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A Study of Microbiological Evaluation of Chronic Suppurative Otitis Media

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ABSTRACT

Background: Chronic suppurative otitis media (CSOM) is still a major cause of acquired hearing impairment especially in developing countries. Longer the ear discharge persists worse the hearing gets and in some cases the hearing impairment may be profound. Chronicity of discharge is because of the peculiar anatomy of the middle ear, repeated infections from nasopharynx and improper treatment.

Aims: 1. To study the microbiology of chronic suppurative otitis media. 2. To study the drug sensitivity of the isolated micro organisms.

Material and method: This prospective study was conducted on 123 ears of 94 patients in the Department of Otorhinolaryngology and Department of Microbiology, Gajra Raja Medical College and associated J.A. Group of Hospitals, Gwalior (M.P.) from August 2009 to October 2010. Aural culture study was done in all the patients. Out of 2 aural swabs, one was inoculated on Robertson Cooked meat medium and the other swab inoculated on nutrient broth. Gram's staining of the slide was also done to have an idea of the type of organism present.

Results: After culture most common organism isolated was staphylococcus aureus 64 (40.7%) followed by pseudomonas aerogenosa 44 (28%). In 32 (26.1%) samples more than one organisms were isolated. Staphylococcus aureus was highly sensitive to cefotaxim in 91% and Pseudomonas was found to be highly sensitive to ofloxacin 80%. Coagulase negative staphylococcus was highly sensitive to gentamycin in 88%.

Conclusion: Antibacterial sensitivity of organisms alter overtime. Staphylococcus aureus being most common organism isolated, is highly sensitive to cefotaxim.

Keywords: Chronic suppurative otitis media, Microorganisms, Pseudomonas aeruginosa, Staphylococcus.

INTRODUCTION

Global burden of chronic suppurative otitis media (CSOM) involves 65-330 million individuals with draining ears.¹ 60% of them suffer from significant hearing impairment. In India chronic suppurative otitis media is one of the most common condition met with in the Ear, Nose & Throat outpatient department.

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Clinical course of chronic suppurative otitis media may range from a relatively benign condition to fatal. It may be accepted that longer the ear discharge persists worse the hearing gets and in some cases the deafness may be profound. The number of cases therefore, suffer little more than the annoyance of running ears. They may have subnormal health, headache, giddiness, decreased hearing and continued presence of pus, which is often offensive and distressing. The pus may be a source of danger to others by acting as reservoir for spread of organism such as *Pseudomonas pyocyanea*. Another disadvantage is the amount of time that have to be spent on treatment. In some cases it is a matter

of years and is often given up because it is prolonged, tedious and uncertain. It responds very poorly to routine antibiotics. This is probably due to the fact that many of the cases are due to mixed infection and in majority of cases the organisms responsible are resistant to the commonly used antibiotics, which has been widely used during last 15 years.²

It is important that there are anatomical factors responsible for chronicity. Also it is essential to find out if the various organisms isolated from the discharge of chronic suppurative otitis media has a role to play in the prolonged and unsatisfactory treatment of this disease. Increased morbidity of chronic suppurative otitis media and its poor response to the routinely used antibiotic has prompted us to conduct the present study.

MATERIAL & METHOD

The study was conducted in the Department of Otorhinolaryngology and Department of Microbiology, Gajra Raja Medical College and associated J.A. Group of Hospitals, Gwalior (M.P.) from August 2009 to October 2010. 123 ears of CSOM in 94 patients were selected from the patient attending ENT OPD. Inclusion criteria was (1) Patients with discharge from ear for more than 3 months, (2) Patients having not received antibiotics for past 5 days (3) Patient with no history of surgical treatment for CSOM.

In selected cases the external auditory canal was cleaned well, then aural discharge was taken from middle ear in two sterile swab preventing contact with external ear canal using sterilized aural speculum. The discharge was added to Stuart transport medium and transported to microbiology laboratory. Culture study was done in the department of Microbiology G.R. Medical College. Out of the two swabs in the test tube one was inoculated in Robertson's cooked meat medium. The inoculated medium was incubated at 37° C for 48 hours. Though reporting was done after 48 hours, each culture tube was kept for a week and examined again for anaerobic organisms. Other swab was inoculated on nutrient broth. It was incubated at 37°C for 24 hours. On the next day appearance of growth in nutrient broths and color of the broth was noted. A loop full of growth from nutrient broth was taken and smear prepared for Gram's staining. Motility of organisms was studied. A loop full of growth from nutrient broth was also inoculated

on each of the blood agar plate and MacConkey's medium. The inoculated medium was incubated at 37°C for 24 hours and examined for evidence of growth next day. Appearance of growth and colony characters on the solid media was to be recorded. Any change in color on MacConkey plate and hemolysis on blood agar plate was noted. In case of no growth in first 24 hours the medium was re incubated and studied again after 24 hours. Cultures were reported as sterile if no growth was obtained for 48 hours. In the cases where gram negative organisms were grown, a colony from MacConkey plate was picked up by platinum loop and inoculated in peptone water and incubated for 24 hours at 37°C. Organisms from peptone water was transferred to various sugar media such as glucose, lactose, maltose, mannitol, dulcitol, sucrose, Koser's media, glucose phosphate media and Christensen's urea medium. These medias were incubated for 24 hours and the biological reactions reported next day. After isolation of pure culture on solid media, Colony of each organism was inoculated on nutrient broth and incubated for 24 hours at 37°C. Sensitivity tests were performed from this broth culture separately for the two organisms if present. Antibiotic sensitivity test was done by Disk Diffusion method.

RESULTS

In our study of 123 ears on 94 patients 56(59.5%) were males and 38 (40.5%) were females. Maximum patients 39(41.4%) were in the age group 11-20, followed by 29 (38.8%) in 21-30 age group. 58(47.2%) patients were having discharging ears for more than 10 yrs. 73(59.3%) ears were of safe CSOM and 50(40.7%) were unsafe CSOM. On culture 157 organisms were isolated out of which 64(40.7%) were gram positive *Staphylococcus aureus*, (44)28% gram negative *Pseudomonas aeruginosa* followed by (25)15.9% gram positive coagulase negative staphylococcus. In 32(26.1%) samples more than one organism were isolated and in 3(2.4%) no organism was isolated. *Staphylococcus aureus* was found to be highly sensitive to cefotaxim(91%), clindamycin (90%), cefaclor(83%) and gentamycin(81%), They showed low or no sensitivity to amoxicillin(33%). *Pseudomonas aeruginosa* was found to be highly sensitive to ofloxacin(80%), gentamycin(79%) and ciprofloxacin(78%) They were resistant to cotrimoxazole(54%) and amoxicillin (52%). Coagulase negative *Staphylococci* were found to be highly

sensitive to gentamycin(88%), tobramycin(80%) and to co-trimoxazole(72%), But they were resistant to amoxicillin (56%).

DISCUSSION

In our study it was observed that majority of patients 39(41.4%) were in the age group 11-20 followed by 29(38.8%) in the age group 21-30. This is in agreement with Shrestha et al, Kamran Iqbal et al, Zakirullah Z et al, Arjyal et al, K.G.Raghu Ku et al^{3,4,5,6,7}. Where as in a study by V.K.Poorey et al⁸ 46% were in age group 0-10. However most of the studies show that majority of patients are children and young adults. The reason for highest incidence of patients in 11-20 age group may be due to multiple reasons like low resistance, increased awareness in young adults about disease, seeking treatment before joining jobs or accessibility to hospital is more easier for this group of patients. Our second largest patient group was age group 21-30yrs also because 58(47.2%) had discharging ears for more than 10yrs, so if they had reported earlier would have fallen in lower age group. CSOM was found to be more common in males (3:2) this is in agreement with other studies^{4,5,8,9}. In a study by Shrestha BL et al females(M:F::4.5: 5.5) were more commonly affected than males and in a study by Arjyal et al males and females were equally affected.^{3,6} The predominance of males may be due to their extrovert nature, their accessibility to hospital and their job requirement in underdeveloped countries like India. Out of 123 cases, growth was seen in 120 cases(97.56%), out of which 88(77.33%) had pure growth and 32(26.66%) mixed growth and 3(2.4%) having no growth. Culture positive cases in our study is in agreement with Kamran Iqbal et al, Zakirullah Z et al, K.G.Raghu et al, V.K.Poorey et al, and A.H.Singh et al.^{4,5,7,8,10} Both gram positive and gram negative organism were isolated. In the present study most common organism isolated was *Staphylococcus aureus* in 64 (40.7%), *Pseudomonas aeruginosa* in 44(28%) and Coagulase negative Staphylococci in 25 (15.9%). Study done by Shrestha BL et al, Arjyal C et al, Nikakhlagh S. et al, Loy AH et al and Prakash R et al the major organism isolated was *Staphylococcus aureus* followed by *Pseudomonas aeruginosa* and coagulase negative *Staphylococcus* in the third place.^{3,6,9,11,12} On the other hand study done by Kamran Iqbal et al, KG.Raghu Kumar et al, V. K. Poorey et al, and Mansoor T. et al, the major organism isolated was *Pseudomonas aeruginosa*

followed by *Staph. aureus*.^{4,7,8,13} *Staphylococcus aureus* was the most common organism isolated in our study. *Staphylococcus aureus* isolates were highly sensitive to cefotaxime (91%), clindamycin (90%), cefaclor (83%), and showed low or no sensitivity to amoxicillin (33%). Sensitivity to ciprofloxacin was 66%. There are strains which are resistant to topically used quinolones like ciprofloxacin and ofloxacin. Study done by Loy AH et al¹¹ showed *Staphylococcus aureus* was sensitive to cephalixin, cloxacillin & clindamycin.

Study by Nikakhlagh S et al⁹ showed high sensitivity of *Staphylococcus aureus* against ofloxacin.

Pseudomonas was second most common organism cultured. *Pseudomonas* was highly sensitive to ofloxacin (80%) and amikacin (79%). They were resistant to co-trimoxazole(54%) and amoxicillin (52%) but moderately sensitive to ciprofloxacin. Study by Nikakhlagh S et al showed ofloxacin as most sensitive and cefotaxime as most resistant antibiotic against *Pseudomonas*.

Coagulase negative *Staphylococcus* like *Staph.epidermidis* and *Staph. saprophyticus* were highly sensitive to gentamycin (88%) and tobramycin (80%) antibiotics. But they were resistant to amoxicillin (56%). Coagulase negative *Staphylococcus* are not true pathogens but these represent skin flora. Loy AH et al study showed sensitivity of these organism against erythromycin, clindamycin and cloxacillin.

In the present study 4 isolates were of *Streptococcus pneumoniae*. They were sensitive to cefotaxime(75%) and gentamycin (75%) but resistant to cefaclor(50%) and co-trimoxazole(50%). This indicates cephalosporins are superior antibiotic for treating these organisms.

Cephalosporins are commonly prescribed antibiotics and third-generation display an extended gram negative spectrum. These drugs are also used for treating *Pseudomonas* infections. In our study, only 39% of isolates showed sensitivity to cefotaxime. These results indicate that in our local community, resistance against cefotaxime is increasing progressively. To avoid emergence of resistance and complications these patients should be adequately monitored, counseled and educated.

Further studies in this area is advocated to prevent complications of CSOM and decreased hearing.

Table 1: Comparison of various studies done on microorganism of CSOM

| Studies Country Year Sample size | M:F ratio Age gp involved | Total no organism isolated | | Culture Positive | Pure growth | Mixed growth | Sterile | S.Aureus | P.Aeru genosa | CNS |
|---|--|----------------------------------|-----------------|---------------------|-----------------|-----------------|----------------|----------|------------------|-------|
| V.K.Poorey India 1999-2000 100 | 1.4:1 0-10(46%) 11-20(30%) | 102 | | 92% | 82 (89%) | 10 (11%) | 8% | 14.7% | 35.2% | 4.9% |
| Arjyal C Nepal. 2000 224 | 1:1 <10(27.2%) 11-20(30.4%) | 243 | | 185 82.6 | 132 (71.35%) | 53 (28.64%) | 17.4% | 49.4% | 20.9% | 1.2% |
| S.Nikhalage Iran 2005-6 50 | 5.4:4.6 16-60(80%) | 84 | | 82% | 26 (63.5%) | 15 (36.5%) | 12% | 32.4% | 21.6% | |
| Shrestha BL Nepal 2010 230 | 4.5:5.5 <10(34.8%) 11-20(30.4%) | 230 | | 100 | | | | 32.2% | 26.7% | |
| Kamran Iqbal Pakistan 2011 190 | 3:2 15-25(39.5%) | | | 174 (91.6%) | | | 8.4% | 26.4% | 45.9% | |
| Rajat Prakash India 2012 204 | 1:1.2 0 - 20 (51%) | 186 (91.18%) | | 118 (57.84%) | 68 (33.33%) | | 18 (8.82%) | 48.69% | 19.89% | |
| KG Raghu Kumar India 2013 118 | 11-20(21%) 21-30(24%) | 118 | 106 (89.83%) | 90 (84.9%) | 16 (15.09%) | | 10.17% | 34.44% | 42.22% | 3.33% |
| Zakirullah Zakirullah1 Pakistan 2014. 123 | 5.6:4.4 <10(8.10%) 11-20(34.95%) | 123 | 110 (89.45%) | 106 (96.3%) | 4 (3.6%) | | 13 (10.55%) | 29.1% | 31.8% | 1.8% |

Table 2- Antibiotic sensitivity pattern of organisms isolated.

| Organism isolated (%) | AMO (%) | PR (%) | CR (%) | CF (%) | AK (%) | TR (%) | CP (%) | OF (%) | CC (%) | BA (%) |
|---|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Staphylococcus aureus (40.7 %) | 21 (33) | 48 (76) | 53 (83) | 58 (91) | 52 (81) | 46 (72) | 42 (66) | 48 (76) | 57 (90) | 45 (71) |
| Pseudomonas (28%) | 12 (27) | 17 (39) | 22 (50) | 17 (39) | 35 (79) | 27 (61) | 34 (78) | 35 (80) | 28 (62) | |
| Coagulase negative Staphylococci (15.9 %) | 9 (36) | 16 (64) | 17 (68) | 18 (72) | 22 (88) | 20 (80) | 14 (56) | 12 (48) | 16 (64) | 18 (72) |
| Streptococcus pneumonia (2.5 %) | 2 (50) | 1 (25) | 2 (50) | 3 (75) | 3 (75) | 1 (25) | 2 (50) | 2 (50) | 1 (25) | 1 (25) |
| Alcaligenes (2.6 %) | 2 (50) | 1 (25) | 1 (25) | 3 (75) | 2 (50) | 2 (50) | 3 (75) | 2 (50) | 1 (25) | 1 (25) |
| Providencia (1.9 %) | 1 (33) | 1 (33) | 2 (67) | 2 (67) | 2 (67) | 1 (33) | 2 (67) | 1 (33) | 0 | 1 (33) |

AMO-Amoxicillin, PR - Cephalexin, CR - Cefaclor, CF - Cefotaxime, GM - Gentamycin, TR - Tobramycin, CP - Ciprofloxacin, OF - Ofloxacin, CC - Clindamycin, BA - CoTrimoxazole.

CONCLUSIONS

CSOM is primarily a disease of children and young adults. Organisms could be isolated in most of the cases (97.56%). Staphylococcus aureus and Pseudomonas aeruginosa were the commonest culprits. Staphylococcus aureus was found to be highly sensitive to cefotaxim, clindamycin and was fairly sensitive to cefaclor and gentamycin. They were less sensitive to amoxicillin. Pseudomonas aeruginosa was found to be sensitive to ofloxacin, gentamycin and ciprofloxacin but were less sensitive to co-trimoxazole and amoxicillin. Appropriate and adequate treatment is essential for favorable outcome. Mandatory ear checkups in school and awareness through media may go a long way in reducing the burden of CSOM in our country.

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A Comparative Study on Traditional & Modern Teaching Methods among Undergraduate Students in a Medical College of Andhra Pradesh

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ABSTRACT

Objective: To study and compare didactic lecture and small group discussions among undergraduate medical students.

Study design: Quasi-experimental study

Method: Two groups of students were selected from the same batch for the study. One group was taken as the experimental group and the students were taught a topic by small group discussions. The other group was taken as the control group and taught the same topic by the traditional method of didactic lecture. At the end of both the methods of teaching a test was conducted and the scores obtained by the students in both the groups were analyzed.

Results: Students involved in the modern teaching method i.e. small group discussions were found to have performed better than those taught by traditional method i.e. didactic lecture.

Conclusion: Introduction of modern teaching methods like small group discussions into the present curriculum of medical education can improve the learning process in the students and produce better results & improve their academic skills.

Keywords: Didactic lectures, small group discussions.

INTRODUCTION

Teaching has got a very important role not only at school level but also in higher education as it can help in generating effective professionals. The effectiveness of teaching depends upon how much has been received by the students. There are different methods of teaching like lectures, tutorials, CMEs, seminars, videotapes, case studies, small group discussions, etc.¹ Lectures are the traditional methods of teaching and are still applied as the main methods of teaching in many medical colleges in India. But it has been

found that, these days the students find passing the examinations as their immediate goal which does not help them in respecting the importance of learning. The fast changes and advancements in other branches of science and technology make it necessary for the medical students also to become active, self-directed and life-long learners to be at par with these changes.²

The objective of this study was to study and compare two different methods of teaching, didactic lecture and small group discussions in a group of undergraduate medical students in GSL Medical College in order to adopt better teaching method for better learning & good results among the undergraduate students

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MATERIALS & METHOD

Study type: Quasi-experimental study

Study area: Department of Community Medicine, G.S.L Medical College, Rajahmundry, A.P

Study subjects: 6th semester students

Sample size: 145 students

Study period: September 2015 to November 2015.

Statistical analysis: Percentages and proportions, mean, SD

METHODOLOGY

This study was quasi-experimental. All the students in the 6th semester during the study period were included in the study. Out of the total 145 students in the class, the first 72 students according to roll were taken as the experimental group i.e. they were included for small group discussions (SGDs) and the last 73 students were taken as the control group i.e. for didactic lectures. The topic selected for teaching them was "Concepts of Health". The control group was taught the topic by the traditional method of didactic lecture over 6 classes with each class of one hour duration. The students in the experimental group were divided into groups of 10-12 members each. Then they were all asked to come prepared from some prescribed books and then discuss the subtopics in their respective groups. In all, 6 sessions of SGDs each of one hour duration were conducted. In the SGDs, the teachers acted as facilitators. At the end of both the didactic lectures and SGDs, the students were assessed by being given a test of 10 questions. The questions included both Long and SAQs. At the end of SGDs, the students in the experimental group were also given a set of questionnaire for their subjective perception of the SGD sessions to assess the advantages & drawbacks in the teaching method in order to improve the teaching skill & remove the flaws. After the test, statistical analysis of the student's scores was done and t-test was done for determining the statistical significance.

RESULTS & DISCUSSION

From the control group of 73 students, 65 appeared for the test and from the experimental group of 72 students, 67 appeared for the test. The mean score obtained by the students in the experimental group was 32.13 whereas it was 26.67 in the control group.

The S.D. of scores in the experimental group was 4.1 and in the control group S.D. was 4.9 as shown in table 1.

The difference between the means of scores of the students in the SGDs and those from the didactic lecture classes was found to be statistically significant ($p < 0.05$).

The students involved in SGDs performed better than those who attended the lectures because getting involved in the discussions might have driven them to study on their own and analyze and understand the topic better.

Our results from this study are similar to the ones obtained from the study by Saleh AM et al.¹ In a study conducted by Hameed S et al.³ where the undergraduate medical students of one batch were taught by SGDs, it was found that they performed better than their previous batch who were taught by the traditional lecture method.

Similar results were also found in studies conducted by Tiwari A et al.⁴ and Costa ML et al.⁵ But in a study conducted by Khan I et al.⁶ it was found that the performance of the students taught by problem based learning method was similar to those taught by lecture method.

In this study it was found that majority of the students (89.6%) in the experimental group found SGDs as an active way learning. In the same group 77.6% students found self-learning motivating and 88% students said that SGDs improved their interaction skills as shown in table 2. Similar results were obtained in the studies conducted by Goshtasebi A et al.⁷ and Nanda et al.⁸

Table 1. Comparison of assessment scores of both groups (study and control)

| Teaching method | Mean | S.D | p value |
|------------------------------|-------|-----|---------|
| Small Group Discussion (SDG) | 32.13 | 4.1 | 0.00001 |
| Lecture | 26.67 | 4.9 | |

Table 2. Positive attitude of students towards SGDs

| Statements | Strongly agree & agree N (%) | Undecided N (%) | Strongly disagree & disagree N (%) |
|---|------------------------------|-----------------|------------------------------------|
| SGDs are more active way of learning | 60(89.6) | 7(10.4) | None |
| I am comfortable in the group | 54(80.6) | 4(5.9) | 9(13.4) |
| SGDs motivate for self learning | 52(77.6) | 6(8.9) | 9(13.4) |
| SGDs develop interaction skills | 59(88.0) | 3(4.5) | 5(7.5) |
| Sufficient learning materials are available for SGD | 59(88.0) | 8(11.9) | None |

Table 3. Negative attitude of students towards SGDs

| Statements | Strongly agree & agree N (%) | Undecided N (%) | Strongly disagree & disagree N (%) |
|---|------------------------------|-----------------|------------------------------------|
| SGDs are stressful | 6(8.9) | 3(4.5) | 58 (86.6) |
| SDGs are waste of time | 7(10.4) | 5(7.5) | 55(82.9) |
| Teaching is unfocussed | 3(4.5) | 4(5.9) | 60(89.6) |
| Uncertainty about the accuracy of Colleague's information | 6(8.9) | 5(7.5) | 56(86.6) |
| SGDs increase work load | 4(5.9) | 5(7.5) | 58 (86.6) |

CONCLUSIONS

Inclusion of modern teaching methods like small group discussions into the present curriculum of medical education can help in retaining interest and knowledge among the medical students. It will help in better learning & better performance with improvement in their academic skills. It can also help the students in improving their interpersonal communication skills which will finally be helpful in their future as professionals.

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Ethical Clearance – Ethical clearance was obtained from the Institutional Ethical Committee

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Weaning Practices among Mothers: A Focused Group Discussion

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ABSTRACT

Background: Semi-solid foods are advised to be introduced after 6 months of age while continuing breast feeding to meet the increased physiological demands of the growing infant. Weaning is transitional to change from liquid to a solid diet, the feeding behavior changes from sucking to chewing and biting and the obligatory introduction with the mother or other caretaker changes to independent feeding. The study was undertaken to explore weaning practices in Rural, Urban and urban slum mothers

Method: Qualitative Cross-sectional community based study of Mothers attending Anganwadi/immunization centre from urban, rural and slum areas. Data was collected by Focused Group Discussion (FGD) regarding General knowledge on infant feeding and Weaning practices was discussed. Data was analyzed by Content Based analysis and Ethnography.

Results: Mothers had fair knowledge about the proper introduction of weaning foods. Children were fed with soft porridge for its satiety value, nature of soft consistency, perceived nutritional value and availability. Adherence to cultural belief regarding food choices and cooking practices for weaning age children became evident. Infants in urban and slum locality were weaned with cereals in most of the time where as infants from rural were fed with fruits like banana. Weaned foods were prepared separately by urban participants, but few from rural and most from slum areas didn't feel the importance of preparing the food separately

Conclusion: Practice of weaning was appropriate though the quantity of weaned food fed was less than the normal requirement. Variation in weaning practices existed among mothers of rural, urban and slum, in which the practice followed by urban mothers was acceptable. Adherence to cultural and traditional practices which influence the child nutrition was followed by mothers belonging to rural and slum areas.

