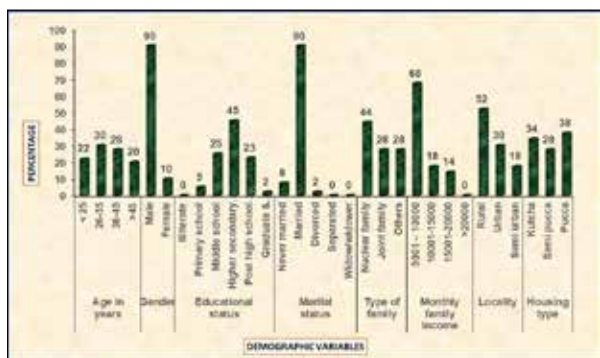


Figure 1: Demographic Variables of employees of petrol filling stations

Figure 1. show the Demographic data of Petrol Filling Station Employees. About 30% of employee belonged to the age group of 26 to 35 years and least, 20% belonged to >45 years of age group. Majority were males (90%) and 45% had higher secondary education. Majority were married (90%) and 44% were from nuclear family. Regarding monthly income, the majority 68% of employees earned between Rs. 5001-10000, 52% of employees hailed from rural area, and more than half (58%) of the employees lived in pucca house.

Table 1: Frequency and Percentage Distribution of Occupational Variables among Employees of Petrol Filling Stations. N=40

S. No	Variables	Sub variables	Frequency	Percentage
1.	Employment status	Permanent	17	42
		Temporary	23	58
2.	Occupational category	Unskilled	11	28
		Semi-skilled	10	25
		Skilled	19	47
3.	Type of pollutant Exposure	Smoke	12	30
		Dust	11	28
		Chemicals	4	10
		All the above	13	32
4.	Duration of Exposure	<1 year	12	30
		1-2 years	12	30
		>2 years	16	40
5.	Type of work	Managerial	3	8
		Clerical	7	18
		Attendant	30	74
6.	Number of working days per week	<5 days	5	12
		5 -7 days	32	88

S. No	Variables	Sub variables	Frequency	Percentage
7.	Average working hours per day	8 hours	32	80
		12 hours	8	20
8.	Total hours of exposure per week	48 hours	32	80
		60 hours	8	20

Table 1. shows the Occupational Variables of Petrol Filling Station employees. About 58% of them were temporary employees and highest, 47% were skilled workers. The type of pollutant exposure shows that 32% had exposure to smoke, dust and chemicals whereas, 30% had exposure to only smoke, 28% had dust exposure, and 10% had chemical exposure. Highest, 40% of employees had more than 2 years of exposure. Regarding type of work majority, 74% were service station attendants and least (8%) were managers. Highest percentage (88%) of employees works more than 5 days per week. Similarly, highest (80%) of employees work 8 hours per day and 48 hours per week.

Table 2: Association between respiratory morbidity with selected Demographic and Occupational Variables N=40

S No	Variables	Respiratory Morbidity	Chi-square (x ²) value	df	p-value		
1	Demographic Variable Age in years	Breathlessness		12.973	3	0.005*** S	
		No	Yes				
		18-25	09				00
		26-35	12				00
		36-45	11				00
Above 45	05	03					
2	Demographic Variable Locality	Phlegm		6.889	2	0.032* S	
		No	Yes				
		Rural	19				02
		Urban	09				03
Semi Urban	03	04					
3	Occupational Variable Employment status	Chest illness		4.097	1	0.043* S	
		No	Yes				
		Permanent	09				08
Temporary	19	04					

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Perceptions and Barriers to Deceased Organ Donation in Armenia: A Qualitative Research

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Abstract

Background and aim: Transplantation is the treatment of choice for end-stage organ failure. The worldwide shortage of organs focuses the attention of scientific community and policymakers on it. Despite having a favourable legislative framework Armenia still do not perform transplantation from deceased donors. Aim of this study is to understand perceptions and barriers of deceased organ donation in Armenia.

Methods: This qualitative study utilizes semi-structured, in-depth interviews to produce rich descriptions of healthy adult individuals and main stakeholders about the perceived drivers and barriers to deceased organ donation and transplantation in Armenia. Participants included healthcare providers, policymaker, priest and healthy adult individuals of other occupation. Content analysis with deductive approach was utilized.

Results: 11 in-depth interviews were performed. The main concepts around which the themes evolved were knowledge, attitudes, interaction with health system, family, cultural, religious and socioeconomic factors. Several factors emerged during the interviews: lack of knowledge, medical distrust, role of the donor's family as a buffer and misinterpretation of religious stance are examples.

Conclusion: Lack of knowledge regarding the brain death and deep mistrust to healthcare system were identified as the major barriers to acceptance of donation after death. It is recommended to conduct a comprehensive educational and awareness raising campaign both for public and providers.

Keywords: Organ transplantation. Brain death. Medical mistrust

Introduction

First successful kidney transplantation was performed in 1954 in Boston ⁽¹⁾. The barrier of genetic compatibility fell after introduction of immunosuppression ⁽¹⁾. Success of immunosuppressive therapies resulted in significant increase in the number of transplanted solid organs ⁽²⁾.

Armenia is a lower-middle income country in Caucasus, between Iran, Georgia, Turkey and

Azerbaijan. It is highly monoethnic country (98.1% are Armenians according to 2011 census) with more than 94% being Christian. Armenia's transplantation law was enacted in 2002.

Presumed consent is the legislative default for deceased organ donation in the country. Armenia's overall transplantation rate of solid organs is 3.79 per million. Before 2019 only kidneys from living donors were transplanted. In 2019, the first two adult

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and pediatric liver transplantations were performed from living donors ⁽³⁾. No deceased organ donations have been performed in Armenia till now. The need for organs is significant given the high prevalence of end-stage organ diseases in the country.

It is imperative to understand community perceptions to organ donation and transplantation in the country and suggest policy implications for further improvement.

Methods

This qualitative study produces rich descriptions of healthy adult individuals and key informants about perceived barriers and drivers to deceased organ donation and transplantation in Armenia.

The study conceptual framework was adopted and slightly modified from the Irving's 2009 study. It demonstrates the balance of attitudes to deceased organ donation and transplantation process in the form of a scale, which is balancing the drivers and barriers between main concepts regarding the topic ⁽⁴⁾. Concepts were knowledge, attitudes, interaction with health system, body integrity, family/relational ties, cultural aspects, religious beliefs and socioeconomic factors.

Semi-structured in-depth interviews were conducted among healthy adult individuals and key informants. They allowed to understand deep feelings, knowledge and attitudes of all groups.

The data were collected using individual, semi-structured in-depth interviews with study participants. Demographic parameters as age, gender and occupation were also collected.

The semi-structured interview guide consisted of 10 open-ended questions, which were administered to participants after obtaining a preliminary written consent. The questions were constantly discussed until repetition was observed. Almost all interviews were recorded with permission of participants. Interviews were continued until the data reached saturation. At the end of the interview, all the participants were asked for specific recommendations to improve the situation. The study interview guide was adopted and modified/ suited for Armenian participants from a South Korean study ⁽⁵⁾.

A purposive sampling method was the method of choice to reach interviewees. All study participants were recruited using individual connections of

primary author. The study population consisted of the following groups:

- Healthy adult individuals – these were young people aged from 25-40,
- Healthcare providers with potential to be involved with the process of donation and transplantation- cardiovascular surgeon, renal transplant surgeon, liver transplant surgeon, intensivist.
- Former Minister of Health of the Republic of Armenia,
- Psychiatrist,
- Priest.

All the interviews were recorded with permission of participants. One of participants refused the recording, so the primary investigator took the permission to take notes on her answers. The recordings were transcribed verbatim in Armenian the same day. The participation in the study was anonymous for ethical reasons, so each participant was given an ID in the process of transcription. Audio recordings were performed using an iOS device with a fully encrypted hard drive and transcribed the same day. No personal details were collected as name, workplace, phone numbers or addresses. Only the author had access to data and performed the process of audio recording and transcription herself to avoid dissemination of sensitive material.

Demographic data were analysed with help of Microsoft Excel Spreadsheet. A conventional theory-driven content analysis with deductive approach has been applied to analyse the transcribed data ⁽⁶⁾. Data obtained were coded using meaningful words, phrases and sentences, which combined into major themes and categories ⁽⁷⁾. The process of analysis was done manually in original Armenian language to avoid any changes in content and meaning of the phrases and misinterpretation of information ⁽⁸⁾. The pre-determined themes were taken from the literature. The main themes around which the coding of data was performed were: 1) Religious; 2) Cultural; 3) Family; 4) Body Integrity; 5) Interaction with health system; 6) Knowledge; 7) Socioeconomic; 8) Attitudes. The choice of deductive approach is justified by the fact, that there is a significant amount of qualitative research focused on the topic of organ donation and transplantation. Triangulation of data analysis results between healthy individuals, healthcare providers

and policymaker significantly increases the credibility of the study results ⁽⁹⁾. In addition, to strengthen the trustworthiness of the study, participant validation method (member check on spot) was used: the interviewer rephrased the information received from participant and returned to them to be sure that they reflected the meanings of their ideas clearly ⁽¹⁰⁾.

Results

Overall, 10 in-depth interviews were conducted with 11 separate participants. The mean age of participants was 47y, ranging from 25 to 72. Eight of them were male participants. Mean duration of in-depth interviews was 18 min, ranging from 7 to 37min. All the responders had a graduate degree of education.

There were eight predefined themes chosen for the study.

1. Knowledge

Knowledge about brain death

All the non-healthcare professional respondents did not know the definition of brain death. It was commonly misinterpreted as inability to think or absence of consciousness, a vegetative state, when all other organs work properly and brain does not. They also had psychological difficulty to interpret brain death as death of whole organism. Healthcare providers and policymaker had different opinions – those, who were involved in living organ donation and transplantation processes formerly, had proper understanding of what is brain death and its irreversible nature. Those who were not involved in the process of organ donation and transplantation, could also misinterpret it as a “vegetative” state, without knowing the exact diagnostic methods of irreversible brain death.

“Brain death is, when the brain stops, does not think. I don’t know if other organs can work. It’s really interesting, isn’t it?” (sports NGO worker, 27)

Understanding the need

Majority of respondents agreed on the fact that the demand of organs for transplantation is crucial and that it is not possible to close the gap with only living organ donations.

“I know a person, who escaped to Belgium for getting a liver transplant, lived in a ghetto for months and eventually became sick with AIDS, which made

everything meaningless. It would be better, if we could organize this using our own resources and would not leave people helpless or force them to leave the country.” (Psychiatrist, 40)

2. Attitudes

Overall attitude to organ donation was very positive. All the respondents agreed with the fact that if the brain is dead, there is no need to keep the remaining organs. There were minor precautions again about validity of brain death. One of the respondents (non-healthcare provider) had philosophical concerns about increasing number of people living on earth. The other concern raised was the potential for commercialization.

“I have a very positive opinion about organ donation and transplantation. For me it is a very healthy and humanistic attitude. The only concern is declaration of death after brain death”. (journalist, 40)

3. Interaction with health system

Medical mistrust

The answers concerning the mistrust to doctors and overall healthcare system were highly repetitive, this was the most frequently mentioned barrier perceived by all participants. The culture of mistrust seemed to be enrooted deeply in the relationship of patients and providers. It related to different aspects of donation and transplantation processes: people did not trust the system’s capability to perform it with normal quality, availability of infrastructure was of concern, fear of organ trafficking and development of black market, validity of brain death and possibility of intentional and unintentional euthanasia were major concerns. At the same time, they also recognized that this issue of trust and mistrust is something irrational, which could require major reforms in the system or only a role model (like a good, competent minister of health), who could lead the change management process. There were also answers from health providers, stating that the medicine in our country is pretty developed and physicians’ potential is not of concern.

“You know, the question is comprehensive: we need an exclusive trust in physicians, that they did everything to save the patient’s life, but failed” (renal transplant surgeon, 69)

4. Body integrity

Thoughts about distortion of body integrity did not come out frequently. Only two of respondents had that concern, not for themselves, but for others. General opinion was that it is not a major problem.

“Maybe they [the relatives] think, that it is better to decay under the ground, than to be helpful to someone? I know that frequently people give money to “correct” the face [of the deceased] before burial. We have such stupid things” (Food manager, 29)

5. Family/relational ties

All respondents agreed that the family of the donor plays a crucial role in our society and it is imperative to take their permission before proceeding with organ procurement. Majority of healthcare providers agreed that with proper and timely preparedness (i.e. that the family knows the wishes of the deceased person well ahead of the tragic event) and adequate trust to health providers they would agree to donate the organs.

“Many things depend on the impression of family: If they feel that everything is done for their patient, he was treated conscientiously, they will not be against” (Intensivist, 63)

6. Cultural

Majority of respondents agreed on the fact that we need to develop as a society to understand not only the importance of our personal ego, but to look at facts as a society, as a whole. Lack of teamworking ability and residential perspective were frequently mentioned as barriers which was explained by the fact that if people need to think about day-to-day survival, there is no time to consider donation and help to society, which is a remote and less tangible target. The other cultural barrier noted was the importance of opinion of neighborhood, which frequently could be negative toward donation and transplantation.

“Opinion of the neighbors is very important. One of the recipients telling that the villagers constantly blamed her for taking the organ of her daughter” (Liver transplant surgeon, 50)

7. Religious beliefs

Common opinion was that the role of the church will be tremendous to foster or prevent the process of organ donation. Some of the respondents who were standing closer to church favored the idea of altruistic

donation or giving to their neighbor, their proponents argued that the official apostolic church will be against the organ donation because the body should keep its wholeness to be ready for the second advent of Christ: this view was not shared by the priest-interviewee.