Keywords: Weaning practice, infant, mothers, FGD, weaning foods

INTRODUCTION

According to World Health Organization (WHO) Breastfeeding is the key to a child's

survival, health, growth and development. WHO recommends exclusive breastfeeding in the first hour of life and the following 6 months to stimulate brain development, and to prevent childhood obesity and non-communicable diseases later in life.¹

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Semi-solid foods are advised to be introduced after 6 months of age while continuing breast feeding to meet the increased physiological demands of the growing infant. Weaning is transitional to change from liquid to a solid diet, the feeding behavior changes from sucking to chewing and biting and

the obligatory introduction with the mother or other caretaker changes to independent feeding.² A delayed infancy-childhood transition (DICT) has a lifelong impact on stature. Feeding practices during infancy are fundamental elements of nutrition as they program for future growth and body composition.³ The various types of commonly given foods are animal milk, water, porridge/mashed chapatti, mashed fruits and vegetables and infant milk formulas. It is seen that 29% of the respondents gave diluted milk.⁴

In NFHS-3 (2005-2006), there is improving trend for breastfeeding within the first hour of birth (23.4%) and exclusive breastfeeding up to 5 months (46.3%); however, weaning for semisolids is delayed (55.8% only at 6-9 months of age). The infant weaning foods are inadequate in energy-protein and micronutrients. Further, weaning foods and feeding/cooking utensils are contaminated with bacteria, resulting in frequent episodes of diarrhea.⁵

Poor weaning practices during infancy and early childhood, resulting in malnutrition, contribute to impairment of cognitive and social development, poor school performance and reduced productivity in later life.²

Early introduction of top feeds in the form of diluted animal milk and late introduction of weaning practices, giving exclusive breast-feeding for more than six months is also found to be followed and practiced widely. Such practices adversely affect the health and nutritional status of infants and young children which increases the incidence of malnutrition that affects almost half of the nation's children.⁶

The most consistent determinants of inappropriate complementary feeding practices across all countries were the lack of maternal education and lower household wealth. Limited exposure to media, inadequate antenatal care and lack of post-natal contacts by health workers were among predictors of inappropriate feeding. Overall, complementary feeding practices among children aged 6-23 months need improvement in all South Asian countries.⁷

Thus, appropriate educational strategies should be directed particularly on counteracting various myths related to infant feeding. Moreover, promotion of appropriate feeding should target not

only on maternal caregivers, but also on other family members, particularly husbands and grandmothers, taking into account the social and cultural situation of the area.²

The present study was undertaken to explore weaning practices in Rural, Urban and urban slum mothers in a North Karnataka District.

METHOD

Study design is a Qualitative Cross-sectional community based study. Mothers of children up to 3 years old attending Anganwadi/immunization centre from urban, rural and slum areas for child immunization in Dharwad district were included in study. Study conducted was from August to October 2015 after obtaining Institutional Ethical Committee clearance (EC13072015). Six groups (two each in urban, rural and slum area), each group containing six mothers were selected by convenient non probable sampling technique. Mothers who didn't give consent were excluded. Mothers were briefed about the information and procedures involved in the study individually and groups were formed accordingly. Consent for the audio recording of the group discussion was also obtained. Qualitative data was collected by Focus Group Discussion (FGD), using a structured interview schedule which was executed to complement the exploratory and descriptive nature of the research design. Audio recorder was used to record the conversation among the members of group during focus group discussion.

General knowledge on infant feeding and Breast-feeding practices was discussed. A structured interview schedule was developed, applying a structured question approach with pre-planned probes to improve understandability. Specific measures such as well-defined concepts, pre-tested instruments were implemented to improve the reliability and the validity of the methodology. Focus group discussions were audio-recorded and the interviews were transcribed immediately after each session to maximize data capture. Data making involved unitizing, sampling and recording thus converting transcribed data into specific units of analysis. Coding categories from structured discussion schedule was created. Data inference and analysis were done using ethnography content analysis by

exploration of themes and content uncovered in the data. Content was analyzed in terms of manifest and latent content. Manifest content (visible surface content) included countable objects/concepts, for example: volume, frequency, foods. Latent content (underlying meaning) included reasons given for the practices, beliefs concerning nutritional knowledge, reasons for nutrition-related attitudes and how these might have influenced the practices. Ethnography was used to obtain descriptive data by using direct quotations from group discussion. Data exploration created new categories and inferences were grouped or discussed according to the content. Only inferences reflecting the feeling of the majority were presented, supported by one or more statements (direct quotations from the participants) best describing the topic explored.

OBSERVATIONS

Focus group discussions were carried and results were tabulated using content analysis and ethnography. Comparison between rural, urban

and slum areas were also tabulated. The categories in which there were no difference of opinion among the rural, urban and slum mothers were excluded in comparison table.

WEANING

Mothers had fair knowledge about the proper introduction of weaning foods. Children were fed with soft porridge for its satiety value, nature of soft consistency, perceived nutritional value and availability. Children food was overcooked and over-diluted. Raagi meal (better called as “Raagi Ghanji” in local term) was choice of feeding by many. Maize meal was washed and thinned with water and boiled for long time to achieve a very soft textured product. Children’s food was prepared separately in their own cooking utensils for which the explanation given mothers were on the cultural and health basis. Adherence to cultural belief regarding food choices and cooking practices for weaning age children became evident. Most children consumed below average quantity of milk than recommended. (Table 1)

Table 1: Weaning Practices

| Category | Content analysis | Ethnography |
|------------------------|--|--|
| First weaning foods | Child is weaned with cereals which include raagi, rice, and maize by almost 70% and rest with fruits like banana. Cereals were included for nutritional, health, physiological and financial reasons. Some of the reasons for inclusion were clearly misconceptions. | <i>“Growing children need more foods apart from milk”</i> |
| Food preparation | Child food was prepared separately (75%) for acceptability, physiological reasons and traditions. Extras added to child’s food included: Fat by 25%, milk/milk products 41.6 % and sugar 91% participants Food was generally overcooked, usually with a lot of water to achieve a soft texture. | <i>“Baby can only chew soft foods”</i> <i>“Their digestion power is low compared to adult”</i> |
| Milk drinking practice | Weaned children drank cow’s milk (27.7%), powdered milk (41.6%), and packet milk (30.5%). Weaned child drank little milk: <ul style="list-style-type: none"> • 38.8% drank < 250 ml • 47.2% drank 250-500ml • 13.8% drank 500-750ml (recommendation) | <i>“Horlicks and Bourn-vita are added to milk to make it tasty”</i> <i>“Children drink more milk when mixed with Horlicks and Bourn- vita powder”</i> |

Table 2: Weaning Practices among Rural, Urban and Slum areas

| Category | Rural | Urban | Slum |
|------------------------|---|--|---|
| First weaning foods | Fruits (banana) was preferred over cereals | Cereals -raagi meal (Ghanji) was their choice along with fruits like banana. | Followed same pattern as that of urban |
| Preparation | 83.3% participants prepared food for their children in separate utensils with different food menu which is most suitable for children. Rest had no difference in making food for adult family members and their children. | Weaning foods are exclusively prepared in separate utensils. | Most (58.3%) made no difference in preparing food for their children and other family members |
| Milk drinking practice | Cows' milk was preferred by 66.6% followed by packet milk by rest | Powdered milk was the choice among 83.3% and remaining chose cows' milk. | Cows' milk was rarely consumed and opted for packet milk (58.3%) and powdered milk by rest |

Comparison: Infants in urban and slum locality were weaned with cereals in most of the time where as infants from rural were fed with fruits like banana. Weaned foods were prepared separately by urban participants, but few from rural and most from slum areas didn't feel the importance of preparing the food separately. Cow's milk was preferred among rural locality. (Table 2)

DISCUSSION

Only 15.8% mothers had initiated supplementary feeding in infants above 6 months. Immediately after starting supplementary feeding, 81.65% mothers stopped breastfeeding. Homemade food was given to only 23.42% babies as supplementary food.⁸

According to study by Shaili Vyas et al, consisting of total 500 mothers, 87 mothers didn't introduce any weaning food to their infants. 52% of children were weaned at >6 months, whereas 48.5% children were weaned at 4-6 months of age. Furthermore, boys were weaned earlier than girls irrespective of the age of weaning which deteriorated the nutritional status of the girls as majority of girls in the age group of 6-12 months were found to be highly undernourished (56.41%) than girls in other age group. Children in whom weaning had started later than 6 months were observed to be more undernourished (79.34%) as compared with those between 4 and 6 months in whom the prevalence was found to be less (61.50%).²

A study by Menon et al found that not consuming

any solid or semi-solid foods at 6-8.9 months was associated with being underweight ($P < 0.05$). The diet diversity score and achieving minimum diet diversity (≥ 4 food groups) for children 6-23 months of age were most strongly and significantly associated with height-for-age z-score (HAZ) and weight-for-age z-score (WAZ), stunting and underweight ($P < 0.05$). Poor Age-appropriate infant and young child feeding (IYCF) practices, particularly poor complementary foods and feeding practices are associated with poor child nutrition outcomes in India, particularly linear growth.⁹ Infant and young child anaemia is highly prevalent and IYCF is poor in rural central and western China. Continued breastfeeding and certain other variables indicate risk of poor IYCF and anaemia. Major policy commitment to reducing iron deficiency and improving IYCF is needed for China's rural poor.¹⁰

The diets of children were deficient in calories, protein, calcium, vitamin C and b-carotene. Supplementary foods are introduced into the diet at the ages of 4 to 8 months of children. Moderate to severe category of malnutrition was observed. Identified traditional weaning foods were based on cereals, small millets and pulses. Most prevalent traditional weaning foods of Jabalpur were found to be *khichadi*, *dalia*, *roti* (wheat/maize/kutki), *sattu*, *pej* (kodo/maize/kutki), *panjiri*, *sewai*, *dal* (lentil/arhar/batari), *chawal* (kodo/kutki/paddy), *kudai bhat*, *latchaka* (kodo/maize) and *rejgeera ladoo*.¹¹ It was found that 71% of the respondents started complementary feeding at

the age of 4-5 months. The various types of commonly given foods are animal milk water, porridge/mashed chapatti, mashed fruits and vegetables and infant milk formulas. It is seen that 29% of the respondents gave diluted milk.⁴ 29.8% started complementary feeding at 6 month, while 38.3% exclusively breastfed for six month duration. 79.6% were given food from four or more group. Minimum meal frequency was adequate in 43.4% while minimum acceptable diet was 37.7%.¹² Cultural factors and taboos have a powerful influence on feeding practices and eating patterns. Young mothers often find it impossible to ignore their ill-informed elders or peer group.¹³

The prevalence of timely introduction of complementary feeding among infants aged 6–8 months was 55%. Among children aged 6–23 months, minimum dietary diversity rate was 15.2%, minimum meal frequency 41.5% and minimum acceptable diet 9.2%. Children in northern and western geographical regions of India had higher odds for inappropriate complementary feeding indicators than in other geographical regions. Richest households were less likely to delay introduction of complementary foods than other households. Other determinants of not meeting minimum dietary diversity and minimum acceptable diet were: no maternal education, lower maternal Body Mass Index (BMI) (<18.5 kg/m²), lower wealth index, less frequent (<7) antenatal clinic visits, lack of post-natal visits and poor exposure to media. A very low proportion of children aged 6–23 months in India received adequate complementary foods as measured by the WHO indicators.¹⁴

CONCLUSION

1. Practice of weaning was appropriate though the quantity of weaned food fed was less than the normal requirement.

2. Variation in weaning practices existed among mothers of rural, urban and slum, in which the practice followed by urban mothers was acceptable. Adherence to cultural and traditional practices which influence the child nutrition was followed by mothers belonging to rural and slum areas.

3. Focus group discussions could be used to uncover nutrition- related problems, followed by facilitated group discussions on possible solutions for

the identified problems.

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Declarations

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Awareness of Biomedical Waste Management among Health Care Personnel in Bangalore, Karnataka

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ABSTRACT

Background: In the present scenario the management of biomedical waste is becoming a major problem in most of the countries. The biomedical waste produced in the course of healthcare activities carries a higher potential for infection and injury than any other type of waste. Improper management of these wastes poses a risk for health and environment.

Objective: To assess the knowledge, attitude and practices of doctors, laboratory technicians, nurses and class IV staff regarding biomedical waste management.

Materials and Method: This was a descriptive observational hospital based cross sectional study.

The study was carried out in a private laboratory and a tertiary care centre, Bangalore. The study was conducted over a period of 6 months. A total of 140 subjects were included in the study, which comprises of 30 doctors, 30 nurses, 60 lab technicians and 20 class IV employees.

Results: Doctors, laboratory technicians and nurses had better knowledge on biomedical waste management than class IV staff. Knowledge on disposal of BMW was good in technicians and nurses compared to doctors. Regarding practices related to BMW management, found to be better in doctors and laboratory technicians compared to nurses and poor in class IV staff. However, injury reporting was low across all the classes of health care personnel.

Conclusion: To improve overall knowledge and practice related to BMW management need for proper training of health care workers (both technical and non technical staff) and strict implementation of BMW management rules is required.

Keywords: Biomedical waste management, hospital, health care personnel.

INTRODUCTION

Biomedical waste management (BMW) has recently emerged as an issue of major concern not only to hospitals, nursing home authorities but also

to the environment. The bio-medical waste generated in the course of healthcare activities carries a higher potential for infection and injury than any other type of waste.¹

According to Biomedical Waste Rules, 1998 of India, Biomedical waste means "Any waste which is generated during the diagnosis, treatment or immunization of human beings or animals or in research activities pertaining thereto or in the production or testing of biologicals."² About 85% of biomedical wastes generated from hospitals are non

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hazardous, around 15% are hazardous wastes in that 10% are infectious and 5% are non infectious.³ In India, 0.33 million tonnes of hospital waste is generated and rate of generation ranges from 0.5 to 2 kg per bed per day.⁴

In many hospitals major issue related to biomedical waste is lack of biomedical waste regulation and disposing of waste in a haphazard, improper and indiscriminate manner. Poor awareness among various health care workers results in improper management of biomedical waste and risk for patients, public health and to the environment.¹ Inadequate management of biomedical waste will cause environment pollution, unpleasant smell and multiplication of vectors like insect, rodents and may lead to transmission of various diseases, injuries from contaminated sharps, needles resulting in hepatitis, AIDS and other infections.⁵

With a judicious planning and management, however, the risk can be considerably reduced. Proper training of health care workers coupled with sustained motivation and implementation of strict rules can improve the situation. The purpose of BMW management are mainly to reduce waste generation, proper segregation of biomedical waste at the source of generation into different colour coded bags, handling, as well as safe disposal in such a way that it controls infection and improves safety for employees working in the system.⁶

The present study was conducted with objective to know the knowledge, attitude and practices among health care personnels working in a private laboratory and a tertiary care centre, Bangalore.

MATERIALS & METHOD

A cross sectional study was carried out in a private laboratory and a tertiary care centre, Bangalore. The study was conducted over a period of 6 months. A total of 140 subjects were included in the study. The study subjects comprised of 30 doctors, 30 nurses, 60 lab technicians and 20 class IV employees (cleaning and maintenance staff). The study subjects were interviewed and observed for the BMW management practices. The data regarding the BMW management practices and safety was collected using predesigned questionnaire.

RESULTS

A total of 140 health care personnel were included in the study. Analysis of data revealed that doctors, laboratory technicians and nurses had better knowledge than class IV staff. Knowledge regarding BMW management rules, colour coding, categories and lethal effects of BMW was found to be better in doctors compared to laboratory technicians and nurses. Knowledge on disposal of BMW was good in technicians and nurses compared to doctors. Class IV staff had poor knowledge on BMW management (table 1).

Regarding practices related to BMW management, found to be better in doctors and laboratory technicians compared to nurses and poor in class IV staff (Table 2). However, injury reporting was found to be low in all classes of health care personnel.

DISCUSSION

The participants involved in this study were assessed knowledge, attitude, and practice of BMW management. The knowledge about biomedical waste management rules among the technically qualified personnel like doctors, laboratory technicians and nurses was high compared to class IV staff. Mathur et al, Pandith et al and Saini et al also reported similar findings in their study.^{7,8,9} Knowledge about colour coding, categories, disposal of BMW and transmission of diseases by improper management of BMW was found to be better among in doctors followed by laboratory technicians, nurses and poor in class IV staff. Low level of knowledge of class IV staff which includes attenders, sanitary staff is mainly attributed to poor training facilities and also to relatively low educational level. Hence training of both the technical staff and the nontechnical staff is very important for the proper and appropriate management of BMW.^{8,10}

Practices regarding biomedical wastes like segregation of wastes, disinfection of BMW and use of personal protective measures while handling BMW was found to be better in technically qualified staff and poor in class IV staff. Similar findings were also observed in other studies.^{7,11}

The practice of reporting of injuries resulting from improperly disposed biomedical waste was found to be low among both technical staff and

nontechnical staff. Low reporting of injuries may be due to the lack of awareness about the formal system of injury reporting which should be established within all the health care facilities.^{7,12}

To improve overall knowledge and practice related to BMW management need for proper training of health care workers (both technical and non technical staff) and strict implementation of BMW management rules is required. Standard

operating procedure (SOP) for disposal of different categories of wastes should be prepared and strictly followed. BMW is a sensitive issue with serious hazards in case of improper handling, the knowledge about it should be updated by continued training and medical education programmes.

Ethical Clearance: Informed consent was obtained from subjects. Ethical clearance was also obtained from the study hospital & laboratory.

Table 1: Knowledge among the healthcare personnel regarding waste management (n= 140)

| Knowledge regarding biomedical waste | Doctors n = 30 | Laboratory Technicians n = 60 | Nurses n = 30 | Class IV staff n =20 |
|---|-------------------|----------------------------------|------------------|-------------------------|
| Biomedical waste management rules & definition | 28 (93.3%) | 30 (50%) | 19 (63.3%) | 6 (30%) |
| Different categories of BMW | 29 (96.7%) | 56 (93.3%) | 18 (60%) | 11 (55%) |
| Colour coding for waste containers | 27 (90%) | 52 (86.6%) | 15 (50%) | 10 (50%) |
| Lethal effect of BMW | 28 (93.3%) | 54 (90%) | 25 (83.3%) | 9 (45%) |
| Disposal methods of different categories of BMW | 26 (86.7%) | 54 (90%) | 27 (90%) | 06 (30%) |

Table 2: Practice of healthcare personnel regarding BMW management

| Practices regarding biomedical waste | Doctors n = 30 | Technicians n = 60 | Nurses n = 30 | Class IV staff n =20 |
|---|-------------------|-----------------------|------------------|-------------------------|
| Segregation of BMW at work place | 26 (86.7%) | 54 (90%) | 26 (86.7%) | 9 (45%) |
| Disinfection of BMW before disposal | 28 (93.3%) | 58 (96.7%) | 25 (83.3%) | 6 (30%) |
| Using personal protective measures while handling BMW | 27 (90%) | 54 (90%) | 23 (76.7%) | 8 (40%) |
| Reporting of injuries due to improperly disposed BMW | 16(53.3%) | 20(33.3%) | 8(26.7%) | 1(5%) |

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Ultrasonic Detection of Laterally Located Placenta as a Reliable Predictor for Pre-eclampsia

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ABSTRACT

Introduction: Previous studies have shown that location of placenta may predispose the pregnancy to an adverse outcome like pregnancy induced hypertension(PIH).

Objective(s) : To find out whether placental laterality as determined by ultrasound can be used as a predictor of development of preeclampsia.

Method : This prospective study consisting of 120 singleton pregnant women was evaluated to find out whether the lateral location of placenta as shown by ultrasound at 18-24 weeks of gestation can be used to predict the development of preelampsia.

Results: Out of 120 pregnant women, 14 patients had PIH, and 86 patients didn't develop any maternal complications. Among these 14 patients, 64.28% were primigravidae, 21.42% were secondgravidae while 14.28% were multigravidae. Further, 21.42% of patients with central placenta had developed PIH and 78.57% of patients with lateral placenta developed PIH (P<0.001). Even incidence of complications of PIH like IUGR (Intrauterine Growth Retardation) were high in PIH developed with laterally implanted placenta when compared centrally located placenta.

Conclusion: The detection of laterally located placenta on ultrasound can be considered as a reliable predictor of preeclampsia.

Keywords: Placenta, ultrasound, preeclampsia

INTRODUCTION

Pre eclampsia is primarily a disorder of placental function leading to a syndrome of endothelial dysfunction with associated Vasospasm. It is one of the major obstetrical complication that carries major morbidity. Both pre eclampsia and eclampsia are associated with other complications such as intrauterine growth restriction, intrauterine growth hypoxia and iatrogenic prematurity. The precise predictor of pre eclampsia will be invaluable in

making clinical decisions regarding management of antenatal period, time of termination of pregnancy, mode of delivery and evaluation of Fetal outcome¹.

A number of studies have shown that the location of placenta may influence the uterine blood flow distribution and predispose the pregnancy to adverse outcome like pregnancy induced hypertension (PIH)^{2,3,4,5}.

Studies in the second trimester of pregnancy revealed defective uterine perfusion in laterally implanted placenta^{2,3,4,6,7} Thus this study was planned to evaluate the efficacy of ultrasonic measurement of Laterally located placenta as a predictor for pre eclampsia.

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OBJECTIVES

To study the incidence of PIH in patients with centrally located placenta and in those with laterally implanted placenta and to find out whether placental laterality as determined by ultrasound can be used as a predictor of development of preeclampsia.

METHOD

A prospective clinical study consisting of 120 singleton pregnant women conducted at Santhiram Medical college and General Hospital ,Nandyal was undertaken between January 2012- December 2012 . This study planned to evaluate relationship between placental location and occurrence of PIH and to find out whether placental as determined by ultrasound can be used as a predictor of development of preeclampsia.

Inclusion criteria: a) Singleton Pregnancy, b) Diagnosis and classification of hypertensive disorders is according to the criteria by the working the group of the national high blood pressure education programme(2000)¹¹.

Antenatal Women with multiple gestation or documented major congenital abnormality, Chronic hypertensive patients, renal disease or collagen vascular disease, and Intra uterine death at the time of first ultrasound examination were excluded from the study.

The location of placenta is determined at around 18-24 weeks of gestational age by real time ultrasound using ESOATE BIOMEDICA AU 5 MACHINE with the transducer frequency of 5MHz.

The placenta is classified as central when it is equally distributed between the right and the

left side of the uterus irrespective of anterior, posterior or fundal position.

When 75% or more of the placental mass is to one side of the mid line, it is classified as unilateral right of left placenta.

RESULTS

In this prospective study of 120 singleton pregnant women of whom 14% developed PIH. Out of which 64.28% are primigravidae, 21.42% are second gravidae and 14.28% are multigravidae.

There were 21.42% antenatal women with central placenta in comparison with 78.57% with Lateral Placenta .

The severity of PIH was more in antenatal women having Lateral Placenta (63.63%) than antenatal women having central placenta (33.33%) .As evident from table 3 , 63.63% of patients with lateral placed placenta developed severe PIH when compared to central placed placenta developing severe PIH(33.33%)

The complications such as IUGR & Abruptio placenta are more in antenatal women with Lateral placenta (66.66% & 100% respectively) than antenatal women with central placenta (33.33% and 0 respectively). In contrary the complications such as IUD & oligohydramnios are same in both groups . The babies with severe birth Asphyxia and mild birth Asphyxia are more with antenatal women with lateral placenta (100% and 75% respectively) in comparison with Antenatal women with central placenta (0 & 25% Respectively).

The primigravidae, second gravidae and multigravidae having Laterally attached placenta (77.78%, 66.67 & 100% respectively) are more than centrally attached placenta (22.22%, 33.33% and 0 respectively).