“If it is possible to save one’s life with donation, then why not doing it? I think of it as a manifestation of Christian compassion and sacrifice” (Priest, 53)

8. Socioeconomic factors

Among frequently mentioned factors were adequate financial compensation to providers and need for financial resources to accomplish the establishment of service. It was mentioned that high-income people would be more prone to discuss the donation of their organs after death. Improvement of education system and advocacy of humanitarian principles were other drivers of the process.

“Those are hard questions, we know definitely, that everything to be done should be compensated properly” (former minister of health, 72)

Discussion

Our study results demonstrated that there are several barriers to development of system for deceased organ donation and transplantation in Armenia. Among them, the deep mistrust to the health system and providers was the most prominent. It was mainly explained with the previous distrustful experience with the system and questioning the doctors’ ability to diagnose the brain death adequately.

In our study we did not observed concerns regarding treating the body of the donor with respect and dignity, or using the organs for experiments⁽¹¹⁾, but there were major concerns about unequal distribution or even “sales” of donated organs.

The best solution in this situation would be “to make donation happen for those who want it”, or at least we believe, that they do. The respect for person is the legal and ethical basis of basic law almost everywhere, including in Armenia.

Another barrier which was frequently mentioned was the lack of knowledge about the “dead donor rule” and its frequent misinterpretation. Even some healthcare providers could not differentiate between the end-stage coma and brain death.

The good news is that majority recognize the need for establishing the system for deceased

organ donation and transplantation and with good educational effort it would be possible to improve the situation ⁽¹²⁾ ⁽¹³⁾.

General attitude to organ donation and transplantation idea was really favourable in our research, everyone agreed that it is humanistic and kind, the best motivator being the human altruism as mentioned elsewhere in the literature ⁽¹⁴⁾.

Role of the donor's family as a surrogate decision maker was perceived as highly important in our study, which could affect the donation rates in both positive and negative meanings.

Armenian Apostolic Church views do not reject the idea of organ donation, but is overall favour of it, provided that everything was done to save the life of the donor.

Based on our findings, several recommendations can be made:

1. As a first step it is recommended to conduct a comprehensive quantitative research with a country-representative sample to understand the acceptance rates for deceased organ donation in Armenia;
2. Comprehensive program educating and raising awareness of general public about the need of organ donation, including social advertising with help of well-known actors and role models;
3. Special education and training of healthcare providers who will be involved in transplant services;
4. Inclusion of all transplantation procedures in Basic Benefit Package offered for people with disabilities;
5. Adequate compensation mechanisms for specialists to avoid the presence of informal payment to providers;
6. Finally, governmental support and leadership are imperative for developing this initiative and build the necessary trust to it.

Limitations and strengths

The major limitation of our research is its external generalizability, as a major limitation of all qualitative studies. Our intention was to understand the deep feelings, values and attitudes towards organ donation

in Armenia. To our best knowledge, this is the first study exploring the perceptions and barriers of deceased organ donation and transplantation in Armenia. Its findings point out on the potential facilitators and barriers for establishing the service in our country.

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Ethical clearance : Taken from Nork-Marash Medical Center ethical review board.

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Conservative Management of Acute Appendicitis in a Tertiary Care Center

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Abstract

Background and Aim: Appendectomy is the most favored treatment of appendicitis in most of the cases. Considered safe and routine surgery few patients develop complications of surgery like recurrent pain, obstruction, wound complications and rarely fistula and death. Present study was done with an aim to study the outcome of conservative treatment in acute appendicitis using antibiotic therapy.

Material and Methods: The present study was a prospective study conducted at the medical institute and associated hospital for a period of 2 years. All the patients attending our emergency department with pain in the lower abdomen were assessed clinically for signs of acute appendicitis. Injection ceftriaxone and injection metronidazole was given for 48-72 hours. Patients who responded for i.v. antibiotics were switched to tablet ciprofloxacin and tablet metronidazole for 7 days and followed for 6 months.

Results: In this present study, 200 patients were included. 168 patients had migratory abdominal pain in the present study. Anorexia was seen in 180 patients and absent in 20 patients. 174 patients had nausea and vomiting. Tenderness in the right inguinal fossa was seen in all the patients. Rebound tenderness was seen in 68 patients and absent in 132 patients.

Conclusion: The overall success rate of conservative treatment according to the present study was 82%. However, there were 12% failures and 6% recurrences in the present study. The success rate of conservative treatment in patients with MAS 4-6 is more than the patients with MAS 7-9 according to the present study.

Keywords: Acute appendicitis, Anorexia, Lower Abdomen, Tenderness

Introduction

Acute appendicitis is one of the commonest causes of acute abdomen with life time risk of 7-8%. Appendectomy is the most favored treatment of appendicitis in most of the cases.¹ Even after clinoradiological diagnosis 10 percent of cases after appendectomy appendix is found normal.¹⁻³ Considered safe and routine surgery few patients develop complications of surgery like recurrent pain, obstruction, wound complications and rarely fistula and death.^{4,5} Based on epidemiologic, radiologic, and pathologic studies, several authors no longer consider appendicitis as an invariably irreversible progressive disease.⁶⁻¹⁰ Rather, they envisage 2 types

of appendicitis: simple appendicitis with no tendency to progress, and complex appendicitis.^{6,7}

In the pre-antibiotic era, acute appendicitis progressed from uncomplicated to complicated appendicitis, so it prompted the surgeon McBurney to implement appendectomy for all the cases of acute appendicitis. But appendectomy has its own complications, morbidity and mortality. In the antibiotic era surgeons gave a trial of conservative treatment for acute appendicitis. The nonoperative conservative management of uncomplicated acute diverticulitis and salpingitis has been well established but the non-operative management of acute appendicitis is yet to be explored. Most authors

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conclude that antibiotic treatment alone is less effective than an appendectomy and therefore promote appendectomy.¹¹⁻¹⁵ However, the methodologic quality of the included studies was low to moderate, there was considerable statistical heterogeneity, and these inferences continue to be questioned.^{14,15} In addition, potential longterm disadvantages of surgery in children have not been evaluated adequately.

Recent studies showed majority of patients with acute, uncomplicated appendicitis can be treated safely with an antibiotics-first strategy. Antibiotics which are more effective is used in the treatment of acute appendicitis. Antibiotic therapy is not a complete substitute for surgery in the management of acute appendicitis. In this regard, we aimed to study the outcome of conservative treatment in acute appendicitis using antibiotic therapy.

Material and Methods

The present study was a prospective study conducted at the medical institute and associated hospital for a period of 2 years. Institutional Ethics committee approval was taken before start of this study.

Inclusion criteria: Radiologically diagnosed acute appendicitis cases with age > 10 years attending within 2 days of symptom onset with Modified Alvarado score (MAS) more than or equal to 4.

Patients having guarding, rigidity, perforation, abscess, lump on clinical examination and radiological reports were excluded from study.

All the patients attending our emergency department with pain in the lower abdomen were assessed clinically for signs of acute appendicitis. Ultrasound examination was done to diagnose acute appendicitis and to exclude other differential diagnosis and complications of acute appendicitis. All the patients who were diagnosed as acute appendicitis radiologically without any other complications were enrolled into the study considering the inclusion and exclusion criteria. The patients were counseled for conservative treatment of acute appendicitis, explaining all the pros and cons of the treatment. The patients who were willing to undergo conservative management were included in this study after taking written informed consent. All the demographic data like age, sex, occupation, contact details and address were recorded from the patient. Detailed history was taken and abdomen was examined thoroughly and signs of acute appendicitis were noted. The ultrasound

findings were documented. MAS was calculated and documented. Patients were advised nil by mouth for 24 hours and administered intravenous antibiotics ceftriaxone every 12 hours and metronidazole every 8 hours with dose depending on age of the patient for 48-72 hours. Paracetamol infusion was given every 8 hours to relieve the pain of the patient. The clinical assessment was done every 12 hours. Patients who responded for i.v. antibiotics were switched over to oral antibiotics- tablet ciprofloxacin 500 mg with tablet metronidazole 400 mg thrice a day for a total of 7 days. In those patients, whose clinical condition were deteriorating or not improving, open or laparoscopic appendectomy was performed. The patients were followed at 10 days and every month for a period of 6 months. The disease recurrence would be managed either conservatively or surgically depending on the clinical presentation and upon patient preference. After completion of treatment and follow up for 6 months period, the patients were grouped into successful/failure of conservative treatment. Failure of conservative treatment again divided into treatment failure and recurrence. Treatment failure was clinical deterioration or lack of clinical improvement in admitted patients treated conservatively. Recurrence was defined as onset of appendicitis in a follow up patient successfully treated initially with conservative treatment.

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

In this present study, 200 patients were included. The minimum and maximum age in the present study was 17 and 72 years. The mean age in this study was 35.10. 88 males and 112 females were included in this study. 168 patients had migratory abdominal pain in the present study. Anorexia was seen in 180 patients and absent in 20 patients. 174 patients had nausea and vomiting. Tenderness in the right inguinal fossa was seen in all the patients. Rebound tenderness was seen in 68 patients and absent in 132 patients. 188 patients in this study had leucocytosis and 90 patients had fever (Table 1).

CT scan was performed in 18 cases and ultrasound was done in 182 cases for diagnosis of acute appendicitis. MAS was in between 4-6 in 56 patients and was 7-9 in 144 patients with an average of 7.29. 24 patients had complicated acute appendicitis and 176 had uncomplicated acute appendicitis. Acute appendicitis was resolved in 48 hours in 62 patients and in 114 cases it resolved in 72 hours. Conservative treatment failed in 24 cases in this study. In those 24 cases, 12 cases who had appendicular mass was treated with i.v. antibiotics for 5 days, 8 cases who had perforation was operated and in 4 cases who had abscess, extraperitoneal drainage was performed. 176 cases were followed for a period of 6 months and 12 cases recurred over a period of 6 months (Table 3).

Table 1: Distribution of clinicopathological factors in the present study

Clinicopathological factors	Number	Percentage (%)
Migratory abdominal pain	168	84
Anorexia	180	90
Nausea and vomiting	174	87
Tenderness	200	100
Fever	90	45
Leucocytosis	188	94

Table 2: Outcome of conservative treatment in the present study

Conservative treatment outcome	Number	Percentage (%)
Successful	164	82
Failure	24	12
Recurrence	12	6

Table 3: Outcome of conservative treatment with different MAS

Conservative treatment	Modified Alvarado score	
	4-6	7-9
Successful	56	120
Failure	0	24
Total	56	144

Discussion

Worldwide the standard of care for appendicitis is appendectomy and considered simple and routine surgery.¹ However the mortality rate of operation ranges from 0.07 to 0.7 and from 0.5 to 2.4% in patients without and with perforation respectively.

Overall post appendectomy complication rates are around 10-19% for appendicitis without perforation and can reach up to 30% with perforation.^{6,7} So if appendectomy treated successfully with antibiotics, morbidity and mortality can be avoided.

Advantages of conservative management over surgical management include: i) Antibiotics offer an alternate source of treatment for acute appendicitis when access to surgical areas are not easily available. ii) Antibiotic treatment offers a low cost treatment for acute appendicitis patients. Hansson et al, reported 25-50% reduction in the cost of hospital expenses among conservatively treated patients than patients treated surgically. 5 iii) Conservative treatments with antibiotics avoid the anaesthesia risks of surgery and also eliminate the morbidity and mortality associated with surgery. iv) In remote areas where the diagnostic facilities are lacking acute abdominal pain might be misdiagnosed as acute appendicitis leading to negative appendectomies. In such scenarios conservative treatment avoids unnecessary removal of appendix. According to a study by Sebastiano, neuroproliferation is involved in the pathophysiology of acute abdominal pain even in the absence of inflammation of appendix. There is an increase in the neurotransmitters like substance P and vasoactive intestinal polypeptide in such cases of neuro immune appendicitis.¹⁶ This neuroimmune appendix might be the aetiology of acute abdominal pain in negative appendicitis.

In the present study, the mean age of presentation was 35.10±9.45. According to Gedam et al, the mean age in their study was 30.45±9.71 years.¹⁷ The majority of patients were seen in the age group of 21-30 years which was consistent with the study of Rajasekhar et al and Lohar et al.^{18,19} There was female predominance in this study with male to female ratio 1:1.32 which was compared to a study by Gedam et al, which was 1:1.09.¹⁷

Abdominal pain was seen in 84% of patients which was contrary to the study conducted by Ekka et al, which was seen in 100% of patients.²⁰ Anorexia was seen in 90% of patients in the present study, whereas anorexia was seen in 61% of patients in a study by Berry et al.²¹ 87% of patients had nausea/vomiting in this present study, which was similar to a study by Kodliwadmth. 45% of patients had fever in this study, but Reddy et al reported fever in 76% of patients in their study. 16 94% of patients in this study had leukocytosis, but Ekka et al reported leukocytosis

in 66.4% of patients in their study.²⁰ Tenderness in right inguinal fossa was seen in all 100% of patients and rebound tenderness was seen in 68 patients. An eastern Indian study reported tenderness in right inguinal fossa in 89.6% and rebound tenderness in 72.8% of patients.²⁰

In the present study, ultrasound was performed in 91% of cases. CT scan was performed in the remaining 9% of cases in this study as ultrasound can't able to detect the features of acute appendicitis. In the present study, 28% of patients had MAS in between 4-6 and 72% had in between 7-9. The conservative treatment was successful in all the patients with MAS of 4-6. According to the results of the present study, majority of patients recovered in 72 hours, so at least 72 hours should be awaited to detect the response for conservative treatment. In the present study, conservative treatment failed in 12% of patients. In a study done by Mumtaz et al, 11.1% of patients had failure of conservative treatment which was similar to our present study.²¹ In a study done by Gedam et al the success rate was 74.65%, and failure rate was 14.08% which was similar to the present study.¹⁷ In the present study the recurrence rate among successfully treated acute appendicitis cases was 6%. In a study done by Gedam et al, the recurrence rate was 13.11% which was higher than our present study.¹⁷ According to a study by Malik, the recurrence rate was 10% which was slightly higher than our present study.²³

Conclusion

The overall success rate of conservative treatment according to the present study was 82%. However, there were 12% failures and 6% recurrences in the present study. The success rate of conservative treatment in patients with MAS 4-6 is more than the patients with MAS 7-9 according to the present study. Uncomplicated acute appendicitis can be managed by conservative treatment provided they were strictly followed every month for at least 6 months period to detect recurrences.