Table 1 : Relation between severity of PIH, and parity and location of placenta.

| Total No.of patients with mild PIH-6 | | | | | | Total No.of patients with severe PIH – 8 | | | | | |
|--------------------------------------|----------|----------------------------|-------|------------------------|--------|--|----------|----------------------------|--------|------------------------|--------|
| Primi gravidae 3 (33.33%) | | Second gravidae 2 (66.66%) | | Multi gravidae 1 (50%) | | Primi gravidae 6 (66.66%) | | Second gravidae 1 (33.33%) | | Multi gravidae 1 (50%) | |
| Cen | Lat | Cen | Lat | Cen | Lat | Cen | Lat | Cen | Lat | Cen | Lat |
| 1 33.33% | 2 66.67% | 1 50% | 1 50% | 0 | 1 100% | 1 16.67% | 5 83.33% | 0 | 1 100% | 0 | 1 100% |

Antenatal women developing mild PIH with Laterally located placenta are more in primigravidae (66.67%) and multigravidae (100%) in comparison with Antenatal women with centrally located placenta (33.33%) & 0% respectively). Whereas second gravidae women developed mild PIH in equal rates in both groups.

Antenatal women developing Severe PIH with Laterally located placenta are is more in three groups i.e., primigravidae (83.33%), Second gravidae (100%) and multigravidae (100%) in comparison with antenatal women with centrally located placenta (16.67%, 0% & 0% respectively) (Table 1).

The development of Intra uterine growth retardation along with PIH is seen only with Antenatal women with laterally located placenta i.e., primigravidae (100%) & second gravidae (100%) in comparison with women with centrally located placenta (0% & 0%) respectively) (Table 2).

Table 2 Relation between parity, location of placenta and complication of PIH like IUGR :

| Primigravidae 2 (66.66%) | Second Gravidae 1 (33.33%) | | |
|-----------------------------|----------------------------------|---------------------|---------------------|
| Central placenta | Lateral placenta | Central placenta | Lateral placenta |
| 0 | 2 (100%) | 0 | 1 (100%) |

Table 4: Showing comparson of various screening tests with placental laterality

| Sl.No. | Screening Test | Sensitivity (%) | Specificity(%) | Positive predictive value (%) | Negative Predictive value |
|--------|---|-----------------|----------------|-------------------------------|---------------------------|
| 1. | Mid-trimester blood pressure estimation | 44 | 87 | 9 | 98 |
| 2. | Urinary albumin creatine ratio | 64 | 84 | 43 | 94 |
| 3. | Hand grip test | 81 | 96 | 81 | 96 |
| 4. | Platelet angiotensin II binding | 50 | 88 | 60 | 84 |
| 5. | Abnormal RI on Doppler | 47 | 81 | 44 | 83 |
| 6. | Placental laterality (Pai Muralidhar et al ²) | 73 | 86 | 51 | 94 |
| 7. | Placental laterality (In present study) | 78.57 | 81.39 | 40.74 | 95.89 |

The complications of PIH like IUGR were high in PIH developed with laterally implanted placenta when compared centrally located placenta (table 2).

Table 3 Placental position and development of preeclampsia

| Placental position | Development of Preeclampsia | |
|-------------------------|-----------------------------|-------------|
| | Yes (n=14) | No (n=86) |
| Central position (n=73) | 3 (21.42%) | 70 (81.39%) |
| Lateral position (n=27) | 11 (78.57%) | 16 (18.6%) |
| Chi square test - 21.97 | | |

As evident from table 3, 21.42% of patients with central placenta developed PIH , where as 78.57% of patients with lateral placenta had developed PIH, which was statistically significant (P<0.001).

A number of other screening tests are being advocated for predicting the development of preeclampsia. A comparison of the performance of placental laterality as a screening test along with that of the other tests as mentioned by Chan et al (1995)¹² was done in this study (table 4) . In our study placental laterality as determined by ultrasound at 18-24 weeks as a screening test for development of preeclampsia has the sensitivity of 78.57%, specificity of 81.39%, Positive predictive value of 40.74% and negative predictive value of 95.89%.

DISCUSSION

Pre eclampsia is a complex clinical syndrome involving multiple organ systems and still remains the principal cause of maternal and perinatal mortality and morbidity. The search for an ideal predictive test and preventive measure remain challenging^{8,9,10}.

It has been documented that the both uterine arteries have a significant number of branches and that each supply the corresponding side of the uterus. Even though there is an anastomoses between the two uterine arteries exist, but no proof that these are functional. When the placenta is laterally located, the uterine artery closer to the placenta has lower resistance than the one opposite to it. In patients with centrally located placentas both uterine arteries demonstrated similar resistance. When the placenta is centrally located, the uteroplacental blood flow needs are met by equal contribution from both uterine arteries^{2,3,4,6}.

Although when the placenta is laterally located, in the majority of cases the uteroplacental blood flow needs are met primarily by one of the uterine arteries with some contribution from the other uterine artery via the collateral circulation. The degree of collateral circulation may not be the same in all patients and deficient contribution may facilitate the development of preeclampsia, intrauterine growth retardation or both^{2,3,5}. The significance of normal placentation for this cytotrophoblastic invasion is high and the cytotrophoblasts fail to adopt a vascular adhesion phenotype in preeclampsia. This may explain the reduced trophoblastic invasion in laterally situated placenta when the uteroplacental blood flow needs are mainly met by one side uterine artery².

In 1989, Kofinas⁶ et al from north Carolina studied 300 pregnant women, of whom 153 women had no maternal complications while 147 had PIH/IUGR, to evaluate the association between placental location and development of PIH or IUGR. They found that in the presence of PIH, or IUGR, upto 75% of patients had laterally located placenta and 25% had central placenta. Whereas in absence of these two conditions, 51% patients had laterally located placenta, 49% central placenta ($P < 0.02$). They found that in patients with

lateral placenta, the incidence of pIH and IGUR was 2.8 fold and 2.7 fold greater respectively than in patients with central placenta.

A similar study with 426 singleton pregnant women was carried out in Manipal at Kasturba medical College by Dr. Pai Muralidhar. V, and Pillai Jyothi (2005)². Out of the total 426 patients, 71 developed preeclampsia, of those 52 (74%) had unilaterally located placenta whereas only 19 had centrally located placenta. That result was in accordance with the study of Kofinas et al (1989)⁶ who state that of their preeclamptic women, 75% had unilateral placental location. The above study showed that women with unilateral placental location had a 2.7 fold increase over centrally located placenta in the incidence of preeclampsia. That was similar to 2.8 fold risk of preeclampsia with unilaterally located placenta reported by Kofinas et al⁶.

In the above study placental laterality as determined by ultrasound at 18-24 weeks as a screening test for development of preeclampsia has the sensitivity of 73%, specificity of 86%, positive predictive value of 51% and negative predictive value of 94%.

A similar study with 100 singleton pregnant women was carried out in Hyderabad at Osmania Medical College by Dr. Aparna. In this study, among these patients who had developed PIH 70% were found to have lateral placenta and among the patients who developed IUGR, 64.7% of women had laterally implanted placenta.

In present study, out of the total 100 singleton pregnant women, 14 developed preeclampsia, of these 11 (78.57%) had unilaterally located placenta whereas only 3 had centrally located placenta. Finally, this present study correlates well with the study conducted by Dr. Muralidhar Pai² and the study conducted by Dr. Kofinas et al⁶.

Our present study showed that the location of placenta in primigravidae, second gravidae and multi gravidae may predict the development of PIH, IUGR and its complications. Hence it is a considerable and reproducible screening test for the prediction of PIH and IUGR.

The pathophysiological characteristics of PIH, are complex and the cause remains unknown. One of the fundamental disturbances in patients with this condition is decreased utero placental blood flow. Nevertheless, whether this is the cause or result is yet to be discussed. But our data indicate that the presence of lateral placenta is strongly associated with PIH.

As yet there is no practical, acceptable and reliable screening test for preeclampsia that has been thoroughly tried and tested. In our study placental laterality has a sensitivity of 78.57% which through low is much better than most other tests (Table 4). Besides, it has a very good specificity of 81.39% and negative productive value of 95.89%. Its positive predictive value is low but so is the case with most other tests. Therefore, placental laterality as a screening test for prediction of preeclampsia is comparable to many other tests in use. Besides, It is a very useful cost effective and easy to perform non-invasive test.

However, further studies are warranted to evaluate the sensitivity of placental laterality is a predictor of the development of PIH.

CONCLUSION

The study provides evidence of the existence of a significant association between placental laterality and presence of PIH, IUGR or both.

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Conflict of Interest : Nil

Funding : Nil

Ethical Clearance : Institutional ethics clearance was obtained before the start of study.

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Oral Health Issues in Women: An Overview

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ABSTRACT

Oral health is a vital component to a woman's overall well-being. Oral health conditions and diseases are not gender specific but can affect women differently. The physiological cycle in women's life have a strong effect on the oral tissues. Especially pregnancy is a critical time to address oral health issues, since it has an influence on the child's health. Women also face a lot social barriers which prevent them from seeking oral health care. This review article discusses the various gender related conditions that have to be taken into consideration during diagnosis and treatment of oral conditions.

Keywords- Women, oral health, pregnancy, gingivitis, periodontitis.

INTRODUCTION

Currently the focus is on gender based biology, therefore the question arises "Do females have different oral dental health needs compared to males". Women's health is defined as "Diseases or conditions that are unique to, more prevalent in or more serious in women; have distinct causes or manifest themselves differently in women; or have different outcomes or require different interventions than men".¹ Most oral health issues are not gender-specific but rather are aspects of conditions that may affect women differently due to physiologic, reproductive biological, environmental and psychosocial differences between men and women.² Hence, there is a need for gender-specific evaluation and treatment considerations for dental patients who are women.³

Dental diseases such as dental caries, gingivitis and periodontitis are chronic and progressive in nature and not self-limiting. However, timely intervention and preventive measures can halt the progress of these conditions and restore the functions of the teeth

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and associated structures. Periodontal infections have been associated with different systemic diseases such as osteoporosis, diabetes mellitus, respiratory diseases, cardiovascular diseases, and pregnancy related complications.⁴ Also, periodontal disease is an infectious disease that affects more than 23% of women between the age of 30 and 54 years.⁵

Physiological pre-disposing factors which increase the risk of oral health problems

- Hormones
- Puberty
- Menses
- Pregnancy
- Use of contraceptives
- Eating disorders

Hormones-

Sex hormones have been suggested as important modifying factors that may influence the pathogenesis of periodontal diseases. Hormonal effects reflect physiological/pathological changes in almost all types of tissues of the body. Hormones such as androgens, estrogen, and progesterone have been localized in periodontal tissues suggesting systemic endocrine imbalances may have an important impact in periodontal pathogenesis.⁶ Sex steroid hormones have effect on cellular proliferation, differentiation and growth in target tissues, including keratinocytes

and fibroblasts in the gingiva.⁷ Lower estrogen levels have been linked to gingival inflammation and reduced clinical attachment levels.⁸ Progesterone has been shown to reduce corpuscular flow rate, allowing for accumulation of inflammatory cells, increased vascular permeability and proliferation.⁶

Puberty -Puberty is a complex process of sexual maturation in both males and females. Female children in puberty experience an exaggerated gingival inflammatory response to plaque. The gingiva may become edematous, erythematous, and feel tender. It is suggested that the subgingival microflora is altered during this period since the bacterial counts increase in number, and there is a prevalence of certain bacterial species such as *Prevotella intermedia* (Pi) and *Capnocytophaga* species. Mild cases of gingivitis can be managed with scaling and improved daily oral hygiene care, but severe cases of gingivitis may require more aggressive treatment.⁹

Menses-Monthly hormonal fluctuations in menses are thought to play a role in gingival inflammation in women and may exaggerate preexisting inflammation in gingival tissues.¹⁰ Manifestes as red, swollen gingival tissues, activation of herpes labialis, oral aphthous ulcers, or halitosis. But evidence-based reports on the epidemiology of oral changes with menses are lacking.⁹

PREGNANCY

An old wives tale suggest "A loss of a tooth for every pregnancy" which is a matter of concern. Oral changes due to the complex physiologic alterations occurring in pregnancy are believed to be related to fluctuations in levels of estrogen and progesterone, leading to an increase in oral vasculature permeability and decrease in host immunocompetence, thereby increasing susceptibility to oral infections.¹¹ Changes that occur during pregnancy are both reversible and irreversible in nature (Table 1). Periodontal disease is considered as a potential risk factor for preterm birth.⁴ Fluctuations of sex hormones during pregnancy increase oral vasculature permeability, decrease host immunocompetence, and alter levels of oral bacteria, thereby increasing susceptibility to oral infection, including periodontal disease.¹² An association between periodontal disease and preterm birth is suggested.^{13,14} Periodontal infection during

pregnancy could lead to placental-fetal exposure which when coupled with a fetal inflammatory response, can lead to preterm delivery.⁵ The bacteria associated with periodontal infection can stimulate excessive production of the mediators, which then induces labor and delivery prematurely, but there is no evidence based research whether perinatal periodontal therapy reduces a woman's risk of low birth weight or preterm birth. A systemic review concluded that periodontal disease during pregnancy may be a risk factor for preterm and/or low birth weight and periodontal intervention may reduce adverse outcomes¹⁵.

Pregnancy causes immune suppression, cravings for carbohydrate diet, hormonal fluctuations, salivary alterations, and other physiological changes that could adversely affect the host resistance to caries. Elevated estrogen levels during pregnancy can lead to significant changes in the environment of the oral cavity with negative effects on salivary flow, impairing the protective washing and buffering mechanisms of saliva against caries development.¹⁶ Though there is very little epidemiologic data evidence on the caries incidence rates of pregnant women, but it is extrapolated that since pregnant women often have food cravings, especially rich in carbohydrates and sugary snacks, it may increase her risk of caries along with less attention towards oral care.⁹

Gingivitis affects 60% to 75% of all pregnant women. Pregnancy gingivitis is a gingival disease induced by plaque and modified by systemic factors.¹⁷ The reason for changes in the gingiva not clear but has been attributed to depression of the immune system, increased vascularity and vascular flow, cellular changes, changes in oral biofilms because of elevated levels of progesterone and estrogen.¹⁸ Supragingival and/or subgingival periodontal therapies are advisable in women with gingivitis to eliminate plaque buildup, which will also reduce the signs of periodontal diseases and the level of periodontal pathogens.

In 0.2 % to 9.6% pregnant women a single tumor like growth on the gingiva is observed usually in the second or third trimesters.¹⁹ It is referred to as pregnancy tumor, epulis gravidarum, or pregnancy granuloma. Etiological factor is mostly poor oral hygiene with deposition of plaque and calculus in

relation to the tooth adjacent to the growth. Clinically a fully developed pregnancy epulis is a sessile or pedunculated lesion that is usually painless. The surface of the lesion may be ulcerated and covered by yellowish exudate, and gentle manipulation of the mass easily induces hemorrhage.^{9,20} Surgical excision of the lesion is indicated during pregnancy if it causes discomfort or bleeding on mastication because it has a tendency to recur, otherwise it will regress postpartum.²¹

Precautions when treating pregnant women²²

- Clinicians should be familiar with the medications that are contraindicated during pregnancy. It is sensible to contact the obstetrician/gynecologist if there are questions or doubts.

- Radiographic imaging is not contraindicated during pregnancy, but standard of care should be observed judiciously. Thyroid collar and abdominal apron use is mandatory.

- Restorative treatment such as restoration of caries using silver amalgam and composite resin, done under best practices such as rubber dam, suction are considered safe.

Simple modification during dental procedures is warranted. Second trimester is considered the safest and comfortable period for restorative treatment (12-20 week). Schedule the appointment at a time the patient is comfortable. Postural hypotensive syndrome is a clinical concern and occurs in 15% to 20% of term pregnant women when supine. To decrease the risk for hypotension, place a small pillow under the patient's right hip and ensure her head is raised above her feet when reclining. If a patient feels dizzy or faint or reports chills, position her on her left side to relieve pressure and restore circulation.²¹

Menopause- The menopause triggers a wide range of changes in women's bodies, and the oral cavity is also affected (Table 2). During menopause, the levels of estrogen begin to drop especially during the late follicular and luteal phase of the menstrual cycle.⁶ Hormone replacement seems to be associated with a decrease in severity of symptoms of oral disease as compared with estrogen-insufficient women.²³ Osteoporosis affects one in three postmenopausal women and estrogen deficiency is considered a

dominant pathogenic factor, which responsible for bone loss, with a consequent increase in fracture risk.^{6,8,24}

Oral contraceptives- The burden of planning the family largely falls on the females which involve the utilization of hormonal contraceptives. The continuous use of hormonal contraceptives by women at their reproductive life has been considered to influence periodontal disease progression.²⁵ Accelerated progression of periodontal disease was noted when they are used long-term.⁶

Eating disorders-Eating disorders such as anorexia nervosa, bulimia nervosa and binge eating though psychological in nature, yet has an impact on the oral and general health of the person. Anorexia nervosa occurs in 0.2-4% of adolescent girls and college-aged young women and commonly begins during adolescence and is associated with low bone mineral density.²⁶ Women tend to report more unhealthy eating behaviors compared to men, such as dieting and eating disorders.²⁷ Oral problems can manifest itself within six months with consistent disordered eating behavior related to vomiting (Table 3). Eating disordered patients have a predisposition to cervical caries and/or a leathery lesion of dentine leaving large areas of enamel undermined and dental erosion which involves lingual erosion on the palatal surfaces of the maxillary teeth with a smooth, glossy appearance known as perimylolysis.^{28,29}

DENTAL CARIES AND WOMEN

Studies have suggested that females have higher caries prevalence compared to men, which is frequently explained by one of three factors: 1). Earlier eruption of teeth in girls, and longer exposure to the cariogenic oral environment; 2) proximity of women to food supplies and snacking during food preparation; and 3) pregnancy and hormonal influences.³⁰ Also difference in salivary composition and flow rate, genetic variations, and particular social status of female members among their family could be contributing factors. Dental caries is highly transmissible from mother to infant, and control of dental caries in pregnant women itself has the potential to reduce the severity of transmission once their babies are born.³¹

Problems associated with utilization of oral health care by women:

Various studies have reported low utilization of dental services by pregnant women in both developed and developing countries, inspite of increase in dental problems during this period.^{32,33} While in developed countries the proportion of women not receiving dental care is between 22 to 40%, in an Indian study, only 24% of the women reported visiting a dentist during this period.^{33,34}

On the positive side girls tend to have significantly higher scores than boys for desire to improve oral care.³⁵ However, barriers for health care utilization exist, such as social, educational, financial and dental. A cross sectional survey revealed that unavailability of services on Sunday (63%), going to dentist only when in pain (57%), trying self- care or home remedy (54%), inadequate government policies (50%), budgetary constraints (40%) were among the major access barriers.³⁶ Low perception for dental problems and misconception regarding effects of dental treatment on the developing fetus during pregnancy can affect utilization of dental services. From a social view point women tend to neglect oral health due other obligations and are hesitant to seek dental care during pregnancy even though accumulated research shows that routine preventive, diagnostic, restorative dental treatment and periodontal therapy is safe.³⁷

| Table 1 | Clinical oral symptoms observed during pregnancy |
|---------|--|
| • | Gingivitis |
| • | Periodontitis |
| • | Dental caries |
| • | Pregnancy tumor |
| • | Mobile teeth |

| Table 2 | Clinical oral symptoms observed during menopause |
|---------|--|
| • | Dry mouth |
| • | Burning mouth |
| • | Metallic taste sensations |
| • | Dysesthesia |
| • | Dental caries |
| • | Gingivostomatitis |
| • | Atrophic gingivitis |
| • | Periodontitis |
| • | Osteoporotic jawbone |

| Table 3 | Common intraoral manifestation of eating disorder |
|---------|---|
| • | Dental erosion and tooth sensitivity |
| • | Inflammation of oral mucosal membrane and pharynx |
| • | Dry mouth |
| • | Xerostomia |
| • | Periodontal disease |
| • | Dental caries |
| • | Soft tissue lesions- Angular cheilitis, candidiasis, glossitis, and oral mucosal ulceration |
| • | Parotid gland enlargement. |

CONCLUSION

A healthy oral cavity is essential for good general health and well-being. The biological, cultural influences, along with educational, behavioral, economical and dietary variations, place women at a disadvantage in regarding oral health. Knowledge and perceptions about oral health and diseases among women is very low especially in the developing countries. The need of the hour is to conduct community awareness programs to increase women’s awareness of oral health needs and hygienic practices.

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Serum Cholesterol Levels as Prognostic Marker in Sepsis in Children

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ABSTRACT

Lipids, such as cholesterol and triglycerides, are insoluble in plasma. Circulating lipid is carried in lipoproteins that transport the lipid to various tissues for energy utilization, lipid deposition, steroid hormone production, and bile acid formation. Besides their role in lipid transport, lipoproteins participate in innate immunity, which is the first line of host defense against invading microorganisms. Changes in lipid and lipoprotein metabolism occur in sepsis. In this study it was observed that the cholesterol levels fall with onset of sepsis and improve as the patient recovers from sepsis. Serum cholesterol levels were measured in 40 septic pediatric patients. On day of admission, the levels were significantly low correlating with the degree of severity of sepsis. The levels increased on day 5 of illness in recovering patients whereas it remained low in patients who died. The levels of cholesterol in sepsis can be used as a prognostic marker.

Keywords: lipid, cholesterol, sepsis, prognosis.

INTRODUCTION

Sepsis is an important cause of morbidity and mortality in hospitalized patients. Various acute phase changes occur in response to infection and inflammation. Lipid metabolism is also altered in acute phase of sepsis. Plasma cholesterol levels rapidly decrease during the clinical course of sepsis and then increase slowly¹. The changes in lipids and lipoprotein metabolism that occur during infection induce anti-inflammatory effects that contribute to the host defence.^{2,3} Lipopolysaccharide (LPS) and toxins of gram negative bacteria and lipoteichoic acid of gram positive bacteria bind to lipoproteins circulating in blood. This results in detoxification and improved host immune response to infection.^{4,5}

In this present study, we studied whether the serum cholesterol levels changed from onset of sepsis and during clinical course and whether this can

determine the outcome of the patients.

MATERIALS & METHOD

In this study, we enrolled the pediatric patients (>28 days and < 5 years) admitted in July 2015 and August 2015 in the department of Paediatrics in PGIMS, Rohtak. A total of 40 patients were enrolled.

Samples were obtained on day 1 of admission and on day 5 of admission from the patients admitted in view of sepsis. A complete workup including hemogram, CRP, blood cultures, LFT, RFT was done along with lipid profile.

STATISTICAL ANALYSIS

Categorical variables were compared using chi square test. Continuous variables were compared using Student's test. p values <0.05 was considered significant. All of the analysis were performed using SPSS software.

RESULTS

The cholesterol levels were lower on day 1 of admission. Patients with lower levels had more sepsis and the differences were statistically significant.

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DISCUSSION

In the present study, cholesterol levels were obtained at the time of admission and on day 5 of admission i.e after 5 days of therapy.

Total cholesterol levels were significantly lower in patients with sepsis on day 1 of admission. This gradually improved on day 5 of admission in 19(50%) patients.

Among 34 patients with low cholesterol levels <100 mg/dl, 30 patients (88.2%) had abnormal TLC (i.e. either leucopenia or leucocytosis), 22 patients (61.7%) had positive CRP. Blood cultures grew some organism in 10 patients (29.4%), meningitis was diagnosed in 20 (58.8%) while 12 (35.2%) had pneumonia. In patients with high levels (>100 mg/dl), the incidence was much lower with p value of 0.03

Clinical outcomes of patients on day 5 of admission were better in normal cholesterol level group (>100). Total cholesterol levels were lower in non survivors. The duration of treatment was significantly lower in patients with normal cholesterol levels (7.1 days), as compared to low cholesterol group (20.3%).