Ethical approval was taken from the institutional ethical committee and written Informed

Consent was taken from all the participants.

Source of funding: Nil

Conflict of Interest: None declared

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A cross-sectional study on Quality of life and stress among nursing students in Central Karnataka.

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Abstract

Introduction: Various studies have shown higher levels of stress and lower quality of life (QoL) among healthcare students compared to others. This study was done to assess the quality of life and perceived stress levels among nursing students and correlation between them. The symptoms in case of stress and coping strategy for stress were also studied.

Methodology: All students studying in a nursing college in Central Karnataka were interviewed. WHO Quality of Life-Bref (WHOQOL-BREF) scale and Perceived Stress scale (PSS-10) were used to assess the Quality of life and perceived stress levels respectively.

Results: 175 students participated. Psychological domain and environment domain scores (55.6 and 53.8 respectively) were lower. Significant negative correlation was observed between all the domains of Quality of life and Stress scores. Majority (81.7%) of nursing students were under moderate stress.

Conclusion: Efforts should be made to improve the Quality of life of nursing students. Effect of various better coping methods for stress should be researched and taught to them.

Keywords: Quality of Life, Stress, Coping strategy, nursing students.

Introduction

WHO defines Quality of Life as "an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns". Many physical, psychological, social, demographic, environmental factors affect quality of life.¹

Psychological stress, as defined by Lazarus and Folkman (1984) is "a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being".² Various

studies have found higher stress levels among students, and still more among students in healthcare field. Various socio-demographic, college related factors are associated with stress.³⁻¹⁰ There are lesser number of studies in this area in India. Hence, the present study was done to assess the quality of life and perceived stress levels among nursing students and correlation between them, to find out various symptoms experienced in case of stress and coping strategies used by students in case of stress. This can help administrators, college managements to address the factors to improve quality of life and decrease stress levels among nursing students.

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Methodology

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. Permission from the head of the institution was taken. Universal sampling was done. The purpose of the study was explained and a pre-designed self-administered questionnaire was sent to all the students via google forms. The responses from all those students who consented to participate in the study and returned fully filled questionnaire forms were considered for analysis.

WHO Quality of Life Bref (WHOQOL-BREF) scale was used to assess the Quality of life and Perceived Stress Scale -10 (PSS-10) scale was used to assess perceived stress levels. WHOQOL-BREF is a 26-item survey with respect to experiences in past 2 weeks. It evaluates quality of life (QOL) in 4 domains: Physical health, psychological health, social relationships, and environment. It has single item questions for Overall QOL and satisfaction with health as well. It is a likert-scale ranging from 1 (very poor) to 5 (very good). This survey has been used in diverse populations wherein good reliability with Cronbach's α of 0.68–0.82 is shown. Final scores can be transformed into 0-100 measured in a positive direction. Higher scores indicate better quality of life.

PSS-10 is a survey with 10 questions. It is self-reported measure of amount of stress with respect to experiences in the past 1 month. Questions have responses in a likert-scale ranging from 1 (never) to 5 (always). Responses to questions 4,5,7,8 are reversed and overall total is calculated which ranges between 0 to 40. Low stress is 0-13. And 14-26, 20-40 are moderate stress and high stress respectively.

Data was entered in Microsoft excel and analysed using SPSS V 20. Qualitative variables are presented as frequencies and percentages. Quantitative variables are presented as mean, SD, median and mode. Statistical tests like t-test, ANOVA, Mann-Whitney test, Kruskal Wallis test were used for statistical analysis. P value less than 0.05 was considered as statistically significant.

Results

A total of 175 nursing students participated in the present study. It was found that, among the

respondents, a majority (96.6%) belonged to age-group of 18-22 years, 77.1% were females, 68% were from rural area, 87.4% were pursuing B.Sc. Nursing course whereas 12.6% were studying General Nursing and Midwifery (GNM). A higher percentage of 76.6% were currently residing in hostel accommodations, 16% resided at their homes and 7.4% students opted for other accommodations such as paying guest facilities or sharing flats with friends. (Table 1).

149 respondents (85.1%) reported that they were currently ill. 49% reported their overall quality of life as 'good'. Followed by 'neither poor nor good', 'poor', 'very good', 'very poor' (29%, 11%, 6% and 5% respectively). 61% reported 'satisfied' for self-reported satisfaction with one's health. Followed by 'neither satisfied nor dissatisfied', 'dissatisfied', 'very satisfied' (19%, 10%, 7% respectively). Least was for 'very dissatisfied' (3%).

Mean of social relationship domain of WHOQOL-BREF was maximum (71.9 ± 20 , median = 75). This was followed by that of physical domain (65.5 ± 14.7 , median = 63), psychological domain (55.6 ± 16.8 , median = 56), environment domain scores (53.8 ± 15.4 , median = 56). PSS scores ranged from 7 to 29, with a mean of 18.6 (SD = 4.3, median = 19). (Figure 1). Most of the students (81.7%) were under moderate stress. 12% and 6.3% were under low and high stress respectively.

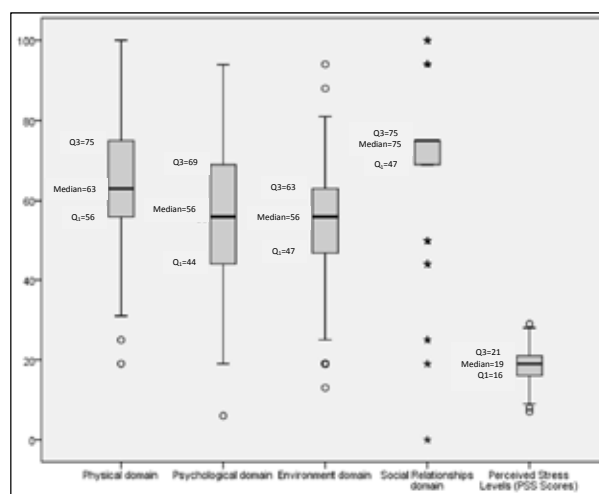
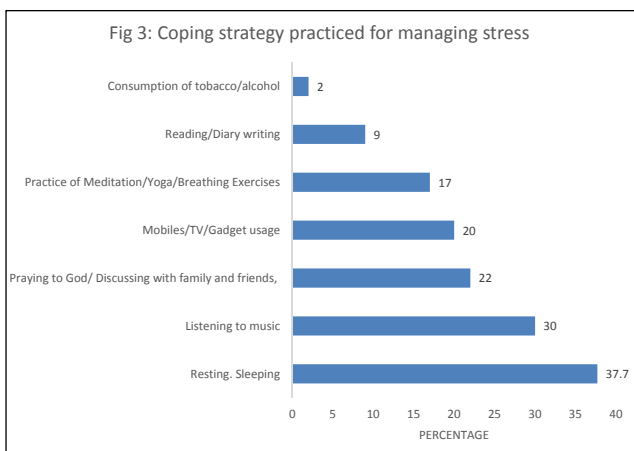
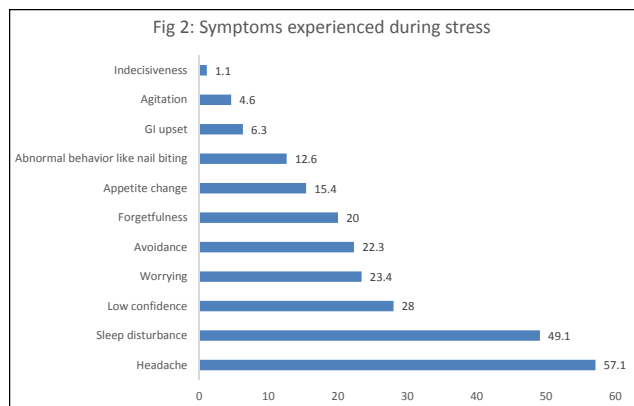


Figure 1: The description of Domain Scores of WHOQOL-BREF Scale and Perceived Stress Levels as per PSS-10 Scale.

Table 1: Quality of Life domains and PSS scores with respect to various socio-demographic variables

Socio-demographic variables	Frequency n (%)	WHOQOL-BREF domains				PSS Score
		Physical Domain Mean \pm SD (Median)	Psychological domain Mean \pm SD (Median)	Social Relationships domain Mean \pm SD (Median)	Environment domain Mean \pm SD (Median)	
Sex						
Male	40 (22.9%)	69.8 \pm 14.7 (69)	60.3 \pm 17.7 (56)	78.7 \pm 17.9 (75)	57.9 \pm 13.8 (56)	18.1 \pm 4.0 (19)
Female	135 (77.1%)	64.2 \pm 14.5 (63)	54.3 \pm 16.3 (56)	69.9 \pm 20.2 (75)	52.6 \pm 15.7 (56)	18.7 \pm 4.4 (19)
Mann-Whitney U, p-value		2209.5, p>0.05	2235.5, p>0.05	2032, p<0.05	2253, p>0.05	2526 p>0.05
Academic Year of studies						
1 st year	69 (39.4%)	65.7 \pm 12.4 (63)	56.5 \pm 13.8 (56)	74.5 \pm 17.8 (75)	54.6 \pm 12.2 (56)	18.2 \pm 3.6 (19)
2 nd year	49 (28.0%)	64.0 \pm 16.9 (69)	55.1 \pm 19.7 (56)	65.9 \pm 26.4 (75)	51.7 \pm 17.1 (56)	19.9 \pm 4.8 (20)
3 rd year	31 (17.7%)	66.7 \pm 17.1 (69)	55.9 \pm 18.2 (56)	72.9 \pm 12.9 (75)	54.6 \pm 17.3 (56)	18.2 \pm 5.1 (19)
4 th year	26 (14.9%)	66.2 \pm 12.9 (63)	54.0 \pm 17.0 (56)	75.1 \pm 17.2 (75)	54.6 \pm 17.8 (56)	17.6 \pm 3.6 (17)
Kruskal Wallis H, df, p-value		0.346, df:3 p<0.05	0.262, df:3 p>0.05	3.495, df:3 p>0.05	0.594, df:3 p>0.05	F (3,174) = 2.209 , p > 0.05
Present accommodation						
Home	28 (16.0%)	68.8 \pm 15.0 (63)	54.6 \pm 16.2 (56)	72.9 \pm 16.9 (75)	55.9 \pm 15.7 (56)	16.5 \pm 4.5 (16)
Hostel	134 (76.6%)	63.7 \pm 14.2 (63)	54.9 \pm 17 (56)	70.5 \pm 20.9 (75)	52.7 \pm 15.6 (56)	19.2 \pm 4.3 (19)
Others	13 (7.4%)	76.5 \pm 13.1 (75)	64.4 \pm 13.9 (56)	84.7 \pm 12.2 (75)	60.2 \pm 11.4 (56)	17.0 \pm 2.6 (16)
Kruskal Wallis H, df, p-value		8.876, df:2 p<0.05	2.845, df:2, p>0.05	6.580, df:2, p<0.05	2.751, df:3 p>0.05	9.892, df:2, p<0.05

Significant negative correlation was seen between all the domains of quality of life and the PSS scores ($r = -0.38, -0.34, -0.35, -0.3$ between PSS scores and physical domain, psychological domain, social relationship domain, environment domain scores respectively).



Discussion

The present study was done to assess the quality of life, stress levels among students studying in a nursing college in Central Karnataka. The symptoms in case of stress and coping strategy for stress were also studied.

In our study, only 6% respondents reported overall QoL as ‘very good’. Whereas in the study on medical students in Saudi Arabia by Malibary H et al, it was 33.6%.⁶ Only 7% respondents reported satisfaction with health as ‘very satisfied’. Malibary H et al, reported it as 23.7%.⁶

Average for WHOQOL-BREF scores for physical health domain, psychological health domain, social relationships domain, environment domain were 65.45±14.67, 55.63±16.77, 71.91±20.03, 53.78±15.43 respectively. Alkatheri AM et al reported lower scores for physical (57.1) and social relationship domains (58.3) and higher scores for psychological (58.3) and environment domains (62.5) in their study on students studying in a Health Sciences University in Saudi Arabia.⁷ Malibary H et al reported lower scores for social relationship domain (55.67 ± 23.95) and physical domain (46.94 ± 14.24). Whereas

environmental domain scores (67.81 ± 17.39) and psychological health domain scores (64.37 ± 14.27) were found to be higher than those from our study.⁶

Social relationship domain scores were significantly different with respect to sex. Malibary H et al reported no significant difference between sex and various domains of Quality of Life.⁶ In the study on medical students in China by Zhang Y et al, males had significant higher scores than females in the physical and psychological health domains.⁸ They reported significantly higher scores for females for social relationships domain. Blebil A et al found significant association between sex and QoL in their study on pharmacy students in Malaysia.⁹

We found no significant difference between domains of QoL and urban or rural place of origin. Zhang Y et al found significantly higher scores for psychological health and social relationships domains in urban students compared to rural ones.⁸

We found no significant difference with QoL with respect to year of studies. Malibary H et al, Moritz AR et al reported similarly.^{6,10} Blebil A et al reported otherwise.⁹ Zhang Y et al found significant difference for psychological health and social relationships domains scores with respect to year of studies.⁸