The factors involved in immunological function of cholesterol include-

1. Lipoproteins bind to and neutralize lipopolysaccharide.
2. HDL reduces LPS induced activation of coagulation and fibrinolysis and collagen stimulated platelet aggregation.
3. Cholesterol also plays a role in production of adrenal hormones¹.
4. LDL acts as a carrier of exogenous coenzyme Q 10(Co Q). CoQ is an effective agent for reducing the deleterious effects of septic shock by acting as a free radical scavenger⁶.

In sepsis, a decrease in LDL levels is caused by TNF α mediated degradation and increase in oxidized LDL². These oxidized LDL particles then produce cytotoxic effects and stimulate macrophages to release inflammatory and prothrombotic mediators.

In our study, we measured cholesterol levels on 2 occasions i.e. day 1 and day 5 of admission. In patients, responding to treatment, there has been an increase in cholesterol levels on day 5 of admission. In these patients better clinical outcomes in form of less

mortality and short duration of stay are seen.

Limitations of our study includes the preillness cholesterol levels were not known and small sample size.

CONCLUSION

Serum cholesterol levels are altered in sepsis and affect the course of illness. Patients with normal cholesterol levels at admission and improving levels with treatment have better prognosis.

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Prescribing Auditing of Analgesics in a Tertiary Care Hospital

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ABSTRACT

Pain is the most common symptom prompting patients to seek medical attention and is reported by more than 80% of individuals who visit the hospital. The study of prescribing auditing is a significant constituent of medical audit which helps in monitoring, evaluating and building required modifications in the prescribing practices to attain a rational and cost effective medical care. The aim of this research was to evaluate the prescribing pattern of analgesics in a tertiary care hospital. 430 patients were selected from the OPD over a period of 6 months for the present study. The study shows that, anti-ulcer drugs were prescribed along with analgesics to reduce the Gastric complications. The result shows that, paracetamol and diclofenac were the most commonly prescribed analgesic. Minimum number of patients were treated by newly marketed analgesics. The use of analgesics depends upon the severity of pain. In mild pain, single analgesics are commonly used where as two or more analgesics are used in moderate and severe pain. The study summarizes that, the cost of therapy can be reduced by changing of prescription of drugs in brand name to Generic name, also this plays an important role in rational use of drug.

Abbreviation: Prescribing pattern, analgesics, pain.

INTRODUCTION

Pain is the most common symptom prompting patients to seek medical attention and is reported by more than 80% of individuals who visit their primary care provider.¹ Despite the frequency of pain symptoms, individuals often do not obtain satisfactory relief of pain. This has led to recent initiatives in health care to make pain the fifth vital sign, thus making pain assessment equally important as obtaining a patient's temperature, pulse, blood pressure, and respiratory rate.²

According to International Association for the Study of Pain, it is "an unpleasant sensory and emotional experience associated with actual or

potential tissue damage, or described in terms of such damage". The lowering of pain thus is an important part of the perception of cure and the overall well-being of the patient. Analgesics are defined as the drugs that relieve pain without blocking nerve impulse conduction or markedly altering sensory function^{3,4}. Based on the type of relieving action, they are classified into two. Opioids inhibit pain impulses by acting on pain receptors. They can be used for short or long-term relief of pain, mainly by prescription, but bears a risk of drug addiction. Non opioids, used for short term relief and modest pain, are accessible without prescription. They act by inhibiting synthesis of prostaglandins which are the molecules involved in the peripheral perception of pain. Drug utilization evaluation is a one time study to evaluate appropriateness of drug therapy. The intention is to recognize whether current patterns of prescribing, dispensing and use of drug therapy are reliable with criteria and standards. These criteria and standards demonstrate the drug therapy is effective, safe, appropriate, and cost effective and support

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optimal patient outcome⁵⁻¹⁰. The aim of this study is to evaluate the prescribing pattern of analgesics in a tertiary care hospital.

METHOD

The study was a prospective observational study. It was conducted at Santhiram medical College and General Hospital, Nandyal, India after taking approval from the Institutional Ethical Committee. The study was carried over six months (Oct 2013- Feb 2014). Designing a Proforma for data collection. Collecting the case histories of the patient treated with analgesics in inpatient departments. Analyzing the prescriptions and categories into varieties based on analgesics prescribed, type of pain disorders and other patient's related factors and concluding it. On the basis of inclusion and exclusion criteria, 430 patients were selected from the OPD over a period of 6 months for the present study. Follow-up of the patients were not done. Data was collected and analyzed by using Microsoft Office Excel 2007. Numerical values were expressed in percentages.

RESULTS

Among the 430 patients analyzed, 178 were males and 252 were females. The highest number of patients were in the age group 30-40 years and the lowest percentage was geriatric patients, more than 70 years old.

Based on the Figure 1, it was observed that the commonest clinical indications for prescribing analgesics in the hospital were viral fever (18.78%) followed by RTI (15.15%) and Acute gastroenteritis (11.86%). Haemorrhage, anaemia, cellulitis, cholecystectomy, prolapsed uterus and malaria were the least diagnosed indication (1.21%).

Out of 430 prescriptions reviewed, a total of 692 analgesics were prescribed. The distribution of drugs prescribed according to the diagnosis were presented in Table 1. Diclofenac was the most commonly prescribed among the analgesics (24.32%), followed by Paracetamol (21.31%). Around 20.90% of ibuprofen+paracetamol combination were prescribed, whereas Paracetamol+mefenamic acid were found to be 11.34%. Tramadol, Nimesulide, Naproxen and Ketolac were found to be given in 7.08%, 4.08%, 3.20% and 2.84%, respectively.

The age distribution of drugs prescribed is presented in Table 2. In an age group below 5, paracetamol was the analgesic which was mainly prescribed (14) followed by ibuprofen (13) and nimesulide (10). Whereas at an age group of 10 to 20, paracetamol was mainly prescribed (14) followed by diclofenac (12). Naproxen sodium was only prescribed for one patient. The age group between 20 to 30 were mainly prescribed by diclofenac (26) followed by ibuprofen+ paracetamol (20). In an age of 30 to 40, ibuprofen+paracetamol combination were mainly prescribed (29) followed by diclofenac (24). Around 3 ketolac was prescribed followed by nimesulide and naproxen sodium (2). The age between 40 to 50 were mainly prescribed by diclofenac (18) followed by paracetamol (15). Ketolac was only prescribed for 2 times. At an age group of 50 to 60, diclofenac was mainly prescribed (17), followed by ibuprofen+ paracetamol combination (14). The age group between 60 to 70 were mainly prescribed by diclofenac (18) followed by a combination of ibuprofen+paracetamol (14), paracetamol and ketolac (9). Paracetamol+mefenamic acid was only prescribed for 8 patients. In an age group of 70 to 80, paracetamol was mainly prescribed (8) followed by ketolac and a combination of paracetamol+mefenamic acid (4).

When considering the mode of prescribing of analgesics, the percentages of drugs prescribed in generic names in the hospital were 10.34% which was low compared to the brand name prescribing (89.66%) shown in Table 3.

Based on the response of patient towards the pain scale questionnaire, around 70.30% of patients responded to the query followed by 29.69% of unresponded patients. Of them 49.13% of patients were suffering from moderate pain followed by 26.29% of severe pain. Around 24.56% of patients were suffered from mild pain (Figure 2).

DISCUSSION

Out of 430 prescriptions reviewed, a total of 692 analgesics were prescribed. Diclofenac was the most commonly prescribed among the analgesics (24.32%). This result supports the study done by Vlahovicpalcevski V et al¹¹ where diclofenac was the most often prescribed NSAID in Croatia and Sweden.

Paracetamol was found 21.31% among prescribed analgesics. Mostly it was given for viral fever. Mohammed A. Al Homrany¹² et al said that the use of Paracetamol in Bronchial asthma (BA) and COPD or its co-prescription with drugs for BA could not be justified in light of recent evidence that it can reduce lung function and exacerbate BA and COPD.

Concerning the analgesics, Paul AD¹³ et al and Seager JM¹⁴ et al have reported that ibuprofen was the most often prescribed NSAID which represents a deviation from our study. Also Henry D¹⁴ et al and Turner C¹⁵ et al reported that, ibuprofen is supposed to be the safest NSAID concerning GI complications. But it has been said that the use of ibuprofen for gastritis and AGE could not be justified as the drug is a gastrointestinal irritant and if such patients need an anti pyretic, paracetamol should be the first choice.

From the study we can summarize that diclofenac was most commonly used analgesic, this may be due to its efficacy when compared to others. The similar work was seen in the study conducted by Rauniar G P.¹⁶

In all prescriptions containing age, paracetamol was prescribed for all age groups. Diclofenac was not prescribed exclusively for elderly and age upto 10. The other NSAIDs were mostly prescribed for adults and none for children below one year of age which shows similar to the the study of Mohammed A. Al Homrany.¹²

When considering the mode of prescribing of analgesics, the percentages of drugs prescribed in generic names were determined because generic prescription has got special importance for rational use of drug as regards to cost, safety and efficacy by permitting the identification of the products by its scientific names (Ara and Chowdhury, 2001).¹⁸

Moreover, generic drugs by allowing the recognition of the products by its scientific names provides easier for the prescribers, dispenser and users to choose between many alternative competing in terms of quality, price or convenience. It has been founded that generic prescribing percentages were less in hospital compared to the brand name prescribing. Though the practice of generic name was found to be very low previously in a teaching hospital

(Ali and Chowdhury, 1993). 19 As analgesics are sold in the market in trade name, therefore prescribers do not have much option in this opinion. Pressure from pharmaceutical companies may be one of the reasons for writing trade name. It was observed that in Cyprus, 20% of drugs were prescribed as generic (WHO Report, 1993).

According to the class of analgesics prescribed, it may be understood that aryl acetic acid derivatives are mainly used for the treatment of pain (23.32%) followed by para amino phenol derivative (22.31%). Around 6.08% of synthetic opioids are prescribed followed by propionic acid derivatives (5.68%). Preferential COX-2 inhibitors are used around 4.90% followed by pyrrolopyrrole derivative (2.84%). Only 2.63% of anthranilic acid derivative were used which constitute the least number of prescribed class. From the above data, we can conclude that mainly non opioid drugs are used for pain treatment than opioid drugs. The only opioid drug used comes under synthetic opioids which is tramadol.

In the study, when considering the analgesics used for therapy, around 48.48% of patients were prescribed with single analgesics and the rest contributed the combination analgesics (51.52%).

Study of Mohammed A. Al Homrany et al¹² said that the combination of more than one systemic NSAID is also an inappropriate practice, while it may be reasonable to combine a topical agent with a systemic one.

The prescriptions containing additional drugs to prevent the adverse effects of analgesics in the hospital were 71.51%. Of them, H2 blockers prescribed in the hospital were 67.37%. On the other hand, proton pump inhibitors prescribed in the hospital were 23.66%. Around 2.96% of both the combinations were prescribed. H2 blockers were the drugs used maximally to prevent adverse effects in the hospital. Moreover, Rahman¹ et al founded that the proton pump inhibitors were the drugs used maximally to prevent adverse effects in hospital at dhaka reflects against our study. Lapne KL et al²⁰ taught that the use of NSAIDs is associated with a substantial increase in the risk of Gastro intestinal bleeding.

Table : 1 Prescribing auditing of Analgesic as per the Diagnosis

| DIAGNOSIS | IBUPROFEN+PARACETAMOL | IBUPROFEN | PARACETAMOL | PARACETAMOL+MEFENAMIC ACID | MEFENAMIC ACID | TRAMADOL | NAPROXEN SODIUM | DICLOFENAC | NIMESULIDE | KETROLAC | TOTAL | PERCENTAGE |
|-----------------------|-----------------------|-----------|-------------|----------------------------|----------------|----------|-----------------|------------|------------|----------|-------|------------|
| Haemorrhage | 4 | - | - | - | - | 2 | - | - | - | - | 6 | 1.22% |
| Appendicitis | 16 | - | 4 | 3 | - | 6 | - | 15 | - | - | 44 | 8.92% |
| Anaemia | 4 | - | - | - | - | - | - | - | - | - | 4 | 0.81% |
| Anal stenosis | 3 | - | - | 1 | - | 2 | - | - | - | - | 6 | 1.22% |
| Bulky uterus | 8 | - | - | - | - | - | - | 8 | - | - | 16 | 3.24% |
| Cholecystitis | 4 | 2 | - | 4 | - | 4 | - | 4 | - | - | 18 | 3.65% |
| Cellulitis | 2 | - | - | - | - | - | - | 2 | - | - | 4 | 0.81% |
| Diabetic foot | - | - | 5 | - | - | 2 | - | 4 | - | - | 11 | 2.23% |
| GB calculus | 4 | - | - | 7 | - | 2 | - | 8 | 2 | - | 23 | 4.66% |
| Acute gastroenteritis | 3 | 4 | 14 | - | 4 | 2 | 3 | 12 | 6 | 3 | 51 | 10.34% |
| Goitre | 6 | - | - | - | - | - | 2 | 4 | - | 9 | 21 | 4.26% |
| Hernia | 8 | 5 | 5 | - | - | 4 | - | 6 | - | - | 28 | 5.67% |
| Cyst in ovary | 4 | - | 2 | - | - | - | - | 6 | - | - | 12 | 2.43% |
| Lipoma | 9 | - | - | - | - | - | - | 6 | - | - | 15 | 3.04% |
| Migraine | 10 | - | 4 | - | - | - | - | 8 | 2 | - | 24 | 4.86% |
| Multiple Injury | 8 | - | - | 7 | - | 4 | 4 | 5 | - | - | 28 | 5.67% |
| Cholecystectomy | - | - | - | - | - | - | - | 4 | - | 2 | 6 | 1.22% |
| Prolapse uterus | 4 | - | 2 | - | - | - | - | 4 | - | - | 10 | 2.02% |
| Malaria | 2 | - | 2 | 2 | - | 2 | - | 2 | - | - | 10 | 2.02% |
| Urethral calculus | - | 2 | 2 | 4 | - | - | - | 6 | - | - | 14 | 2.84% |
| Viral fever | 3 | - | 50 | - | - | - | - | 4 | 14 | - | 71 | 14.40% |
| RTI | 6 | - | 20 | 23 | 9 | - | 6 | 7 | - | - | 71 | 14.40% |

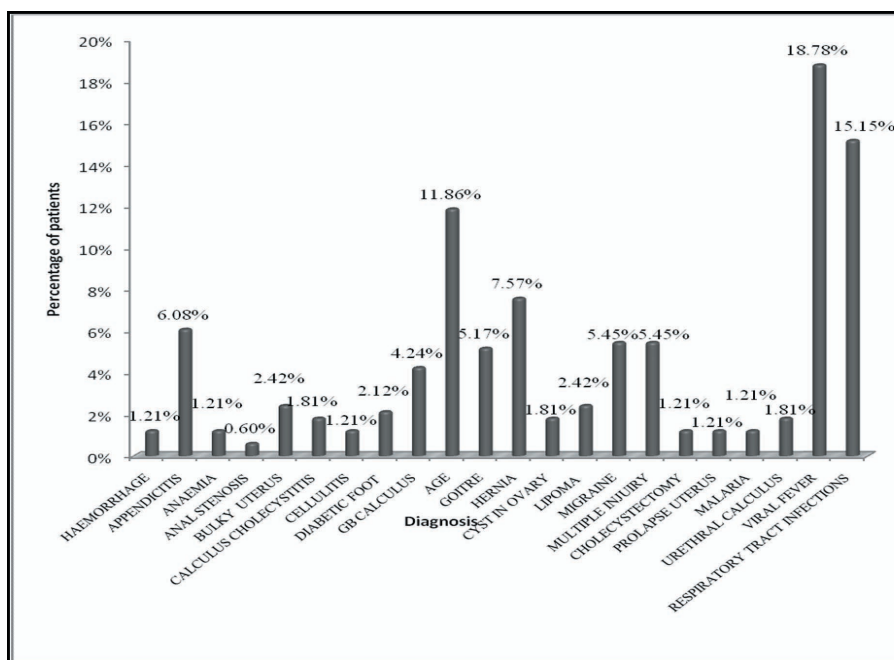


Figure: 1 Clinical indications wise Distribution among study population

Table : 2 Age wise prescribing frequency of Analgesics

| DRUG | < 5 | 5 to 10 | 10 to 20 | 20 to 30 | 30 to 40 | 40 to 50 | 50 to 60 | 60 to 70 | 70 to 80 | TOTAL |
|----------------------------|-----|---------|----------|----------|----------|----------|----------|----------|----------|-------|
| IBUPROFEN+PARACETAMOL | 9 | 5 | 7 | 20 | 29 | 10 | 14 | 14 | - | 108 |
| IBUPROFEN | 13 | - | - | - | - | - | - | - | - | 13 |
| PARACETAMOL | 14 | 8 | 14 | 18 | 16 | 15 | 8 | 9 | 8 | 110 |
| PARACETAMOL+MEFENAMIC ACID | 4 | - | 2 | 6 | 6 | 12 | 9 | 8 | 4 | 51 |
| MEFENAMIC ACID | - | 6 | 6 | 1 | - | - | - | - | - | 13 |
| TRAMADOL | - | - | 2 | 3 | 6 | 7 | 8 | - | 4 | 30 |
| NAPROXEN NA | - | 1 | 1 | 1 | 2 | 6 | 4 | - | - | 15 |
| DICLOFENAC | - | - | 12 | 26 | 24 | 18 | 17 | 18 | - | 115 |
| NIMESULIDE | 10 | 8 | 4 | - | 2 | - | - | - | - | 24 |
| KETROLAC | - | - | - | - | 3 | 2 | - | 9 | - | 14 |

Table : 3 Methods of Prescribing Pattern of Analgesics

| Prescribing pattern | Number of drugs | Percentage |
|---------------------------------------|-----------------|------------|
| Analgesics prescribed in Generic name | 51 | 10.34% |
| Analgesics prescribed in Brand name | 442 | 89.66% |
| Total | 493 | 100% |

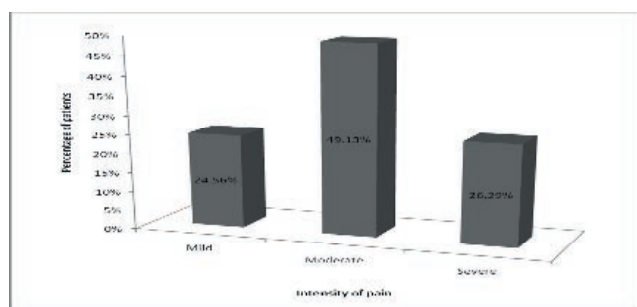


Figure : 2 Pain Intensity based on Pain scale

CONCLUSION

The result shows that, paracetamol and diclofenac were the most commonly prescribed analgesic, this may be due to its lesser side effects and their effectiveness when compared to others. Minimum number of patients were treated by newly marketed analgesics. It suggests that choice of newly emerged drugs should be considered, so that better results in pain therapy can be achieved. For reducing the cost of therapy, the prescription of drugs in brand name could be changed to Generic name, also this plays an important role in Rational use of Drug (Proper dispensing of drugs, Cost, safety and efficacy). The use of analgesics depends upon the severity of pain. In mild pain, single analgesics are commonly used where as two or more analgesics are used in moderate and severe pain.

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Conflict of Interest : Nil

Funding : Nil

Ethical Clearance : Institutional ethics clearance was obtained before the start of study.

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Evaluation of X-ray Induced Oxidative Stress in Cardiac Tissue of Albino Wistar Rats

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ABSTRACT

Radiotherapy is increasingly used in the treatment of cancer, even though injurious effects of radiations is due to the production of free radicals. The study of normal tissue response and tissue injury after exposure to low and moderate dose is of great importance to cancer patients subjected to radiotherapy. Hence, this study attempts to explore the mechanism of oxidative stress in the myocardium of rats exposed to various doses of X rays.

Albino rats were administered whole body radiation of 4Gy (groupII), 6 Gy(groupIII) and 6.6 Gy(groupIV) per minute and were divided into three groups of 6 animals each. Rats that were not irradiated served as control group(group I). Glutathione, Superoxide dismutase, catalase were estimated in rat myocardium homogenate by spectrophotometric method, to assess the antioxidant status and lipid peroxidation measurement indicated free radical toxicity.

Cardiac tissue MDA increased significantly in rats exposed to 4,6,6.6 Gy of X rays compared to controls. The percentage increase in lipid peroxidation was proportional to the intensity of radiation. Tissue GSH, SOD and catalase activities declined significantly in all the X ray irradiated rats compared to controls. Intergroup comparison showed significant increase in MDA levels and statistically significant decrease in antioxidants between Group II vs Group III vs Group IV.

To summarise, there is a significant increase in oxidative stress as indicated by increased lipid peroxidation and decrease in antioxidants in cardiac tissue of rats exposed to X rays. These findings establish a link between oxidative stress and X ray irradiation

Keywords: X-rays, oxidative stress, cardiac tissue, SOD, catalase, Glutathione.

INTRODUCTION

Since the discovery of X ray a century ago, its use in medicine to help in diagnosis and treatment has been steadily increasing. The deleterious effects of X rays in biological systems are mainly mediated through the generation of free radicals by water radiolysis¹. Among them, most potent hydroxyl radical can cause severe injury by reacting with biomolecules². Thus oxidative stress may contribute

to metabolic changes in animals and humans during radiotherapy³. The study of normal tissue response and tissue injury after exposure to low or moderate dose of ionizing radiation is of great importance to cancer patients who are subjected to radiotherapy⁴. However, little is known about the response of cell physiology to ionizing radiations. Hence, this study attempts to explore the mechanism of oxidative stress in the myocardium of rats exposed to various doses of X rays.

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MATERIALS & METHOD

Animals: Male albino wistar rats weighing around 150 g, aged 8-10 weeks, were obtained from animal house, Kasturba Medical College, Mangaluru. They

were maintained for a week before the experiment. Food and water were given ad libitum during this time. Whole body radiation was administered to the experimental animals by LINIAC accelerator at department of radiotherapy, KMC hospital, Mangaluru. 24 rats were divided into four groups of 6 animals each. Each group of experimental animals was administered with either 4Gy (group II), 6Gy (group III), 6.6Gy (group IV) of radiation per minute. The group that was not irradiated served as control (group I). Exactly after a month, rats were sacrificed by administering ether. Heart was dissected out, washed with saline and homogenized in ice cold phosphate buffer pH 7.4 to yield 10% homogenate. Glutathione was estimated based on the development of yellow color with DTNB⁵. SOD was determined according to Beauchamp and Fridovich⁶ based on inhibition of nitroblue tetrazolium reduction. Catalase was measured by recording the decrease in absorbance due to decomposition of hydrogen peroxide to water⁷. Lipid peroxidation was determined by malondialdehyde using thiobarbituric acid⁸.

Data were analysed statistically by ANOVA with Tukey's as post Hoc test for intergroup comparison.

The differences of $p < 0.05$ were considered significant.

This study was approved by the Institutional animal ethical committee. Institutional and national guide for the care and use of laboratory animals was followed..

FINDINGS

Cardiac tissue MDA increased significantly in rats exposed to 4, 6 & 6.6 Gy of X rays compared to the controls ($p = 0.000$) (Table 1). The percentage increase in lipid peroxidation was also proportional to the intensity of X rays. The tissue GSH decreased significantly in all X ray irradiated rats compared to non irradiated rats. Further, the degree of the decrease was inversely proportional to X ray dose administered. SOD and catalase activities declined significantly in all the X ray irradiated rats compared to that of control group (Table 1). Intergroup comparison showed significant increase in MDA levels and statistically significant decrease in antioxidants between Group II vs Group III, Group II vs Group IV, and Group III vs Group IV (Table 2)

Table 1: Comparison of lipid peroxidation and antioxidants in cardiac tissue of irradiated rats with controls (Mean \pm SD)

| Parameters | Group I | Group II | Group III | Group IV |
|---|-------------------|-----------------------------|-------------------------------|-------------------------------|
| MDA ($\mu\text{mol/L}$) | 0.92 \pm 0.03 | 1.42 \pm 0.08*** (54%) | 3.12 \pm 0.22*** (239%) | 4.01 \pm 0.08*** (335%) |
| GSH ($\mu\text{mol/g}$ tissue) | 1.87 \pm 0.04 | 0.75 \pm 0.03*** (60%) | 0.46 \pm 0.03*** (75%) | 0.29 \pm 0.017*** (85%) |
| SOD ($\mu\text{mol/g}$ tissue) | 0.02 \pm 0.0004 | 0.016 \pm 0.002* (20%) | 0.015 \pm 0.001*** (25%) | 0.012 \pm .0005*** (40%) |
| Catalase ($\mu\text{mol/g}$ tissue) | 247 \pm 7.39 | 223 \pm 6.02** (10%) | 210 \pm 1.42*** (15%) | 205 \pm 4.84*** (18%) |

*** $p=0.000$, ** $p=0.001$, * $p=0.004$ significantly different from controls

Values in the parenthesis indicate % increase or decrease compared to controls

Table 2: Intergroup comparison of lipid peroxidation and antioxidants in cardiac tissue of irradiated rats (Mean \pm SD)

| Parameters | Group II | Group III | Group IV |
|--------------------------------------|-------------------|--------------------------------|---------------------------------|
| MDA ($\mu\text{mol/L}$) | 1.42 \pm 0.08 | 3.12 \pm 0.22 ^a | 4.01 \pm 0.08 ^{a**} |
| GSH ($\mu\text{mol/g}$ tissue) | 0.75 \pm 0.03 | 0.46 \pm 0.03 ^a | 0.29 \pm 0.017 ^{a**} |
| SOD ($\mu\text{mol/g}$ tissue) | 0.016 \pm 0.002 | 0.015 \pm 0.001 ^b | 0.012 \pm .0005 ^{b*} |
| Catalase ($\mu\text{mol/g}$ tissue) | 223 \pm 6.02 | 210 \pm 1.42 ^c | 205 \pm 4.84 ^{c*} |

ap=0.000, bp=0.001, cp=0.004 significantly different compared to group II

**p=0.000,*p=0.001 significantly different compared to group III

DISCUSSION

Radiation exposure induces injuries due to the damage at cellular and systemic levels. Since the acute or early period covers the time interval from initial minutes to two months post irradiation^{9,10}, the results of the present study also indicates the acute effects of radiation. Pathologies during acute period are mostly due to cytotoxicity. Radiation produces reactive oxygen species, which leads to lipid peroxidation, protein oxidation and DNA damage. The heart is a vital organ that generates oxidants due to its intense activity. However, it presents a less potent antioxidant system compared to other tissues of the body¹¹. In the present study, whole body irradiation probably generates ROS that entails lipid peroxidation, in turn impairment of membrane fluidity and eventually cell lysis of the myocardium. High MDA levels may be indicative of oxidant damage to the mitochondria and myocyte membranes that could promote cell death due to membrane damage termed as radiation induced apoptosis¹¹. Gajdusek et al observed that gamma rays caused increased vascular smooth muscle cell damage in culture medium. A similar observation is made by Liren et al¹² who showed increased MDA and 8 hydroxy guanine in cardiac tissue of mice irradiated by gamma rays. The increase in lipid peroxidation and DNA damage can be attributed to the free radicals generated by radiolysis of water by the gamma rays¹³. In agreement with the findings of our study Osman et al examined a wide variety of tissues such as brain, liver, spleen, kidney and testis after exposing rats to whole body radiation of 4Gy and 6Gy and found increased lipid peroxidation in all the tissues¹³.

GSH has versatile role as antioxidant and executes

its radio protective function through free radical scavenging, restoration of the damaged molecules by hydrogen donation, reduction of peroxides and maintenance of protein thiols in the reduced state¹⁴. There was a significant fall in GSH levels in cardiac tissue of irradiated rats in the present study. The decrease in GSH may be attributed to its utilization to mitigate oxidant damage. SOD is the most important enzyme which provides protection from radiations¹⁵. The results also showed significant decrease in antioxidant enzymes SOD and catalase in cardiac tissue of irradiated rats. The marked reduction in the enzymes could be attributed to excess ROS production which caused their denaturation and partial inactivation¹⁶. Heba et al observed, that gamma radiation exposure resulted in decrease in SOD and GSH content and increase in MDA content in cardiac tissues compared to controls¹⁷. The current study also observed that irradiation of rats with different dose of X rays resulted in dose dependent decline of antioxidant enzymes and GSH. The decrease in GSH was (60%, 75%, 85%), decrease in SOD was (20%, 25%, 40%), the decrease in catalase was (10%, 15%, 18%) in 4, 6, 6.6Gy irradiated rats respectively compared to the controls. Rehab Makhoul¹⁸ opines that lower dose (2Gy) of radiation caused 44% increase in lipid peroxidation, while the higher dose (4Gy) was effective in further increasing (97%) the extent of lipid peroxidation. The result of our study appears to be the continuation of the earlier studies where, the increase in lipid peroxidation was 54%, 239%, 335% in 4Gy, 6Gy and 6.6Gy irradiated rats respectively.

CONCLUSION

There is a significant increase in oxidative stress

as indicated by increased lipid peroxidation and decrease in antioxidants in cardiac tissue of rats exposed to X rays. These findings establish a link between oxidative stress and X ray irradiation. The continued investigation of chronic effects of radiation is warranted in the hope of elucidating the mechanism involved in toxicity. Furthermore, the available evidence from animal studies illustrates that antioxidant reserve may play an important role against oxidative damage induced by X rays even in humans.

There is **no Conflict of Interest** amongst the authors.

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Status of Biomedical Waste Management in Health Centres of a Block of Haryana

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ABSTRACT

Introduction: The biomedical waste (BMW), in addition to the risk for patients and personnel who handle these wastes poses a threat to public health and environment. Effective management of BMW is not only a legal necessity but also a social responsibility.

Aims & objectives: To assess the present status of BMW management in health centres of block, Beri.

Material and method: A list of all health care centres was obtained from CHC Dubaldhan and CHC, Dighal of block Beri. The present status of BMW management in each health care centre was observed and recorded by using the pre-tested checklist.

Results: The segregation of BMW was inadequate in 20 (40.8%) government centers and 59 (96.7%) private centers. Hub-cutter/ needle destroyer was available at 31 (63.3%) of government health centers while only 12 (19.7%) of the private health centers possessed it. Disinfection was adequate in 3 (6.1%) government centers and 1 (1.6%) private center. This difference between government & private health centres regarding above findings except disinfection was found to be statistically significant.

Conclusion: The study has shown a definite apathy of intellectuals towards the operational aspects of the system. All the health care personnel of health care centres must undergo awareness programme to keep abreast with the current knowledge of scientific waste management system.

Keywords: Biomedical waste, Management, Health Centres, Segregation, Disinfection

INTRODUCTION

Biomedical waste, also known as infectious waste or medical waste is defined as waste generated during the diagnosis, testing, treatment, research or production of biological products for humans or animals. The main sources of biomedical waste are hospitals, medical clinics and laboratories.¹ It is estimated that annually about 0.33 million tonnes of hospital waste is generated in India and, the waste

generation rate ranges from 0.5 to 2.0 kg per bed per day. Wherever, generated, a safe and reliable method for handling of biomedical waste is essential. Effective management of biomedical waste is not only a legal necessity but also a social responsibility.²

Keeping in view inappropriate biomedical waste management, the ministry of environment and forests notified the "Biomedical waste (management and handling) rules, 1998" in July 1998. In accordance with these rules (rule 4), it is the duty of every "occupier" i.e. A person who has the control over the institution and or its premises, to take all steps to ensure that waste generated is handled without any adverse effect to human health and environment.¹

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The hospitals, nursing homes, clinic, dispensary,

animal house, pathological lab etc., are therefore required to set in place the biological waste treatment facilities. It is however not incumbent that every institution has to have its own waste treatment facility. The rules also envisage that common facility or any other facilities can be used for waste treatment. However, it is incumbent on the occupier to ensure that the waste is treated within a period of 48 hours.¹

Medical care is vital for our life, health and well-being but the waste generated from medical activities can be hazardous, toxic and even lethal because of their high potential for diseases transmission. The hazardous waste from health care establishments comprising infectious, Biomedical and radioactive material as well as sharps (hypodermic needles, knives, scalpels etc.) constitute a grave risk, if these are not properly treated/disposed or is allowed to be mixed with other waste. The disposable plastic syringes if recycled indiscriminately, can become a potential source of infections not only to the patients but also to the workers who are recycling the syringes. Each year, the reuse of injection equipment may cause 20 million infections with Hepatitis B virus (HBV), 2 million infections with Hepatitis C virus (HCV) and 250,000 infections with human immunodeficiency virus (HIV) worldwide.³ Unfortunately, in the absence of reliable and extensive data, it is difficult to quantify the dimension of the problem or even the extent and variety of the risk involved. With a judicious planning and management, however, the risk can be considerably reduced.⁴

According to WHO about 80-85% of the total hospital waste is not hazardous/ infected (provided strict segregation is practiced). The remaining 15-20% is hazardous and can be injurious to humans or animals and deleterious to environment. The hazardous waste can be infectious (10-15%) like sharps or noninfectious (5%) such as chemical and pharmaceutical waste.^{5,6}

Various studies on biomedical waste management in urban areas of India have been conducted whereas in the rural areas very few studies have been undertaken. Hence an attempt was made to study the status of biomedical waste management in healthcare centres in Beri block of district Jhajjar, Haryana which is predominantly a rural area.

MATERIAL & METHOD

The study was conducted in all the health centres whether govt. or private (including veterinary centres) of block Beri, district Jhajjar which is a field practice area of Department of Community Medicine Pt. B. D. Sharma PGIMS, Rohtak. The study was conducted from January 2012 to December 2012. Approval from institutional ethics committee was obtained before carrying out the study.

A list of all health care centres/units was obtained from CHC Dubaldhan and CHC, Dighal as both these CHCs are administrative units of block, Beri. This block is served by 133 health centres including one general hospital (Beri), two community health centres (Dighal and Dubaldhan), three primary health centres, 25 sub health centres, 75 general practitioner's clinics (allopathic, AYUSH, naturopathy, quacks etc.), 2 dental clinics, 18 veterinary hospitals and 7 laboratories.

The investigator himself met the heads of all health care centres/units to explain the purpose of the study and sought their co-operation. Healthcare centres/units whose heads denied consent to carry out the study were excluded. The present status of bio-medical waste management in each health care centre/unit was observed and recorded by using the pre-tested checklist. The checklist was having information regarding segregation, disinfection, disfigurement, colour coding, transportation, and final disposal of bio-medical waste.

Collected data were entered in the MS excel spread sheet, coded appropriately and analysis was carried out using SPSS (Statistical Package for Social Studies) for windows version.18.0 and online. Categorical data were presented as percentage (%) and statistical average (mean) was calculated wherever necessary. Pearson's chi square test was used to evaluate differences between groups for categorical variables. In case, expected cell count less than 5 comprise >20% of a table, fisher's exact test was used. All tests were performed at a 5% level significance, thus an association was significant if the value was less than 0.05 (p value < 0.05).

RESULTS

There were 133 health centres/units in the Beri

block, out of which 110 (82.7%) could be studied. Rest 23 (17.3%) health centres could not be studied because heads of these health centres didn't consent to carry out the study. All the government centres consented for the study but least response rate (70.7%) was from general practitioners clinics.

Table 1 shows the facilities available in the health centres for biomedical waste management. Out of 49 government and 61 private health centers only 6 (12.2%) and 2 (3.3%) were authorized by the State Pollution Control Board (SPCB) respectively. None of the health centre whether government or private was having the system of reporting injuries/ accidents to the concerned committee.

Only 9 (18.4%) government and 4 (6.6%) private health centres were segregating the biomedical waste

in four colored containers with bags. Twenty two (44.9%) of government health centers were using only colored bags without color coded containers. It was surprising that 57 (93.4%) of the private health centers were using only single container while the same was present in 18 (36.7%) government health centers. This difference between government & private health centres was found to be statistically significant ($p < 0.001$).

Only 9 (18.4%) of government health centers and 11 (18%) private health centers were using containers with lid. About two third (63.3%) of the government health centers had hub-cutters/needle destroyer while only 12 (19.7%) of private health centers had it. The difference regarding hub cutter use between government & private health centres was found to be statistically significant ($p < 0.001$).

Table 1: Facilities Available in Government & Private Health Centres for Biomedical Waste Management (n=110)

| Facility | Government centres (n= 49) | Private centres (n=61) | Total (n=110) | P value |
|--|----------------------------|------------------------|---------------|----------|
| SPCB [#] | | | | |
| Authorized | 6 (12.2) | 2 (3.3) | 8 (7.3) | 0.136 |
| Not authorized | 43 (87.8) | 59 (96.7) | 102 (92.7) | |
| System of reporting injuries/ accidents to the concerned committee | | | | |
| Present | 0 (0) | 0 (0) | 0 (0) | - |
| Absent | 49 (100) | 61(100) | 110 (100) | |
| Segregation | | | | |
| • 4 colored containers with colored bags | 9 (18.4) | 4 (6.6) | 13 (11.8) | 0.06 |
| • Colored bags only | 22 (44.9) | 0 (0) | 22 (20.0) | < 0.001* |
| • Single container | 18 (36.7) | 57(93.4) | 75 (68.2) | < 0.001* |
| Containers with lid | 9 (18.4) | 11(18.0) | 20 (18.2) | 0.96 |
| Hub-cutter/ Needle destroyer | 31 (63.3) | 12 (19.7) | 43 (39.1) | < 0.001* |
| 1% NaOCl availability (for disinfection) | 6 (12.3) | 2 (3.3) | 8 (7.3) | 0.14 |
| Separate storage area for waste | 19 (38.8) | 19 (31.1) | 38 (34.5) | 0.40 |

Figures in the parentheses are percentages. *Statistically Significant ($p < 0.05$)

[#]SPCB- State Pollution Control Board

Table 2 shows that segregation of biomedical waste was found inappropriate in 20 (40.8%) government centers and 59 (96.7%) private centers. Status of disinfection was worse in both govt. and private setups. The biomedical waste stored for more than a day in 43 (87.8%) government centers and 36 (59.0%) private centers. Only 3 (6.1%) government centres and one private centre (1.6%) were adequate as far as the process of disinfection is concerned.

Only 14(28.6%) government centers and 2 (3.3%) private centers transported biomedical waste in closed vehicle. This study also noticed that 59 (96.7%) private centres were transporting the biomedical waste manually. Difference between government & private health centres regarding status of segregation, storage & transport was found statistically significant (p value < 0.001).

Table 2: Status of Biomedical Waste Management in Government & Private Health Centres (n=110)

| Step of Biomedical waste management | Government centres (n= 49) | Private centres (n=61) | Total (n=110) | P value |
|---|----------------------------|------------------------|---------------|----------|
| Segregation | | | | |
| Appropriate | 29 (59.2) | 2 (3.3) | 31 (28.2) | |
| Inappropriate | 20 (40.8) | 59 (96.7) | 79 (71.8) | < 0.001* |
| Disinfection | | | | |
| Appropriate | 3 (6.1) | 1 (1.6) | 04 (3.6) | |
| Inappropriate | 46 (93.9) | 60 (98.4) | 106 (96.4) | 0.32 |
| Storage | | | | |
| ≤1day | 6 (12.2) | 25 (41.0) | 31 (28.2) | |
| >1day | 43 (87.8) | 36 (59.0) | 79 (71.8) | 0.001* |
| Transport | | | | |
| Manually | 35 (71.4) | 59 (96.7) | 94 (85.5) | |
| Closed vehicle | 14 (28.6) | 2 (3.3) | 16 (14.5) | < 0.001* |
| Treatment & final disposal | | | | |
| CBMWTF# | 14 (28.6) | 2 (3.3) | 16 (14.5) | |
| Others (burning, public bins, dumping indiscriminately) | 35 (71.4) | 59 (96.7) | 94 (85.5) | < 0.001* |

#CBMWTF- Common Bio-Medical Waste Treatment Facility

Figures in the parentheses are percentages. *Statistically Significant (p<0.05)

DISCUSSION

The present study was conducted in a block of Haryana to find out the present status of biomedical waste (BMW) management in healthcare centres. There is much to be done where the waste is generated. The activities include reduction of waste generated, segregation, decontamination of infected waste, proper containment of waste, secure transportation of the waste, and occupational health & safety measures by creating awareness. The study area is served by 133 health centres/units, out of which 110 (82.7%) could be studied. Out of the 110 studied health centres, 49 (44.5%) were government health centres and 61 (55.5%) were private health centres.

The present study depicted that only 6 (12.2%) government institutions and only 2 (3.3%) private hospital were authorized from State Pollution Control Board (SPCB). Surprisingly, neither government nor the private institutions had any system of reporting injuries/accidents to the concerned committee (Table-1). Pandit NB et al. reported similar situation in their study that none of the hospitals had any record keeping system about amount of waste generation. They were not keeping record for injuries occurred to health personnel, during their routine work. None of the hospitals knew about authorization that they have to take from pollution control board.⁷

Mathur et al. in their study conducted in

hospitals of Allahabad, Uttar Pradesh revealed that injury reporting was low across all the groups of health professionals.⁸ Stein et al. in their study in Birmingham, England and reported that among doctors and nurses, only 37% reported that they ever suffered needle stick injury. Low/no reporting of injuries may be attributed to the fact that most of the doctors and other technical and nontechnical staff are unaware about a formal system of injury reporting.⁹

The present study also revealed that there was no infection control and/or waste management committee in both governments as well as in private institutions. However, Anuroopa SM¹⁰ in Davangere city and Shindhe MM¹¹ in Mandya district reported that only 4 (3%) and 2 (4%) health care centres had infection control and/or waste management committee respectively. There should be an infection management committee in both government & private institutions so that injuries can be reported as early as possible and accordingly the preventive measures can be taken.

This study also shows that there was a gross inadequacy as far as segregation (adequate in 59.2% government and 3.3% private health centres) and disinfections (adequate in 6.1% government and 1.6% private health centres) are concerned (Table-2). Pandit NB et al. in their study carried out in a district of Gujarat⁷ and Rijal et al. in Kathmandu valley¹² also noted that there were no effective waste segregation, collection, and transportation and disposal system in most of the health care institutions. Singh et al. studied at Chandigarh and revealed that the medical establishments in the rural areas didn't have any waste management system.¹³

The present study showed that 35 (71.4%) government institutions and 59 (96.7%) were transporting the biomedical waste manually while only 14 (28.6%) government institutions and only 2 (3.3%) private hospitals were transporting the waste through closed vehicle (Table -2). In the present study, the Common Biomedical Waste Treatment Facility (CBWTF) for transportation and terminal disposal was used by 14 (28.6%) government and only 2 (3.3%) private health centres (Table-2). Gupta et al. carried out a study in Lucknow¹⁴ and Pandit NA et al. in Srinagar¹⁵ and they reported that storage and transportation of waste was not proper in rural health

facilities. This may occur because in rural areas, there is no contract with CBWTF for transportation and terminal disposal. In this system, a person working with CBWTF collects the bio medical waste daily in a closed vehicle for transportation to the terminal disposal site.

The present study noted that rest of the government and private institutions used the burial and burning on open ground as disposal method. The Gupta et al. in their study in Lucknow¹⁴ and Pandit NA et al. in Srinagar¹⁵ reported the similar finding i.e. the health facilities of rural area were using burial, burning and open dumping near to hospital premises for terminal disposal.

CONCLUSION AND RECOMMENDATIONS

The study has shown a gross apathy of intellectuals towards the operational aspects of the system. The state pollution control board has also failed to implement the relevant legal provisions. In the field of medical practice statutory public health guidelines for biomedical waste management and close monitoring of its compliance alone cannot achieve the ultimate goal, if it is not accompanied with social science approach of mass education motivation and change of mind set in all strata of medical practice.

To improve the situation the medical staff should be more involved in waste management system and importance of this subject should be emphasized on everyone including public, patients and hospital staff. It will be apt to remember recommendations of WHO 'human element is more important than technology'. A policy needs to be formulated based on 'reduce, reuse, recover and dispose'.

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A Study of Anatomical and Morphological Aspects of Lung Fissures and Lobes

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ABSTRACT

Background: The fissures facilitate the movement of the lobes in relation to one another, which accommodates greater distention and movement of the lobes during respiration. The fissures may be complete, incomplete or absent altogether.

Aims: To study the morphology of fissures and lobes, to note the variations, to compare them with previous studies and to find their clinical significances. These lungs were carefully observed for the patterns of lobes, fissures and variations if any were noted.

Method: Morphological study of 42 lungs by dissection method of embalmed cadavers was performed in the Department of Anatomy, Santhiram Medical College, Nandyal.

Results: the present study showed oblique fissure was present in 33% of right lungs and 38 % of left lungs. Incomplete horizontal fissure was seen in 33.2% of right sided lungs. 19% of right lung and 9.5% of left lung had accessory lung fissures.

Conclusions: Awareness of the variations in the lobes and fissures of the lungs is important for radiologists for proper radiological interpretation and to clinicians for performing segmental lung resections and lobectomies. This implies that a variety of genetic and environmental factors might affect development of these fissures.

Keywords: *Cadavers, Lobectomy, Fissure, Parenchymal fusion*

INTRODUCTION

The lungs are a pair of essential organs of respiration located within the thoracic cavity. Each lung is divided into lobes by fissures. Anatomically, left lung is divided into upper and lower lobes by oblique fissure whereas right lung is divided into upper, middle and lower lobes by oblique and horizontal fissures. In each lung, the oblique fissure begins from the mediastinal surface above and

behind the hilum and cuts the posterior border of the lung about 2.5cms lateral to the junction of the T4 and T5 spine ^{1,2}.

Then it runs along the costal surface, cuts the inferior border of the lung and reappears on the mediastinal surface and ends at the lower end of hilum. The horizontal fissure begins at the oblique fissure near midaxillary line, passes horizontally forward to anterior border of the lung, level with the sternal end of fourth costal cartilage and then passes backwards to the hilum on the mediastinal surface. The fissures of lung helps in the movement of lobes in relation to one another which accommodates the greater distension and movement of the lower lobes during respiration and hereby helps in uniform expansion of lung. These fissures may be complete,

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incomplete or absent. When lung fissures are complete, lobes remain intact at hilum by bronchi and pulmonary vessels or when fissures are incomplete there is a parenchymal fusion between lobes. Other than usual fissures, the lungs may also have accessory fissure which may be single or multiple dividing the lungs into many lobe³⁻⁵.

The position of lobes and fissures is useful in locating the bronchopulmonary segments which is significant both anatomically and clinically. Awareness of the variations in the lobes and fissures of the lungs is important for radiologists for proper radiological interpretation and is of great significance to cardio thoracic surgeon for planning segmental resections or pulmonary lobectomy as stated by Nene AR, et al., in 2011⁶. Considering the clinical importance of this topic, the present study is undertaken to determine the morphology of the lung with respect to lobes and fissures.