We found significant difference with physical health, social relationships domains of QoL and place of staying/accommodation. Blebil A et al found otherwise.⁹

In our study, PSS-10 total scores range was 7 - 29. Whereas, 0-35 was found in the study on University students in Saudi Arabia by Anwer Setal.¹¹ Mean PSS-10 total score was 18.58±4.32. Manzar MD et al (University students in Ethiopia) and Opoku-Acheampong A et al (pharmacy students, Ghana) reported similarly (18.07±4.72 and 18.06±6.21).¹²⁻¹³ Slightly lower average (16.28±5.93) was seen in study by Anwer S et al.¹¹ Slightly higher means were seen in studies by Lippke S et al (international students studying at a German University), Henning MA et al (pre-medical and health science students in New Zealand) and Gupta K et al (college students in India) (19.89±6.90, 20.24±7.33, 20.43±6.30 respectively).¹⁴⁻¹⁶

Majority of students (81.7%) had moderate stress, followed by low (12%) and high stress (6.3%). Gajula M et al, in their study on adolescent school students in India, reported higher proportion of students in high stress (24.44%).¹⁷

We found no significant difference with respect to stress and sex of students. Gupta K et al reported similarly.¹⁶ Whereas, Karaca A et al, in their study on nursing students in Turkey, reported otherwise.¹⁸ We found no significant difference with respect to stress and year of studies. Karaca et al and Opoku-Acheampong A et al reported similarly.^{18,13}

Significant negative correlation was seen between physical health domain, psychological health domain, social relationships domain, environment domain scores with PSS scores (-0.382, -0.337, -0.354, -0.3 respectively). Alkatheri AM et al also reported similarly.⁷

Conclusion

Physical health, Psychological health and environment domains scores (65.4, 55.6 and 53.8 respectively) were lower. Efforts should be made to improve them.

Majority (81.7%) of nursing students were under moderate stress. Effect of various better coping methods should be researched and taught to them to handle stress.

Limitations of the study

Being a single-centre study, the present study results cannot be generalised to the students of all the health care courses. Regional or national level multi-centric studies have to be done to know quality of life, stress, coping methods in case of stress among students of various health care courses' students.

Ethical Clearance: Ethical Clearance was obtained from the institutional ethics committee of Basaveshwara Medical College and Hospital, Chitradurga, prior to the commencement of the study.

Source of funding: Self

Conflict of interest: Nil

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Sleep quality and predictors of sleep disturbances among adult patients admitted in a selected hospital, Mangaluru.

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Abstract

Sleep has an important role in maintaining health. Being active and energetic inversely related to the quality of sleep. We can say that sleep is an important parameter to measure health and vitality. Sleep disturbance is common among patients admitted in the hospital. A new place, new people, pain and various amounts of discomfort, fear, hospital routines and many more parameters can disturb the sleep of those patients admitted in the hospital. The patients admitted in the general wards get almost no choice to postpone their bedside procedures to their preferred time. Somewhere over the line, we need to realize the predictors of sleep disturbance in the hospital environment and take measures to tackle those factors. We need to look at those situations at the patient's point of view and implement changes in our routines. Though nurses write sleep status of each patient at night, their assessment on sleep quality is not measured with any standard tools. This study would help to implement such strategies to take specific actions on those factors which cause sleep deprivation.

Objective of the study: The aim of this study is to assess the quality of sleep and to identify the predictors of sleep disturbance among hospitalized patients.

Methods and materials: A descriptive survey design was used for this study. The sample consists of 60 adult patients admitted in the medical wards of a selected medical hospital. The subjects were selected by using purposive sampling technique. The tool has been prepared by the investigators keeping in mind those concepts presented by the U.S. National sleep foundation on the quality of sleep. The data were obtained by sleep quality index and using a five-point rating scale to assess the predictors of sleep disturbances.

Results: Out of total patients 48.3% of them had fair sleep during hospitalization and 30% of them had poor sleep and only 21.7% of them had good sleep. Most of the sleep distracters (78.3%) found to be at low level, 20% of the sleep distracters were present in moderate level and 1% in high level. **Conclusion:** The present study shows that many patients do have sleep deprivation due to a wide variety of factors. This shows that health personnel need to be extra conscious and cautious in planning the activities for their patients and minimize distractions.

Keywords: Sleep quality, sleep pattern, sleep predictors, sleep distracters, Patients, Adults and Hospital.

Introduction

Every patient admitted in the ward expects to have a comfortable stay and a speedy recovery. It's a common practice in the hospital to focus more on disease entity and pay a less attention to patient's

personal feelings and comfort. Sleep is considered as an important parameter to gain vitality; yet, most of the patients get disturbed by the hospital routines and get less sleep. Commencement of routine nursing care starts at 5 am with the expectation of completing

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before the change of shift. Those wards having 40 -50 patients obviously made to wake up early and it can cause sleep disturbance among patients. Somewhere over the line, we need to realize the predictors of sleep disturbance in the hospital environment and take measures to tackle those factors. We need to look at those situations at the patient's point of view and implement changes in our routines.

Materials & Methods

The data were collected from 60 adult patients admitted in the general wards. Ethical consent was taken from the institutional ethics committee before the data collection. The investigator explained the purpose of the study to the subjects by using a detail Subject participation information sheet. Informed consent was obtained from the participants. The tool was formulated by the investigator by using various literatures had 09 items on baseline variables, the Part B was on sleep quality which had 6 items with maximum scores of 15. The tool II was on predictors of sleep disturbances was a 5 point rating scale, this tool had three parts. The first component was related to physical environment which had 4 items .The second component was with 05 items (patient related) and the third component (Hospital facilities) was with 13 items .The entire tool was with 22 items with a possible maximum scores of 110. The tool regarding quality of sleep was tested for internal consistency using Chronbach's Alpha and it was found to be .65. The predictors of sleep distracters was tested for homogeneity using Chronbach's Alpha and it was found to be $r = .60$ Area I , $r = .65$,Area II, $r = .82$.Both the tools found to be reliable.

Study design: Descriptive design

Selection & Description of participants: The data was collected from the patients from three general wards. The data was collected at bedside. The information sheet was given for the participants to read, after that only consent was obtained. No patients were forced to participate and they were assured saying non participation will not cause any changes or differences in due health care.

Criteria for the sample selection:

Inclusion criteria:

- Those patients between age group of 20-40 years of age
- Admitted in the general wards with medical conditions only

Exclusion Criteria for Sampling

- Patients with hypertension and Diabetes Mellitus or any endocrine disorders
- Admitted in the private rooms
- Those who are hospitalized for less than 2 days
- Those who are with sedatives
- Unconscious and disoriented patients
- Those who are not able to read Kannada ,Malayalam or in English

Statistics: SPSS 23 Version was used for analysis

Results

Assessment of sleep quality of adult patients

The study results revealed that 48.3% of the subjects had fair sleep during hospitalization & 30% of them had poor sleep and only 21.7% of them had good sleep.