METHOD

Forty two pairs of lungs obtained from formalin-fixed adult cadavers removed during routine dissection at Santhiram Medical College and General Hospital, Nanadyal were studied. Period study was June 2013 to June 2014(1 year). The specimens having pathological lesions, marks of previous surgery, and those that were damaged during removal were excluded from the study. Of the lung specimens, 21 were of the right side and 21 were of the left. These lungs were examined for the patterns of lobes and fissures. Later, variations in these lungs were observed and photographed.

The anatomical classification based on the degree of completeness of the fissures proposed by Craig and Walker⁶ was followed to determine the presence and completeness of fissure (table 1)⁷.

Table 1: Grading of completeness of a fissure

| Grades | Craig and Walker criteria of completeness of a fissure |
|---------|---|
| Grade 1 | Complete fissure with entirely separate lobes |
| Grade 2 | Complete visceral cleft but parenchymal fusion at the base of the fissure |
| Grade 3 | Visceral cleft evident for part of the fissure |
| Grade 4 | Complete fusion of the lobes with no evident fissural line |

RESULTS

The observations regarding prevalence of oblique and horizontal fissures are shown in table 2. Results showed oblique fissure was present in 33% of right lungs and 38 % of left lungs. Incomplete horizontal fissure was seen in 33.2% of right sided lungs. Figure 3 displaying the Superior accessory fissure of left lung and Figure 1 -2 showing , right lung with oblique and horizontal fissures. Accessory fissures of lung are shown in table 2 . 19% of right lung and 9.5% of left lung had accessory lung fissures Results of the study are expressed in percentage (%).

DISCUSSION

Lung fissures help in a uniform expansion of the whole lung and they also form the boundaries for the lobes of the lungs. Knowledge of fissures is necessary for the appreciation of lobar anatomy and thus for locating the bronchopulmonary segments (Rosse C, 1997)³. Lung buds develop from the foregut and it divides into two primary bronchial buds at around 28 days after fertilization. Then they develop into the right and left lungs. As the development progresses, the formation of numerous bronchopulmonary buds take place, the spaces or fissures that separate individual bronchopulmonary buds/segments become obliterated except along two planes, evident in the fully developed lungs as oblique or horizontal fissures (Larsen WJ, 1993)⁸. Absence or incomplete oblique or horizontal fissures could be due to obliteration of these fissures either completely or partially. Accessory fissure could be the result of non-obliteration of spaces which normally are obliterated (Sadler TW, 2004)⁹.

Craig and Walker have proposed a fissural classification based on both the degree of completeness of the fissures and the location of the pulmonary artery at the base of the oblique fissure⁷.

Several studies have been reported regarding the varying percentage of presence of incomplete fissures. Current study indicates that incompleteness of the fissures predominate in the right lung. The position of the lung fissure could be used as reliable landmarks in specifying lesions within the lung¹⁰. The identification of the completeness of the fissures is important prior to lobectomy, because individuals with incomplete fissures are more prone to develop

postoperative air leaks, and may require further procedures such as stapling and pericardial sleeves (Venuta F, et al., 1998) ¹¹. Incomplete fissure may give rise to atypical appearance of pleural effusions and causes the odd appearance of fluid tracking within the fissure. An incomplete fissure may also alter the spread of disease within the lung. Pneumonia in particular lobe is often limited to that lobe alone by the fissures.

In patients with incomplete fissures, pneumonia may spread to adjacent lobes through the incomplete fissures. Similarly carcinoma of the lung may involve odd lobes via incomplete fissure (Traver RD, 1995) ¹².

In this study, four right -sided lungs showed accessory fissures. Accessory fissures of the lung are commonly observed in lung specimens, but are often unappreciated or misinterpreted on radiographs and CT scans. On CT scans accessory fissures are seen as high attenuation curvilinear band and are confused with areas of linear atelectasis, pleural scars, or walls of bullae (Butler P, et al., 1999) ¹³. In patients with endobronchial lesion, an accessory fissure might alter the usual pattern of lung collapse

and pose difficulty in diagnosing a lesion and its extent. Often these accessory fissures act as a barrier to spread of infection, creating a sharply margined pneumonia, which can wrongly be interpreted as atelectasis or consolidation (Godwin JD, et al., 1985) ⁴. The knowledge of the anatomy and variations of the lung fissures is essential for proper identification of normal lung anatomy, evaluation of disease, for identification and interpretation of their variable imaging appearance and related abnormalities (Hayashi K, et al., 2001) ¹⁴.

The results of present study and their comparison with the previous works show that there is a wide range of difference in occurrence of classical and accessory fissures between and among different populations. This implies that a variety of genetic and environmental factors might affect development of these fissures.

Knowing the frequency of occurrence of a variant fissure in a particular population is important for making correct radiological diagnosis and for proper surgical management of lung pathology.

Table 2: Prevalence of Oblique and Horizontal fissures

| Lung | Fissure | Grade 1 | Grade 2 | Grade 3 | Grade 4 |
|-------|------------|------------------|--------------------|---------------------|---------------------|
| Right | Oblique | 33% (7 lungs) | 28.5% (6 lungs) | 23.8% (5 lungs) | 14.2% (3 lungs) |
| | Horizontal | 38% (8 lungs) | 19% (4 lungs) | 19% (4 lungs) | 23.5% (5 lungs) |
| Lung | Fissure | Grade 1 | Grade 2 | Grade3 | Grade 4 |
| Left | Oblique | 33% (7 lungs) | 38% (8 lungs) | 14.20% (3 lungs) | 14.20% (3 lungs) |

Table 3: Prevalence of accessory fissures in right and left lungs

| Lung | Accessory fissure | Number | Percentage |
|------------|----------------------------|--------|------------|
| Right lung | Superior accessory Fissure | 3 | 14% |
| | Inferior Accessory fissure | 1 | 5% |
| Left lung | Superior accessory fissure | 2 | 9.5% |
| | Inferior Accessory fissure | NIL | NIL |

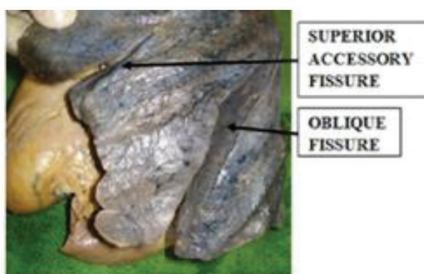


Figure 1: Left lung showing accessory fissure



Figure 2: Right lung showing horizontal fissure & oblique fissure



Figure 3: Right lung showing presence of oblique fissure

CONCLUSION

Current study indicates the incomplete fissure predominates in right lungs. In few cases, the horizontal fissure is classically absent. Considering the clinical and surgical importance of such anomalies one can opine that prior anatomical knowledge and high index of suspicion for probable variations in the fissures, lobes and bronchopulmonary segments in the lung may be important for clinicians, surgeons and radiologists.

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Ethical Approval: The study was approved by the Institutional Ethical Committee

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A Clinical Appraisal of Endogenous and Exogenous Factors of Acne Vulgaris in Adolescents and Adults from a Tertiary Care Teaching Hospital in Central Kerala

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ABSTRACT

Background : Acne vulgaris a common cosmetic problem especially in the adolescent age is caused and perpetuated by various endogenous and exogenous factors. Identification of these factors would improve the treatment outcome and prevent recurrences.

Aim: To identify various etiological factors in acne vulgaris among out patients attending the Dermatology department of a tertiary care teaching hospital.

Materials and Method: 200 registered patients who presented with acne vulgaris and on regular follow up for a period not less than 6 months were classified into three groups, mild, moderate and severe. Detailed history was elicited and clinical examination were done in all cases with hormonal evaluation in clinically relevant cases.

Results: 110 females and 90 males participated in the study. 118 (59%) had mild acne, 68 (34%) moderately severe and 14 (7%) severe form of acne. Main endogenous factors observed were genetic predisposition in 64/200 subjects (32%), seborrhoeic dermatitis in 102/200 (51%) and acanthosis nigricans was present in 9/200 (4.5%). Of the 110 females premenstrual exacerbation of acne was observed in 48 (43.6%) and polycystic ovaries in 16 females (14.5%). Main exogenous factors identified were usage of topical comedogenic agents in 102 (51%) subjects, dietary factors in 64 (32%) subjects, emotional stress in 17(8.5%) subjects.

Conclusion: A proper evaluation of endogenous and exogenous factors is necessary to prevent persistence or recurrence of acne and long term consequences like scarring, pigmentation and psychological distress. The most common exogenous etiological factor identified in the present study was usage of comedogenic substances and the most prevalent coexistent dermatoses was seborrhoeic dermatitis. Hence these factors need to be addressed in all cases of acne to prevent its recurrence or perpetuation.

Keywords : *Acne vulgaris, endogenous, exogenous factors.*

INTRODUCTION

Acne vulgaris is a self-limited disease, primarily involving the pilosebaceous unit. The great majority experience it during the middle to late teenage period. Acne may persist through the third decade or even later or may have a late onset. Persistent acne and late onset acne are two types of post adolescent

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acne, the former being an extension of acne that begin in adolescence and continues into adulthood and the latter first appears in those over 25 years.^[1] A proper evaluation of endogenous and exogenous factors in each case and elimination of these factors is essential to improve the treatment outcome. Laboratory work up is indicated for patients with menstrual irregularities, features of hyperandrogenism and in patients unresponsive to treatment even in the absence of features of hyperandrogenism.^[2] The aim of the present study was to determine the prevalence of endogenous and exogenous factors taking into account the commonly used home remedies and habituations which perpetuated or exacerbated acne vulgaris and to determine any coexistent dermatoses.

MATERIALS & METHOD

The study was conducted in the Department of Dermatology of a tertiary care teaching hospital in central Kerala among 200 consecutive patients who presented with acne vulgaris from January 2010 onwards and who were on regular follow up at least for a period not less than 6 months and who consented for the study. All cases of acne induced or aggravated by systemic drug intake were excluded from the study. The study was approved by the Institutional Review Board.

Age of onset of acne and duration were noted. A detailed history was elicited taking into account the endogenous and exogenous factors which could have precipitated or perpetuated acne. Endogenous factors included genetic predisposition (a family history of acne), history, clinical examination or laboratory evaluation suggestive of endocrine factors, coexistence of dermatoses like seborrhoeic dermatitis, hidradenitis suppurativa or any others were noted. Exogenous factors included emotional stress, diet, topical agents, facials and home remedies, seasonal aggravation and smoking.

Grading of acne was done according to International Consensus Conference on Acne Classification systems: mild -few to several comedones, papules and pustules and no nodules; moderate-several comedones, papules, pustules and few to several nodules; severe-numerous comedones, papule and pustules and many nodules.^[3] Investigations were done in female patients with

signs of hyperandrogenism as well as in treatment resistant acne which included thyroid stimulating hormone (TSH), serum total and free testosterone, dihydroepiandrosteronestearate (DHEAS), luteinising hormone (LH), follicle stimulating hormone (FSH), LH: FSH ratio, serum prolactin, 17-OH progesterone and a pelvic ultrasound. Rotterdam's criteria was used to diagnose patients with polycystic ovarian syndrome (PCOS). PCOS was diagnosed, after the exclusion of related disorders, by two of the following three features: 1) oligo- or anovulation, 2) clinical and/or biochemical signs of hyperandrogenism, or 3) polycystic ovaries.^[4]

RESULTS

The study was conducted among 200 subjects consisting of 90 males and 110 females. The distribution of age and severity of acne are shown in Graph 1 and Table 1 respectively. Male to female ratio was 1:1.22. The mean age of the subjects was 19.27 ± 5.09 (SD). The average age of males was 18.99 ± 4.37 (SD) and females was 19.52 ± 5.65 (SD). The age of onset of acne in males ranged from 10 to 38 years of age while in females it varied from 11 to 44 years. Persistent acne was observed in 14 males(15.6%) and 14 females(12.7%) and late onset acne occurred in 2 males (2.2%) and 9 females(8.2%). [Figure 1]

Endogenous Factors: 64 subjects (32%) gave family history of acne. Premenstrual exacerbation of acne was present in 48(43.6%) female subjects. 16 females (14.5%) had PCOS of which 11 had features of hyperandrogenism while 5 had treatment resistant acne without clinical features of hyperandrogenism. Among the 23 females with adult acne, 9 of them had PCOS. Acanthosis nigricans was present in 9 (4.5%) consisting of 6 females and 3 males, seborrhoeic dermatitis in 102 subjects(51%), [Figure 2] acne conglobata was present in one male patient [Figure 3] who also had hidradenitis suppurativa, while another male had features of SAPHO (Synovitis, Acne, Pustulosis, Hyperostosis and Osteitis) syndrome.

Exogenous Factors: A history of aggravation of acne by consuming certain food substances was elicited in 64 subjects (32%). Table 2 shows the food substances implicated in this study. Application of topical agents and home remedies were associated with aggravation or recurrence in 102(51%) cases.

Table 3 shows the commonly used topical agents that could have led to the precipitation or aggravation of acne. Among the 39 cases of adult acne (28 persistent acne and 11 late onset acne) usage of fairness creams with oily base was present in 16 females and 7 males. History of some kind of stressful situation causing exacerbation of acne was noticed in 17(8.5%) subjects which included examinations in 5 (2.5%), sleep disturbance in 1 (0.5%), family problems in 7 (3.5%) and stress at work place in 4 (2%) and aggravation during summer months in 3(1.5%).

DISCUSSION

Almost 90% of people may be affected by acne sometime or other in their life.^[5] In females, peak incidence occurs between fourteen to seventeen years and in men sixteen to nineteen years. This is evident in our study where most of the subjects belonged to 11-20 years of age. Contrary to common belief, acne is not a disease limited to adolescents and young adults but can occur at any stage of life.^[6] This fact is reflected in our study where acne ranged from 10-38 years in males and 11-44 years in females. The prevalence of acne varies between sexes and age groups, appearing earlier in females than in males possibly reflecting the earlier onset of puberty.^[7] But in the present study males showed an earlier onset of acne. The reason for this needs to be explored further. A similar finding was observed in another Indian study where the mean age of onset of acne was found to be higher for females (19.17 ± 7.77) as compared to males (15.74 ± 5.86).^[8] Studies have shown adult acne in 11-12% of women and 3% in men with significant decline after 45 years.^[1] In the present study, an increased incidence of adult acne was seen with 25.3% in females (14 with persistent acne and 9 with late onset acne) and 17.7% in males (14 with persistent acne and 2 with late onset acne).

An interplay between endogenous and exogenous factors contributes to the development, exacerbation and perpetuation of acne. Acne commonly shows a premenstrual exacerbation in women.^[7] Genetic factors like deficiency of Apolipoprotein A and family history of acne vulgaris are associated with an increased risk.^[9] Some of the endogenous factors in our study included a positive family history in 32%, premenstrual exacerbation in 43.6% of females and co-existence of seborrheic dermatitis in 51% of

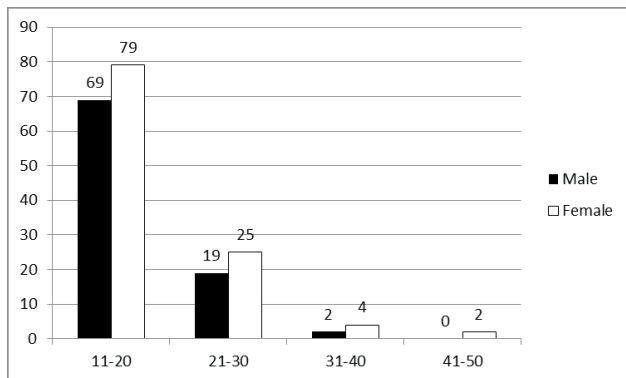
subjects. Seborrhea is involved in the pathogenesis of acne and seborrheic dermatitis. Although the presence of Malassezia yeasts in the pilosebaceous follicle of acne patients is confirmed, its exact role in the pathogenesis of acne is not clearly defined. The South Indian study of acne profile also observed seborrheic dermatitis as the commonest coexistent dermatoses.^[10] Polycystic ovarian disease was identified in 14.5% of females who either had features of hyperandrogenism or acne unresponsive to usual modes of therapy including isotretinoin. Since all our patients were not subjected to endocrine evaluation, incidence of PCOS is lower compared to other studies. In the study by Begum S et al where all subjects with acne were subjected to evaluation the prevalence was 27.5%.^[2] Among male subjects with severe acne, one had features of acne conglobata with hidradenitis suppurativa while the other had SAPHO which was diagnosed 6 years after the onset of acne.

Exogenous factors implicated in causing acne are diet, emotional stress, topical agents, home remedies, smoking, and seasonal aggravation. Diet is the third most frequently implicated factor (after hormones and genetics) as the cause of the disease.^[11] In one study a positive association between intake of skim milk and acne was found suggesting that skim milk contains hormonal constituents, or factors that influence endogenous hormones, in sufficient quantities to have biological effects in consumers.^[12] 32% of our subjects reported to have aggravation of acne by certain types of foods, the main dietary items being fried snacks and egg. More than one dietary item precipitated acne in these subjects. A similar observation has been reported in another Indian study.^[8] External application of oil, pomades and certain comedogenic chemicals can cause acne like lesions.^[13] Acne is increasingly being observed in adults using depigmenting cosmetics.^{[14],[15]} In 51% of our subjects various exogenous agents were identified which included some home remedies commonly practiced by our patients in the hope of removing the marks inflicted by acne. These were turmeric often mixed with milk, milk cream, curd or coconut milk, application of steroid creams (plain as well as the ones used in combination with hydroquinone and retinoic acid), fairness oils and creams. The habit of applying oil on the scalp and smearing the excess on the face and leaving the oily hair loose can lead to

acne over forehead, back and neck. Frequent visits to beauty parlours also contributed to acne especially in adults. Emotional stress tends to aggravate acne.^[16] There is a positive correlation between stress levels and severity of acne.^[17] In the present study stressful events aggravated acne in 8.5% subjects. Smoking as an aggravating factor was not observed by our subjects.

The main factors aggravating acne in those with persistent and late onset acne were genetic factors in 12 females (12/23) and 7 males (7 /16), seborrhoeic dermatitis in 6 females and 8 males, PCOS in 9 females, usage of fairness creams in 16 females and 7 males.

More studies with larger sample size along with an age and sex matched control group is needed to evaluate the statistical significance of the various endogenous and exogenous factors observed in the present study in both adolescent and adult acne.



Graph 1. Age distribution

Table 1. Classification of acne in males and females.

| Severity of Acne | Male n= 90 | Female n=110 | Total (%) |
|------------------|------------|--------------|------------|
| Mild | 41 | 77 | 118 (59%) |
| Moderate | 38 | 30 | 68 (34%) |
| Severe | 11 | 3 | 14 (7%) |

Table 2. Food items aggravating acne.

| Food items | Number (%) |
|--------------------------|------------|
| Fried snacks | 29 (14.5) |
| Egg | 17 (8.5) |
| Meat (Chicken/beef) | 13 (6.5) |
| Sweets (Milk chocolates) | 9 (4.5) |
| Milk | 13 (6.5) |

Table 3. Topical agents precipitating or aggravating acne

| Topical agents | Number (%) n=200 |
|---|------------------|
| Fairness creams & oils | 29 (14.5) |
| Coconut oil | 18 (9) |
| Coconut milk | 4 (2) |
| Turmeric | 13 (6.5) |
| Turmeric & Milk cream | 8 (4) |
| Turmeric & Curd & lemon | 5 (2.5) |
| Steroid cream | 6 (3) |
| Topical steroid, retinoic acid & hydroquinone | 13 (6.5) |
| Following Facials | 4 (2) |



Figure 1 : Moderately severe form of late onset acne



Figure 2 : Seborrhoeic dermatitis in mild acne



Figure 3 : Acne conglobata

CONCLUSION

We observed an increase in the incidence of adult acne in males as well as females in this study. The need for proper patient education regarding diet, life style modification and avoidance of cosmetics, home remedies like turmeric alone or in combination with milk cream especially in patients prone for acne has to be emphasized. Simultaneous treatment of seborrhoeic dermatitis is mandatory as *Pityrosporum ovale* could act as a perpetuating factor in a good number of cases. In females if acne appears resistant to therapy a hormonal evaluation and pelvic sonography is mandatory even in the absence of overt features of hyperandrogenism.

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Conflict of Interest : Nil

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A Study on Quality of Life of Elderly Population in Rural Thailand – A Cross Sectional Study

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ABSTRACT

Background: Thailand currently faces significant rise of aging population which has become an important public health issues. The objective of the study was to assess the background profile, pattern of disease and overall health related quality of life (HRQOL) of elderly population residing in Bungsan sub-district of Nakhon Nayok province in rural Thailand.

Methods: Data were collected from 148 elderly population (male=67, female =81) aged over 60 years of old. SF 36 was used for the data collection by the trained interviewers. The dependent variable of this study was health related quality of life (HRQOL) which was measured using two sub-components of SF 36 – one is Physical Component Summary (PCS) and another is Mental Component Summary (MCS).

Results: Multiple logistic regression analysis revealed that the older persons suffering from chronic diseases are more prone to low quality of life in health both in PCS and MCS [OR: 7.92, CI: (4.89-15.88) and OR: 1.94, CI (1.24-3.11) respectively]. Further, the individual aged more than 75 years puts high risk of decreasing HRQOL in both PCS and MCS ([OR: 2.71, CI: (1.90-3.83) and OR: 1.74, CI: (1.23-2.08) respectively] than 60-75 years of old persons. Additionally, the women and illiterate possessed an increase in low PCS than that of men and literates [OR: 1.29, CI: (1.02-1.85) and OR: 1.72, CI: (1.20-2.35) respectively].

Conclusion: The study findings suggest that the older person gets more decrease in HRQOL with increase in age. Also, some other factors such as gender, illiteracy and chronic diseases have an important role towards decrease in HRQOL among more aged population.

Keywords: *Elderly, quality of life, health, SF 36, Thailand.*

INTRODUCTION

The older population across the world are increasing day by day¹. It is estimated that the global population of those with age 60 years and above is going to be twofold (from 542 million to nearly 1.2 billion) by the year 2025¹. The older people living in low and middle income countries will also be very high reaching around 850 million by the year 2025¹.

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By September 2010, the population of Thailand was 65.98 million from whom 8.5 million persons (12.9%) were 60 years and above². Further, the Ministry of Public Health, Thailand has estimated an increase in elderly population to nearly 20 percent by 2025 and 25 percent by 2030. The ministry has also estimated that approximately 150,000 elderly people are dependant in Thailand and this number will reach to 240,000 by 2019. Additionally, more than 70% of current dependant elderly do not access adequate support from their peers and families³. Also, Thai Ministry of Social Development and Human Security (2009) estimated that about 43 percent of old people were in good health. Those people more than 80 years had more chronic health problems than other age

groups and only 7.7 percent lived alone in 2007⁴.

With increase in the life expectancy, it is believed that elderly people are more exposed to chronic diseases such as cancer, hypertension, diabetes, cardiovascular disease, coronary heart diseases and osteoporosis. As these diseases are more common in older person and cause socio-pathological problems; these could limit their activities and may result in decrease in HRQOL⁵. Therefore, HRQOL has become an important public health issue among aged populations⁶. There are different dimensions of HRQOL such as social, physical and mental functions⁷ that could explain the overall health of an individual. The worse HRQOL indicated a rise in both morbidity and mortality of a person and therefore, needs proper health care planning and utilization. Therefore, the measurement of HRQOL stands a crucial indicator in old persons that could help in proper health planning in future⁸. Thus, this study makes a unique contribution by measuring health related quality of life among elderly population. The paper also examines the factors affecting quality of life of elderly populations residing in Bungsan sub-districts of Thailand.

Bungsan is one the central sub-district of rural Thailand situated in Nakhon Nayok province. To our knowledge, no studies have been carried out measuring HRQOL among old persons in Bungsan sub-district. The study findings could be useful for health program planners to formulate specific preventive and rehabilitative measures to improve overall quality of life among more advanced aging people.

MATERIALS & METHOD

A population based cross sectional study was conducted between September-November 2014 to investigate the health related quality of life among old age people in Bungsan sub-district of Nakhon Nayok province. The data that collected from Bungsan sub-district administration authority, it showed that nearly 636 older people reside out of total population of about 4896⁹. Using multi-stage sampling methodology, a total of 159 participants (25 % of whole old population of Bungsan) aged 60 years and above were interviewed. Firstly, cluster sampling method was used to divide the sub-district into 8 clusters out of which 4 clusters were randomly

selected. Further, in each cluster, systematic random sampling method was used to select the households using a sampling interval of 3. For the first point of sampling, the first household was taken and then, every third household was selected. If the selected household was not having any elderly individual, then the next household was approached. This process was continued until about 40 respondents were interviewed from each cluster. Finally, 148 respondents were included in the study as 11 questionnaires were rejected due to incompleteness.

Two sets of questionnaire were used to gather the data. The first one contained the basic socio-economic, demographic and health-related data of age, education level, gender, status of living (live alone/with family), practice of smoking, alcohol consumption status and physical exercise, having any chronic diseases such as hypertension, diabetes, cardiovascular diseases, cancer, back pain, arthritis, visual and hearing impairment. The self-reported data related to chronic diseases was collected from the respondents. This set of questions were developed through extensive review of literature. The second questionnaire was Short Form Health Survey (SF-36) – a well known measure for HRQOL.

The final outcome variable HRQOL was further divided into two sub-components – Physical Component Summary (PCS) measure and Mental Component Summary (MCS) measure. Each of these components are calculated using eight subscales: Physical Functioning (PF), Role Physical (RP), Bodily Pain (BP), Vitality (VT), General Health (GH), Social Functioning (SF), Role Limitation due to Emotional Problems (RE) and Mental Health (MH). Three subscales: PF, RP, BP are associated with GH and contribute to the Physical Component Summary (PCS) measures scores. Also other three subscales: MH, RE and SF associate with VT and give the Mental Component Summary (MCS) measure¹⁰. Both PCS and MCS scores range from 0 to 100. Zero (0) is considered as a worse score whereas 100 is levelled as highest or best score¹¹. The total scores of PCS and MCS were categorised into two groups - low and high – using the mean standard score of 50. The Thai version of SF-36 questionnaire were used whose validity and reliability is well documented in pervious study¹². The answer of the questionnaire was gathered from skilled interviewers through face to face interviews.

Data was analysed in SPSS statistical version 18 software. Descriptive statistic was used to gather the information of demographic characteristic of the subjects. Independent t-tests were used to compare the differences in the PCS and MCS scores between gender and age groups. Logistic regression was performed to assess the effect of the predictor variables on the PCS and MCS components of HRQOL. The significance level was set at $p < 0.05$.

FINDINGS

The mean age of study respondents was 69.94 (SD=7.8) that varies from 60 to 97 years. Out of the total respondents who participated in this study, 67 (45.27%) were men with mean age of 73.34 (SD=8.3) and 81 were women (54.73%) with mean age of 67.13 (SD=7.2). Further, 117 participants (78.9%) were 60 to 75 years of age with mean age of 65.7 (SD=4.1) and 31 (21.1%) individuals were over 75 years of age with mean age of 85.94 (SD=6.3).

Table 1 states the personal characteristics of participants with a comparison between male and female respondents. About 46.8 percent respondents were illiterate and 8.4 percent stay alone. Alcohol is consumed by 52.7 percent participants while 39.7

percent have smoking habit. Around 68.4 percent of the sample suffers from at least one chronic health condition. Among all, 47 individuals suffer from diabetes, 58 from hypertension, 71 from arthritis and 41 had back pain. The prevalence of these diseases was more among the study participants.

As table 1 indicates almost all socio-demographic variables are statistically significant difference between men and women (all p value < 0.05) except age groups. The findings suggest that more number of women are illiterates and live alone than men. On the contrary, higher proportion of men smoke, consume alcohol and suffer from at least one chronic disease than women.

Table 2 demonstrates the comparison of PCS and MCS scores by gender and age groups. The mean PCS score for all participants was 42.7 (SD=14.6) and the mean MCS score was 61.4 (SD=16.8). The gender comparison suggested that the PCS score for men was significantly lower than that of women while the MCS did not show any significant difference. However, the age comparison showed that individuals with higher age had significantly lower scores for both PCS and MCS measures of HRQOL.

Table 1: Respondent characteristics by gender (n = 148)

| Variables | All | Gender group | | |
|-------------------------|--------------------|-------------------|-------------------|----------|
| | N (%) | Female N (%) | Male N (%) | P* value |
| Age | | | | |
| 60-75 | 117 (78.9) | 63 (78.0) | 54 (79.8) | 0.52 |
| > 75 | 31 (21.1) | 18 (22.0) | 13 (20.2) | |
| Education | | | | |
| Literate | 79 (53.2) | 24 (29.6) | 55 (82.1) | 0.002 |
| Illiterate | 69 (46.8) | 57 (70.4) | 12 (17.9) | |
| Living Status | | | | |
| With family | 136 (91.6) | 71 (88.2) | 62 (92.8) | 0.004 |
| Alone | 12 (8.4) | 10 (11.8) | 5 (7.2) | |
| Smoking | | | | |
| No | 89 (60.3) | 66 (81.8) | 23 (34.3) | 0.001 |
| Yes | 32 (39.7) | 15 (19.2) | 44 (65.7) | |
| Alcohol Drinking | | | | |
| No | 70 (47.3) | 60 (74.1) | 10 (15.2) | <0.001 |
| Yes | 78 (52.7) | 21 (25.9) | 57 (84.8) | |
| Chronic disease | | | | |
| No | 47 (31.6) | 35 (43.3) | 12 (17.9) | 0.003 |
| Yes | 101 (68.4) | 46 (56.7) | 55 (82.0) | |
| Total | 148 (100.0) | 81 (100.0) | 67 (100.0) | |

* Chi-square Test

Table 2: Comparison of PCS and MCS scores by gender groups and age groups

| HRQOL | All | Gender Group | | | Age Group | | |
|------------|-----------|--------------|-----------|----------|-----------|-----------|----------|
| | | Male | Female | P* value | 60-75 | >75 | P* value |
| | | n = 67 | n = 81 | | n = 117 | n = 31 | |
| PCS | 42.7±14.6 | 40.8±14.7 | 47.3±14.2 | 0.003 | 49.6±13.7 | 37.9±14.3 | 0.001 |
| MCS | 61.4±16.8 | 62.2±16.3 | 60.6±16.9 | 0.214 | 68.4±16.2 | 54.6±15.9 | 0.001 |

* Independent t-test

PCS – Physical Component Summary, MCS – Mental Component Summary

Table 3: Result of Logistic Regression Analysis for PCS and MCS

| Variables | PCS | | MCS | |
|-------------------------|-------------------|---------|------------------|---------|
| | OR (CI) | P value | OR (CI) | P value |
| Age | | | | |
| 60-75 | 1 (Ref) | | 1 (Ref) | |
| > 75 | 2.71 (1.90-3.83) | < 0.001 | 1.74 (1.23-2.08) | 0.009 |
| Gender | | | | |
| Male | 1 (Ref) | | 1 (Ref) | |
| Female | 1.29 (1.02-1.85) | 0.042 | 0.88 (0.65-1.54) | 0.862 |
| Education | | | | |
| Literate | 1 (Ref) | | 1 (Ref) | |
| Illiterate | 1.72 (1.20-2.35) | 0.012 | 0.91 (0.69-1.21) | 0.132 |
| Living Status | | | | |
| With family | 1 (Ref) | | 1 (Ref) | |
| Alone | 1.72 (0.92-2.11) | 0.086 | 1.51 (0.83-2.89) | 0.091 |
| Smoking | | | | |
| No | 1 (Ref) | | 1 (Ref) | |
| Yes | 0.78 (0.42-1.43) | 0.385 | 0.81 (0.55-1.36) | 0.48 |
| Alcohol Drinking | | | | |
| No | 1 (Ref) | | 1 (Ref) | |
| Yes | 0.64 (0.37-1.86) | 0.071 | 0.92 (0.63-1.49) | 0.71 |
| Chronic disease | | | | |
| No | 1 (Ref) | | 1 (Ref) | |
| Yes | 7.92 (4.89-15.88) | <0.001 | 1.94 (1.24-3.11) | 0.03 |

Table 3 illustrates the results of a multivariate logistic regression analysis to examine the effects of the independent variables on the PCS and MCS components of HRQOL and to assess the risk of having a score

lower than the standard mean score of 50 or more. The findings suggested that regardless other factors, the individuals with more than 75 years possess higher risk of decreasing both physical (PCS) and mental (MCS) aspect of HRQOL [OR: 2.71, CI: (1.90-3.83) and OR: 1.74, CI: (1.23-2.08) respectively]. Further, older persons suffering from chronic diseases are more prone to low quality of life in health both in PCS and MCS [OR: 7.92, CI: (4.89-15.88) and OR: 1.94, CI (1.24-3.11) respectively]. The analysis have also indicated that women and illiterate showed an increase chances of having low PCS than that of men and literates [OR: 1.29, CI: (1.02-1.85) and OR: 1.72, CI: (1.20-2.35) respectively]

DISCUSSION

This study used the HRQOL scores using SF-36 and the physical and mental component scores were compared between gender and age groups of aged people residing in Bungsan sub-district of Nakhon Nayok province, Thailand. Further, the factors influencing HRQOL of older persons were also examined and presented in this study.

The study findings showed that the women living in Bungsan had worse HRQOL than that of men with respect to PCS ($p < 0.001$). Further, multivariate regression revealed that irrespective of other independent variables, only gender were found to increase the risk of having a lower score of PCS of HRQOL whereas there was no change in mental aspect of HRQOL. This result is similar to findings of other studies with respect to difference in quality of life among men and women in aged populations^{13, 14, 15}. Similarly, illiterate individuals perceived a lower physical component of HRQOL than the literate persons.

The findings of the study also suggest that the older people above 75 years obtain significant lower scores when compared with 60-75 years age group. This signifies that being older more and more could affect on both PCS and MCS components of HRQOL. Further, when adjust the sociodemographic variables, the study showed that the age groups could significantly affect the both Physical and Mental component of HRQOL. This findings is also supported by other researchers^{6,8,16} that debates for an urgent attention for older people with most

supportive and accessible health care solutions.

Moreover, diabetes, hypertension, arthritis and back-pain were the most common chronic health ailments among the elderly respondents. Regression analysis suggested that, the individuals suffering from chronic diseases are potential to decrease in both Physical and mental components of HRQOL. This result corresponds to another study finding⁵. Therefore, it can be suggested that health services for old people needs to be strengthened as a priority issue. Overall, this study recognizes that lowering of HRQOL is not merely caused by aging, but also other variables such as being female, illiterate and development of chronic disease possess potential impact on HRQOL^{17, 18}.

LIMITATION OF THE STUDY

There are few limitations of the study. The current study is only restricted to Bungsan sub-district of Nakhon-Nayaok province, Thailand. So results of the study might not be generalized to whole country. Further, a longitudinal study with larger sample size is needed to know the exact factor influencing the HRQOL in elderly population.

CONCLUSION

The results of our study could helpful to policy makers, experts, health managers and planner to consider old and advanced age population as high risk group and they should be given special attention. Additionally, the study clearly identified some of the factors that could decrease the HRQOL among older people. Thus, Thailand health care system should be responsive towards the needs of this vulnerable group of population.

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Conflict of Interest: There is no conflict of interest

Source of Support: This study is a part of community service project undertaken by St. Theresa International College.

Ethical Clearance: This study was approved by the research and ethics committee of St. Theresa

International College. Prior informed consent was taken from each participant before the interview and confidentiality was strictly maintained.

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Patient and Health System Delays among New Sputum Positive Tuberculosis Patients in East Godavari District, Andhra Pradesh

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ABSTRACT

Background: Early diagnosis and prompt initiation of treatment is essential for an effective tuberculosis control program. Delay in the diagnosis may worsen the disease, increase the risk of death and enhance tuberculosis transmission in the community. If the delays in diagnosis and treatment of tuberculosis are reduced, it can further improve cure rate and decrease number of new cases. **Objectives:** To determine patient and health system delays and associated factors among NSP tuberculosis patients. **Materials & method:** It is a community based cross sectional study in district East Godavari, Andhra Pradesh. All NSP tuberculosis patients registered during 4th quarter of 2008, of age 15 and above from eight microscopy centers were selected through simple random method. **Results:** Average patient delay is 40 days. Long patient delay is associated with age, smoking habit, and first consultation with government provider. Median health system delay is 8 days. 38% patients had health system delay of more than 14 days. Health system delay is more when patient first consulted private provider. **Conclusion:** Awareness among people about tuberculosis and acceptance of RNTCP guidelines by private providers can result in better cure rates and fewer new cases.

Keywords: Tuberculosis, Health seeking behavior, Patient delays, Health system delays.

INTRODUCTION

TB is the one of the leading causes of adult mortality, ranking third after HIV/AIDS and ischemic heart disease as a cause of death among those aged 15-59 years (and 7th globally among all age groups)¹.

It is estimated that two out of every five Indians are infected with the TB bacillus. There is a strong chance that of them, at least 10% will develop TB disease during their lifetime. Of the 1.8 million new

TB cases occurring annually, around 0.8 million have sputum positive pulmonary TB. One sputum positive patient can infect 10–15 persons in a year if left untreated. Poorly treated patients can develop drug-resistant and potentially incurable forms of TB².

Though Revised National TB Control Program is successful in increasing cure rates and decreasing death rates many folds, several obstacles still impede the expansion of the RNTCP. First, diagnosis and treatment are uncoordinated and inconsistent because many patients initially receive care through the large private health-care sector; pharmacies often sell anti-TB drugs over-the-counter; and TB notification requirements are not strictly enforced. Economic hardships and drought cause large-scale

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migration, reducing treatment completion and cure rates. Third, a patient-centered approach to care—one that actively helps patients by providing them with transportation to health facilities, food, and social support to overcome obstacles to completion of treatment—is not practiced widely in India³.

Early diagnosis and prompt initiation of treatment is essential for an effective tuberculosis control program. Delay in the diagnosis may worsen the disease, increase the risk of death and enhance tuberculosis transmission in the community⁴. Strategies aiming to reduce the time between the onset of symptoms and the initiation of effective chemotherapy may impact the infectious duration in the community and thereby reduce the number of new infections. Hence the present study is undertaken.

OBJECTIVES

1. To determine patient and health system delays among New Sputum Positive(NSP) tuberculosis patients
2. To determine factors associated with the delays.

MATERIALS & METHOD

It is a community based cross sectional study done from October 2008 to September 2009 in district East Godavari, Andhra Pradesh. All NSP tuberculosis patients registered during 4th quarter of 2008, of age 15 and above from the selected microscopy centers were selected for the study. Very sick patients, patients with mental disturbances and those transferred out were excluded.

Four TUs were selected to give representation to urban, tribal and rural population. From each TU, two DMCs were selected by simple random method.

A total of 109 patients thus selected were interviewed after obtaining verbal consent, some at their respective PHCs and some at their homes, during their treatment. Data regarding date of diagnosis, date of treatment initiation, smear grading, sputum conversion and treatment outcome was collected from TB register after treatment completion. The data was collected using a pre tested questionnaire. The data collected was analyzed using Epi-info software

version 3.4.1.

Time interval between onset of symptom and presentation to a qualified allopathic health care provider was considered as Patient delay and if the delay was more than 21 days it was considered as long patient delay.

Time interval between the date of health-seeking at a qualified allopathic health care provider and the initiation of anti-tuberculosis treatment was considered as Health care system delay. If the delay was more than 14 days it was considered long health system delay.

RESULTS

Median age of the patients is 40 years (range: 15-70). Median age of females is 35.5 years where as it is 42 years among male patients. About 63% of patients are younger than 45 years. 74% Females are younger than 45 years and 58% males are younger than 45 years. 65% patients are males.

45% of the patients are alcoholics and 28.5% of patients are currently smokers. About 16.5% of patients quit smoking after the diagnosis was made.

Patient delay: The first point of contact was a government provider for 75% of the Patients. Average patient delay was 40 days (range 4 days- 2 years) to seek care from a qualified healthcare professional. 82% patients had delay of more than 14 days to seek care and 69% had more than 21 days patient delay.

60% patients aged 45 and less had long patient delay. Whereas 83% of patients aged more than 45 had long patient delay. The difference is statistically significant. Smokers also had statistically significant long patient delay when compared to nonsmokers.

74% females had long patient delay and 66% males had long patient delay. However this difference is not statistically significant

76% of patients who initially sought care from government facilities had long patient delay. Whereas 48% had long patient delay when they initially sought care from private hospitals. This difference is statistically significant

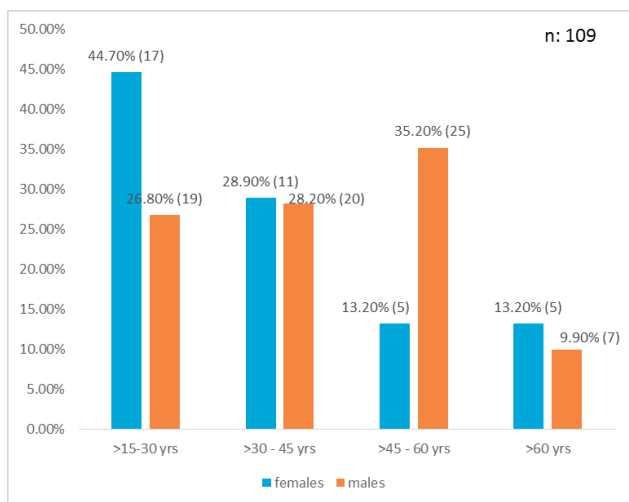


Fig: Age distribution of patients

Table 1: Risk factors Versus Long Patient delay

| Risk factor | Total | Patient delay of >21 days | Delay Vs no delay P value |
|---------------------------|-------|---------------------------|---------------------------|
| Age | | | |
| ≤45yrs | 67 | 40(60%) | <0.01 |
| ≥45yrs | 42 | 35(80%) | |
| Sex | | | |
| Female | 38 | 28(74%) | 0.4 |
| Male | 71 | 47(66%) | |
| Smoker | | | |
| Yes | 49 | 39(80%) | <0.05 |
| No | 60 | 36(60%) | |
| First consultation | | | |
| overnment | 82 | 62(76%) | <0.01 |
| Private | 27 | 13(48%) | |

Health system delay: Median health system delay is 8 days (range: 2-180). 38% patients had health system delay of more than 14 days Median health system delay when patient first consulted government facility is 6 days (range 2 -180) and when patient initially consulted private facilities is 30 days (range 4-120).

Table 2: Risk factors Versus Long health system delay

| Risk factor | Total | Health system delay of >14 days | Delay Vs no delay P value |
|----------------------------|-------|---------------------------------|---------------------------|
| Age | | | |
| ≤45yrs | 67 | 29(43%) | 0.12 |
| ≥45yrs | 42 | 12(29%) | |
| Sex | | | |
| Female | 38 | 16(42%) | 0.47 |
| Male | 71 | 25(35%) | |
| Smoker | | | |
| Yes | 49 | 19(39%) | 0.8 |
| No | 60 | 22(37%) | |
| First consultation | | | |
| overnment | 82 | 19(23%) | <0.001 |
| Private | 27 | 22(82%) | |
| Pt delay >21days | | | |
| Yes | 75 | 21(28%) | <0.01 |
| No | 34 | 20(59%) | |

23% of patients who initially consulted government facilities had long health system delay, whereas 81.5% patients who first consulted Private facilities had long health system delay. The difference is statistically significant.

43% patients aged 45 and less, had long health system delay. Whereas only 29% patients aged more than 45 had long health system delay. The difference is not statistically significant.

42% females had long health system delay whereas 35% males had long health system delay. However the difference is not statistically significant.

Most of the patients (72%) with long patient delay (>21days) had low health system delay (<14days) and most of the patients with long health system delay (59%) had low patient delay. This association is statistically significant. This could be due to patients with long patient delay are more symptomatic enabling physicians to suspect tuberculosis more easily and thereby reduces health system delay.

DISCUSSION

Studies conducted in India^{5,6,7,8} show that majority of TB patients (65-75%) are males, average age of patients is 40 yrs and female patients are younger than male patients. The present study also has similar findings.

In the present study first point of contact is a government provide for majority of patients (75%) where as in a study conducted by Selvam JM et al.⁹ it is 47% and in a study conducted by Rajeswari R et al.⁵ only 27% sought care from a government provider. Average Patient and Health system delays in the present study are 40 and 8 days respectively where as in the studies reviewed by the authors done in India, patient and health system delays ranged from 20-60 days and 7-28 days respectively.

According to Selvam JM et al.⁹ Patient delay was significantly associated with difficulty in accessing government health facility, type of transport used, and smoking. The delay was not associated with sex, age, literacy, occupational status or the type of provider consulted. Provider delay was significantly associated with consultation with private provider/ other facilities and longer distance from the health facility.

Rajeswari R et al.⁵ in their study observed that A longer patient delay was associated with age ≥ 45 years (30 days vs. 15 days), illiteracy, lower family income, alcoholism and first consultation with a government provider. The health system delay was significantly longer if patients first consulted a private practitioner (30 days vs. 7 days).

Tobgay⁶ in his study done in Sikkim reported that longer patient delay was associated with initial consultation with government provider and longer health system delay with initial consultation with private provider.

From these studies it can be judged that health system delay was more when patient first consulted private provider. It could be because private providers were still relying more on X-rays or serological tests to diagnose TB

CONCLUSIONS

Most of the patients are males and younger than

45years. Patients on an average waited for about 40 days to seek care from a qualified healthcare professional. Long patient delay is more in patients aged more than 45yrs, smokers, and in patients who first sought care from a government provider. Long health system delay was more with private providers.

RECOMMENDATIONS

Awareness should be created among public regarding TB symptoms and that diagnosis and treatment of TB is free of cost and quality assured. Private providers should be encouraged to adopt RNTCP guidelines to diagnose and treat TB patients as many patients prefer them for out-patient care.

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Conflict of Interest: None.

Source of Funding: None.

Ethical Clearance: Taken from Institutional review board (IRB) & accepted

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Vitamin D Induced Hypothyroidism

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ABSTRACT

Objectives: Vitamin D deficiency is a worldwide health problem, the aims of the study was to see the level of Vitamin D in hypothyroidism. its role as an immune modulator on endocrinal system has been recently emphasized. The evidence is increasingly pointing towards vitamin D significant role in reducing the incidence of autoimmune diseases.

Material and Method: Thyroid hormones (TSH, T₃ and T₄) and Serum vitamin D (25-OH) levels were measured in 40 patients with hypothyroidism and 40 healthy subjects, utilizing the ELISA and spectrophotometric method.

Results: The serum level of total T₃, total T₄, TSH and Serum 25(OH) vitamin D was significantly lower in hypothyroid patients as compared to controls (p<0.001). Its level was lower in females than male patients.

Conclusion: Our results indicated that patients with hypothyroidism suffered from hypovitaminosis D that is significantly associated with the degree and severity of the hypothyroidism. It is advised vitamin D supplementation should be given to all hypothyroid patients.