Table 1: Mean, SD, Mean% and SEM scores regarding sleep quality (N=60)

Variable	Mean/ SD	Mean%	SEM	95 %CI	
				Lower	Upper
Overall sleep quality	11.77± 2.07	78.47	.27	11.24	12.30

From the table 2, it can be interpreted that overall sleep quality was fair among hospitalized patients. Out of total subjects 57 of them had mean quality sleep index scores of 11.24 to 12.30.

Assessment of Predictors of sleep distracters.

Table 2: Frequency and percentage distribution of predictors of sleep disturbances among adult patients. N =60

Variables	f	%
Overall predictors of sleep:		
High level of sleep distracters	1	1.7
Moderate level of sleep destructors	12	20.0
Low level of sleep distracters	47	78.3
Physical aspects:		
High level of physical sleep distracters	3	5.0

Variables	f	%
Moderate level of physical sleep distracters	26	43.0
Low level of physical sleep distracters	31	52.0
Patient related factors:		
High level of patient related sleep distracters	2	3.3
Moderate level of patient related sleep distracters	21	35.0
Low level of patient related sleep distracters	37	61.7
Hospital facilities related:		
High level of hospital related sleep distracters	0	0
Moderate level of hospital related sleep distracters	7	11.7
Low level of hospital related sleep distracters	53	88.3

The above statistical table indicates 20% of the sleep distracters were present in moderate level and 1% in high level. From this it can be interpreted that most of the sleep distracters (78.3%) found to be at low level. Around 43% of the physical factors were causing moderate sleep destruction and 35% of the subjects 'personal factors were causing sleep destruction.

Discussion: Sleep duration: The current study indicates the Mean sleep duration of the subjects before the hospitalization $7.53 \pm 1.38/24$ hrs and during hospitalization is 6.72 ± 1.68 . This indicates there was a reduction of at least 1 hour of sleep/day. The study conducted by Jean reported the proportion of people reporting mid-range sleep (6.5 to 8.5hrs/24hrs)². Mai study result found that highly statistically significant correlation between the quality of sleep pattern before and after hospitalization whereas ($p=0.000$)³. From this it can be said that the above studies are on pace with the current study results.

Sleep quality: From the present study it is discerning that 48.3% of them had fair sleep during hospitalization and 30% of them had poor sleep. From the table it also can be stated that only 21.7% of them had a good sleep.

The study conducted in the USA among chronically ill patients, out of total subjects 16.3% had severe sleep problems, 16.8% had moderate and 12.5% had mild sleep problems⁴. The current study, the proportion of the subjects with poor sleep found to be two times

more than the study conducted in USA⁴. The study conducted by Kusleikaite *et al* showed that 66.7% of ESRD (End Stage Renal Failure) patients on HD (Hemodialysis) had poor sleep quality⁵. That means two times more than our study results. Kusleikaite says that sleep duration less than 6 hours /night can cause negative health outcomes⁵. The study conducted in a Chinese general hospital reported poor sleep quality (45.6%) during hospitalization and a reduction in sleep quality after hospitalization (57.4%)⁶. The study by Magdy in Egypt among critically ill patients demonstrated 48% of the patients admitted to the RICU (Reparatory Intensive CARE Unit) had poor sleep quality⁷. The study conducted by MarnJoon Park discerns 86% of the hospitalized patients having disturbed sleep⁸. The study conducted by Pawar in Maharashtra also supports the study, the author of the study has revealed 47.3% of the subjects had insomnia, 26.3% had hypersomnia⁹.

Factors causing sleep disturbances:

The overall most of the sleep distracters were found to be at a low level (78.3%), 20% in moderate level and found 1.7% in high level. Overall Mean % 46.59 indicates distracters were at low level.

Hospital related factors: Shoe sound said by 5% of the subjects causing most of the time sleep disturbances and 11.5% said, sometimes sound generated by the shoes disturbed their sleep in the hospital. Regarding bright hospital light, causing disturbances most of the time was revealed by 18.4% of the subjects and 28.3% agree upon causing sleep disturbance sometimes by the presence of bright lights. **Snoring:** 21.7% of the subjects said that snoring heard from the adjacent bed causing sleep disturbances whereas, 10% said always their sleep disturbed by an adjacent patient's snoring habit. **Loud talk:** They were 38.3% of the subjects revealing loud talk by the health personnel disturbing their sleep and same factor is causing always sleep disturbance among 8.4% of the subjects. Around 22% said that **poor bedding** causing poor sleep.

The study conducted by Chinese has shown the using of toilets at night and sound generated from the nurse's shoes are one of the causes for sleep distraction at night⁶. A study conducted by Hilde point out (70.4%) having been awakened by external causes, out of which, (35.8%) concerned hospital staff¹⁰. The study conducted by Magdy highlights Noise (7.60 ± 1.40) was the main sleep disruptive factor; hospital staff conversations (7.77 ± 1.38) and

medical staff pagers and phones (7.42±1.53) were the maximum noises⁷. Frequent use of light is the second influential factor for sleep disruption (6.82±1.31), followed by nursing interventions and blood sampling⁷. MarrJoon study results on noise in ICU'S revealed the mean equivalent continuous noise level for 24 hours was 63.5 decibel A (DBA), which was far higher than 30 DBA recommended by the World Health Organization for hospital wardrooms. The most common sleep disturbed patient-perceived sources of noise were noise caused by other patients', caregivers and visitors (23.6%), followed by noise, caused by other patients such as snoring or groaning, toilet flushing, medication/food trolleys and phone or TV sound, medical staff, and medical equipment's.

Age and sleep quality: The subjects between 25-30 years of age had better sleep than those subjects above 30 years (23.07 and 20.06 respectively). These findings further obvious in the worst sleep category too, the older adult in large proportion had bad sleep against those who below the age of 30.9 35.3% and 23.07% respectively).

The study conducted by Jean had indicated that as age advances the sleep reduction is obvious, the subjects admitted of 25-35 years had less sleep to that of subjects under 25 years of age². Cengic also said that the younger patients undergoing hemodialysis had better sleep than the older adults¹¹.

Strengths of the study

- 1) The study has helped to know the intensity and type of factors causing Sleep disturbance among patients admitted in the hospital
- 2) It has helped the organization to sensitize the hospital staff on factors contributing sleep disturbances and bring change in their behaviors that can cause sleep disturbances.

Limitations: The study was limited to one time data collection and three wards of the hospital only.

Implication of the study

A present study is a foundation to undertake an exploratory study on clients experience during the hospital stay.

Suggestions:

- 1) Hospital facilities concern issues causing sleep disturbances can be thought about and could be eliminated from its root.

- 2) Wheel chair generating sounds, machine alarms, bright lights, shoe sounds can be eliminated by sensitizing the people those engaged in such activities

Ethical clearance: The ethical clearance was obtained from the Institutional Ethics Committee (Ethical Number: FMEC/CCM/36/19 dated 11-3-2019)

Source of funding: Rajiv Gandhi University of Health Sciences, Bangalore.

Conflicts of Interest: None

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