Keywords: Hypothyroidism, Thyroid diseases, Vitamin D deficiency

INTRODUCTION

Vitamin D deficiency is a global health problem.¹ Over a billion people worldwide are vitamin D deficient or insufficient.¹ Yet no international health organization or governmental body has declared a health emergency to warn the public about the urgent need of achieving sufficient vitamin D blood levels.² Understanding of the role of vitamin D has been evolving since its discovery in the early 20th century from being a simple vitamin to a steroid pro-hormone.³ It has been recognized to be involved in various immune functions as well as bone and muscle development.³ Vitamin D deficiency has been

shown to be associated with autoimmune diseases, including rheumatoid arthritis (RA), systemic lupus erythematosus (SLE), inflammatory bowel disease (IBD), multiple sclerosis (MS) and type 1 diabetes (T1DM), and that vitamin D supplementation prevents the onset and/or development of these autoimmune diseases.⁴ Furthermore, it was reported that patients with Hashimoto's thyroiditis, an autoimmune thyroid disease had lower vitamin D levels.⁵ Vitamin D plays an essential role in calcium homeostasis and the development and maintenance of the skeleton.⁶ It is recognized as the sunshine fat soluble vitamin. Exposure to ultraviolet B light (290–320 nm) are the main source of vitamin D.⁷ In the classical endocrine pathway, vitamin D enters the circulation attached to a D-binding protein, is first hydroxylated in the liver to 25(OH) D and then in the kidney to form the active metabolite, 1, 25 dihydroxy vitamin D (1, 25-(OH)₂ D) or calcitriol.⁸ Serum 25(OH) D, the most abundant circulating precursor of active vitamin D, is the most widely

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accepted indicator of vitamin D status and reflects combined contributions from cutaneous synthesis.⁹ Serum 25(OH)D has a half-life of approximately two to three weeks, in contrast, 1,25-(OH)₂D has a short circulating half-life and is tightly regulated over a narrow range by parathyroid hormone, calcium and phosphate.⁹ Serum 1,25-(OH)₂D is not a good measure of vitamin D status since a decrease may not occur until vitamin D deficiency is severe.¹⁰ Levels of 25(OH)D 30 to 32 ng/ml is considered to be sufficient, but levels of 20 to 29 ng/mL is insufficient and if it is less than 12 ng/ml is considered an evidence of severe vitamin D deficiency.¹¹ Importantly, both vitamin D and thyroid hormone bind to similar receptors called steroid hormone receptors. A different gene in the Vitamin D receptor was shown to predispose people to autoimmune thyroid disease including Graves' disease and Hashimoto's thyroiditis. For these reasons, it is important for patients with thyroid problems to understand how the vitamin D system works.¹² Vitamin D mediates its effect through binding to vitamin D receptor (VDR), and activation of VDR-responsive genes. While VDR gene polymorphism was found to associate with autoimmune thyroid diseases (AITDs).¹²

The purpose of this study was to examine the relationship between hypothyroidism and vitamin D deficiency with hypothyroid disease.

MATERIAL & METHOD

Forty cases both male and female were selected from all clinical departments of Saraswathi Institute of Medical Sciences Hapur, Ghaziabad, U.P., India, from March 2013 to April 2015 for the present study. Patients were excluded if they had known risk factor to influence metabolism of serum vitamin D. The patients were individually matched age and sex with randomly selected healthy controls. None of healthy woman had a history of oligomenorrhea and menopause in the past or at the time of study, and none of the healthy participants were using medications known to affect bone density, including calcium or vitamin D supplements.

After an overnight fast of 14-16 hours, 5 ml blood samples of patient and control were collected in vacuum tubes and allowed to clot at room temperature for 60-120 minute followed by centrifugation at 3000

rpm for 10 min. at 40C. Serum was stored at -20C, for estimation of vitamin D and thyroid hormones were determined with standard automated equipment.

RESULTS

The study was conducted on 40 patients (28 male and 12 female) of different age group who were suffering from hypothyroidism. 40 healthy age and sex matched individuals served as control.

Table no-1 shows the distribution of patients according to age group. The result shows maximum patients (20) 50% were in the age group of 20-29 years followed by (13) 32.5% were in age group of 30-39 years, while the least (02) 5% were in age group of between 10-19 years and 50 years above.

Table-1: Distribution of patients according to age

| Age group (Years) | No of patients | Percentage |
|--------------------|----------------|-------------|
| 10-19 | 02 | 5.0% |
| 20-29 | 20 | 50.0% |
| 30-39 | 13 | 32.5% |
| 40-49 | 03 | 7.5% |
| 50 and above | 02 | 5.0% |
| Total | 40 | 100% |

Table no-2 shows the distribution of patients according to sex. The result shows maximum patients (28) 70% were female and 12 (30%) were male.

Table-2: Distribution of patients according sex

| Sex | No of patients | Percentage |
|--------------|----------------|---------------|
| Male | 12 | 30% |
| Female | 28 | 70% |
| Total | 40 | 100.0% |

Table no-3 shows level of serum T3 and T4 in patients were slightly decreased 1.53±0.34 nmol/l and, 71.93±15.01 nmol/l and serum TSH was significantly increased 5.39±1.21 mIU/L as compared to control p<0.001. The level of vitamin -D were also decreased 49.37±08.34 ng/dl as compared to control p<0.001

Table-3: Vitamin D and Thyroid hormones concentration in patients and in controls

| Serum concentration | Patients no=40 S.D. | mean ± | Control(no=40) ±S.D. | mean | P value |
|---------------------|------------------------|--------|-------------------------|------|---------|
| T3 nmol/l | 1.53±0.34 | | 1.68±0.22 | | <0.001 |
| T4 nmol/l | 71.93±15.01 | | 86.01±16.29 | | <0.001 |
| TSH mIU/L | 5.39±1.21 | | 3.12±0.97 | | <0.001 |
| VitaminD (ng/dl) | 49.37±08.34 | | 63.38±09.18 | | <0.001 |

DISCUSSION

Vitamin D is known for its primary role in bone and mineral homeostasis, and it has been shown recently that its deficiency is associated with various diseases such as cardiovascular disease, cancer, infection, and adiposity as well as osteoporosis.¹⁷ Interestingly, it has been shown recently that vitamin D has potent immunomodulatory effects and plays important roles in the pathogenesis of autoimmune diseases.¹² Serum concentration of 25(OH)D is the best indicator of vitamin D status. It reflects vitamin D produced cutaneously and that obtained from food and supplements¹⁸ and has a fairly long circulating half-life of 15 days.¹⁹ In contrast to 25(OH)D, circulating 1,25(OH)₂D is generally not a good indicator of vitamin D status because it has a short half-life of 15 hours and serum concentrations are closely regulated by parathyroid hormone, calcium, and phosphate¹⁹. Levels of 1, 25(OH)₂D do not typically decrease until vitamin D deficiency is severe.²⁰⁻²¹ Therefore, in the present study we measured serum 25(OH)D rather than 1,25(OH)₂D to ensure we are getting more accurate results. Few studies have been conducted in order to find any significant association between the levels of vitamin D and hypothyroidism and to determine whether vitamin D deficiency involves in the pathogenesis of hypothyroidism or rather a consequence of the disease and those that yielded conflicting results.

To our knowledge, there are some researchers examined the prevalence of vit D deficiency in Saudi populations but our study was one from few studies aimed to examine the association between Vit D and calcium levels with hypothyroidism in Saudi Arabia mainly Qassim region. We therefore undertook this study to evaluate the levels of vitamin D among

patients with hypothyroidism compared to healthy controls who did not complain from hypothyroidism or any thyroid diseases.

Our results revealed decreased serum 25 (OH) vit D levels in females than those of male controls and patients, otherwise this decrease was non-significant but we can refer this non-ignificant decrease to the small sample size of our study.

In concordance to our results, previous studies have observed that serum 25(OH)D levels did not differ significantly between males and females.^{22,23}

Moreover, Hashemipour et al²⁴ studied the prevalence of Vit D in Tehran and found non-significant differences between males and females without association between Vit D and sunlight exposure. In contrast to our results, Sedrani,²⁵ Al-Jurayyan et al,²⁶ Fida,²⁷ Naeem et al,²⁸ stated that vit D serum levels are significantly more decreased in females than males. Although several authors have reported higher serum levels of 25(OH)D in normal men than in normal women,²⁹⁻³⁰ data has not been available for patients with hypothyroidism. In Saudi Arabia, the prevalence of vitamin D deficiency was significantly lower in the elderly persons than in young students of both sexes, and was significantly higher in females than in males.³¹

However, a study from Japan including 200 euthyrotic patients with Graves' disease found vitamin D deficiency in 40% of women and around 20% of men ($p < 0.005$).³² The discrepancies between these studies can be explained by differences in the selection of patients, dietary vitamin D intake, exposure to sunlight, and seasonal variations.

Furthermore, the present study showed

that vitamin D level was significantly lower in hypothyroid patients compared to the controls. We recorded a significant positive association between Vitamin D levels in both groups.

Vit D and calcium serum levels had negative correlation when compared to TSH levels. These results suggested that there may be a significant association between vitamin D deficiency and hypothyroidism. Our results were in harmony with the previous studies that showed the prevalence of vitamin D insufficiency in Hashimoto's cases (92%) was significantly higher than that observed in healthy controls (63%, $p < 0.0001$).³³⁻³⁴

Byron Richards (2008)³⁵ studied the effect of Vitamin D deficiency on thyroid gland in experimental study, he reported that a lack of vitamin D contributed to the possibility of low thyroid hormones.

One of two mechanisms may explain the low levels of vitamin D in patients with hypothyroidism. First, the low levels of vitamin D may be due to poor absorption of vitamin D from the intestine. Second, the body may not activate vitamin D properly.¹² Other articles have demonstrated that patients with Graves's disease also have low levels of Vitamin D.³⁶ Importantly, both vitamin D and thyroid hormone bind to similar receptors called steroid hormone receptors. A different gene in the Vitamin D receptor was shown to predispose people to autoimmune thyroid disease including Graves' disease and Hashimoto's thyroiditis.¹²

Vitamin D inhibits the production of Th1 polarizing cytokine (IL-12), thereby indirectly shifting the polarization of T cells from a Th1 toward a Th2 phenotype. In the CD4+ T cell response, vitamin D directly inhibits the production of Th1 cytokines (IL2 and IFN-c), and enhances Th2 cytokine (IL-4) production.³⁷ In addition, recent numerous studies have shown the relation of vitamin D and various autoimmune diseases. Vitamin D receptor (VDR) gene polymorphisms and vitamin D status are associated with different autoimmune diseases.³⁸⁻³⁹ Furthermore, vitamin D supplementation prevented the onset and/or development of several kinds of autoimmune diseases in humans and animal models.³⁷ These results suggested that vitamin D deficiency might cause the onset and/or development of several

kinds of autoimmune diseases.

Recent studies have demonstrated a role of vitamin D in Graves Disease (GD). First, Vitamin D related gene polymorphisms such as VDR gene and vitamin D binding protein gene are associated with GD. Second, Vitamin D deficiency modulates Graves' hyperthyroidism induced by thyrotropin receptor immunization in BALB/c mice. Third, Vitamin D analog inhibits inflammatory responses in human thyroid cells and T cells.⁴⁰⁻⁴¹

On the other hand, study had been conducted in Netherlands showed that Vitamin D deficiency is not associated with early stages of thyroid autoimmunity.⁴²

We also observed a significant difference of vitamin-D levels between the studied groups with lower level seen in hypothyroid patients were it insignificantly decreased in females than male patients.

CONCLUSION

Our results indicated that patients with hypothyroidism suffered from hypovitaminosis D. Moreover, the positive significant correlation between serum vitamin D with thyroid hormones and that negative significant correlation with TSH levels, suggested that deficiency of serum vitamin D was significantly associated with degree and severity of the hypothyroidism which encourage the advisability of vitamin D supplementation. Screening for Vitamin D deficiency recommended for all hypothyroid patients.

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Comparison of WHO, CDC and IOTF Growth References in Relation to Overweight and Obesity in School Going Adolescents of Delhi, India

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ABSTRACT

Background and Objective: Obesity has become a serious public health problem. Accurate measurement of this health issue is crucial in defining its burden. Thus the objective of the study was to compare the body mass index (BMI) classification systems for World Health Organization (WHO), Centers for Disease Control and Prevention (CDC) and International Obesity Task Force (IOTF) prevalence estimation of overweight and obesity and in terms of level of agreement between the classification systems.

Method: In a cross sectional survey, 877 school going adolescents of age 12 to 15 years (mean = 13.04 years) were included in the study. Height and weight of subjects were measured to calculate the BMI. Subjects were classified as overweight and obese according to IOTF, CDC, and WHO criteria and Kappa statistics was used to calculate the level of agreement between the three classification systems.

Results: Prevalence estimates of combined overweight and obesity differed by system (males WHO = 33.16%, CDC=29.78%, IOTF=28.55%; females WHO = 33.54%, CDC=29.71%, IOTF = 29.39%). A substantial agreement was observed between CDC vs IOTF and WHO vs CDC (Kappa=0.82) and a moderate agreement between WHO vs IOTF (kappa=0.70).

Conclusion: IOTF is a frequently used system for BMI classification of children and adolescents in India but it reports the lowest combined prevalence in comparison to CDC and WHO. Although the agreement between CDC vs IOTF and WHO vs CDC is substantial but the system which is most suitable to a country like India is WHO, 2007 since the sample includes children from India among other countries.

Keywords : Adolescents, Body Mass Index (BMI), Obesity, Overweight, Growth reference

INTRODUCTION

With the changing time trend, focus of nutritionists have changed^[1] from malnutrition to a pandemic of obesity.^[2] Children and adolescent with overweight and obesity represents a burden at individual level and population level due to its associated co-morbidity.^[3] With an increasing awareness about obesity various

nutrition education programs and interventions have been formulated and implemented at school and family level.^[4] Interventions and programs are often designed and structured, based on results obtained from the studies done in past. Usually, overweight and obesity in children and adults is estimated by use of body mass index (BMI) (kg/m²)^[5] however; in children and adolescents where sex and age play an important role in body composition^[6], there is no clear agreement on which BMI classification to be used for diagnosing overweight and obesity. Internationally, three classification systems which are frequently used for assessment of overweight and obesity are

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those proposed by International Obesity Task Force (IOTF) ^[7], WHO for school-aged children (5 to 19 years old) ^[8] and CDC growth charts^[9] Previous studies have reported that prevalence of overweight and obesity in children and adolescents differ according to the classification systems used.^[10] This inconsistent prevalence estimates poses a challenge in defining the burden of obesity. In India there is a robust data on prevalence of overweight and obesity and majority of them have used one of these three international standards for analysis. Thus the aim of this paper is to compare the body mass index (BMI) classification systems for World Health Organization (WHO), Centers for Disease Control and Prevention (CDC) and International Obesity Task Force (IOTF) in terms of prevalence estimation of overweight and obesity and in terms of level of agreement between the classification systems

MATERIAL & METHOD

This cross-sectional study was conducted from July -September 2013 in private schools situated in different zones of Delhi. Selection of zone was done randomly; from the selected zones, four public co-ed schools were selected through purposive sampling. All the selected schools had nearly the same fee structure and same infrastructure facilities like availability of play ground and games teachers. From every selected school, six sections from class VIth to IXth (with student strength 40-50) were selected through application of computer generated random tables. By this way a total sample 900 adolescents were selected for the study. Sample size calculation is based on an ongoing study estimating the prevalence of Metabolic Syndrome among Delhi school going adolescents

Ethical clearances for the study were obtained from Lady Irwin College Institution Ethics committee. Written parental consent and written student assent was taken before enrolling the subjects. Any subjects with secondary cause of obesity, using corticosteroids or physically handicapped or from economical weaker section were excluded from the study. Data on general information was collected by using pre designed and pre tested self administered questionnaire. The emphasizes during pretesting was on content validity and face validity. Assessment of content validity was undertaken by an independent

panel comprising experts in nutrition, child development, paediatrics and school teachers who acted as expert judges to determine the relevance of the content of the tool. Either through email or by hand, copies were given to the experts to review the questionnaire in relation to (i) clarity; (ii) content in terms of appropriateness; (iii) cognitive complexity (i.e. 'How important is this question?'; 'Is the content appropriate?'; 'Is the phrasing clear?'; and 'Overall opinion of question'); and (iv) relevance and (v) level of writing in accordance to age. Responses were collated and were thoroughly discussed and desirable changes were made. Assessment of face validity of the amended questionnaire was undertaken by individual discussions with 16 subjects (adolescents) belonging to a private co-ed school of Delhi. These adolescents were selected on a purposive basis with care being taken to include a sample in age range of 12-15 yrs and to include both boys and girls. Subjects were asked to complete the questionnaire and were then interviewed regarding ease of completion and comprehension, with further probing if they appeared to have misunderstood any of the questions. Responses were collated and the questionnaire was amended.

Anthropometric measurements were taken by using standardised techniques. ^[11] Weight was measured using a digital scale. Scale was calibrated on daily basis and duplicate readings were taken for maintaining reliability and validity. Each student's weight was recorded to the nearest 0.1 kg. Height was measured using a microtoise and was recorded to the nearest 0.1 cm. For every subject duplicate readings of height were recorded. BMI was calculated for all participants, who then were classified as overweight, obese, or neither overweight nor obese according to the IOTF, CDC, and WHO cutoffs. IOTF cutoffs are an extrapolation of the adult BMI cutoff points for overweight (25 kg/m²) and obesity (30 kg/m²). ^[7] The CDC system defines overweight as a BMI above the 85th percentile of the reference population and obesity as a BMI above the 95th percentile. ^[9] The WHO system defines overweight and obesity as BMI > 1 SD and BMI > 2 SD respectively from the mean of the WHO reference population. ^[8]

Statistical Analysis : Data recorded on a predesigned Performa was entered in a Microsoft Access sheet. All the entries were double-checked

for any possible keyboard error. Descriptive statistics (mean, standard deviation) was computed for age and BMI. Pearson's correlation coefficients, student t test and kappa statistics was used to investigate the possible influence of age and gender on BMI using Stata / SE 13.1 package.

RESULTS

The study excluded 21 subjects due to incomplete data for age, weight and height; 2 subjects withdrew their participation during the course of study. Thus the final sample included was 877 adolescents, 567 (64.6%) boys and 310 (35.4%) girls. Male to female ratio was 1.8. Mean age of subjects was 13.04 ± 0.9 yrs. BMI was slight positively distributed with mean and median BMI of the subjects being 20.2 and 19.4 kg/m². No difference was seen in mean BMI of boys and girls at different ages ($p < 0.05$).

Prevalence of overweight and obesity was estimated by using WHO, CDC and IOTF criteria. WHO classification had the higher combined prevalence for overweight and for obesity as compared to the categories in CDC classification and IOTF classification. Prevalence of obesity among males was higher as compared to females as per WHO criteria (table I). Similar trend has been seen by CDC where as in IOTF, females were more obese as compared to males though the differences were not statistically significant. Though the combined prevalence of overweight and obesity was compared with age adjusted combined prevalence for males and females, but there were no statistical difference seen.

Similarly the prevalence for different age groups have also been calculated by WHO, CDC and IOTF criteria (table II). According to WHO classification system, combined prevalence at age of 13yrs, 14yrs and 15yrs was 34.68, 32.11 and 28.2 respectively but when adjusted for gender, prevalence changed to 33.37, 31.78, 30.2 respectively. Similarly in CDC, change in adjusted prevalence was seen at 15 yrs from 26.92 to 28.35. Whereas in case of IOTF, combined prevalence at age 13 yrs and 14 yrs was 30.24 and 29.81 but when adjusted for gender it changed to 28.80 and 30.93 respectively.

The agreement between three internationally frequently used classification systems has been calculated and is presented in Table III. A substantial

agreement was observed between CDC vs IOTF and WHO vs CDC (Kappa=0.82) and a moderate agreement between WHO vs IOTF (kappa=0.70).

DISCUSSION

Results have shown high prevalence of overweight and obesity among school going adolescents of private school in Delhi by the application of three criteria (IOTF standard, CDC growth charts and WHO reference standards). Based on these international criteria, overweight (14.7% to 18.81%) and obesity (10.03% to 18.59%) was reported in the present study. Similar results were reported in other recent studies done in different parts of India, majority of these studies have used one of the three international cut offs. One of the studies with 400 subjects from Bihar reported 20.5% of subjects (10-19 yrs) were overweight or obese based on WHO reference values.^[12] Based on CDC charts, prevalence of obesity and overweight was 2.04%, 14.5% respectively among 979 Sikkim subjects aged 10-19 yrs.^[13] Overweight/obesity based on WHO reference values was found to be 6.86% among girls in the age of 10-15 years in Salem district, Tamil Nadu.^[14] One of the studies reported 21.4% and 26.4% overweight/obesity based on National charts proposed by Khadilkar et al., 2012^[15] and IOTF charts.^[16] Prevalence of overweight was 10% and obesity was 5% based on IOTF criteria among 761 south Indian subjects (12-15 yrs).^[17] According to WHO reference values, overweight and obesity among 900 subjects (10-19 yrs) of Gujrat was 13.3% and 5.4% respectively.^[18] Short and long term physical health risks are associated with excess weight includes high Blood pressure, type II diabetes, hyperinsulinemia, early CVD glucose intolerance, and psychosocial difficulties.^[19] Accurate measurement and classification of obesity is important in determining the burden of this health issue^[20]

Common age group considered across three classification systems is 5 to 18 years have been developed with different objectives. WHO was developed using only NCHS 1977 with "non-obese sample with expected heights" to develop the growth charts.⁸ IOTF came into existence by the surveys conducted in six countries^[7] and CDC used five U.S. National Nutrition and Health Surveys conducted between 1963 and 1994 with intend of developing a reference for the U.S. population.^[9] The difference

in objectives and sources of reference population partially explains the difference in prevalence estimation. In the developing country like India there is no such a gold standard that has been developed yet for generalization but different studies conducted in India use one among the three internationally used references. WHO yielded highest combined prevalence of overweight and obesity followed by CDC and IOTF, similar finding has been seen in studies conducted in India, Canada, Colombia, Brazil, and Belgium ^[10,19-23]

In our study, a substantial agreement was observed between WHO and CDC (0.82) which is similar to study conducted in Canada (0.84). ^[20] Substantial agreement was also seen between CDC and IOTF(0.82). Similar findings were reported by Stigler et al (2011) when categories of weight were collapsed to reflect obese/overweight students vs normal weight/ underweight students. ^[10]

Moderate agreement was observed between WHO vs IOTF (kappa=0.70) and this result is similar to a study done in India where kappa was 0.69 and 0.71. ^[10, 19] Since, WHO has shown the highest combined prevalence of overweight and obesity because its reference population is intended to be a non obese sample, whereas CDC and IOTF includes more recent data wherein the BMI distribution of the reference populations had shifted toward the right because of the recent increase in child and adolescent BMI.

The major goals of assessing obesity at the population level are to identify the prevalence and the associated determinants so as to design suitable public health interventions for primary and primordial prevention. Thus, in order to take the field of obesity research and prevention ahead, it is essential to create the potential of the available BMI classification systems. However whatever classification system is used, it is essential to include age and sex as covariates due to their confounding nature and can contribute to the error introduced by the BMI classification systems.

In the meantime, studying associations of overweight and obesity in school going adolescents, we propose to consider the objectives and limitations of the three systems in order to select the most

suitable for each study population. IOTF was the first recommendation designed specifically to be used in international populations but it includes six countries survey from 1963 to 1993, and the extrapolation of the adult BMI cut off points facilitates the transition from assessing children's to adults' BMI. However, it has low sensitivity for diagnosing overweight and obesity in comparison with the other methods and does not provide month-specific cutoff points. ^[24] The CDC system is frequently used internationally; however, it was designed by means of only information from the United States with the objective of understanding obesity trends in that country. The WHO classification is the system designed by including data from before the obesity epidemic; therefore, it may be the most suitable for countries where the prevalence of obesity is still relatively low as compared to developed country and WHO reference allows for an earlier identification of larger number of subjects affected by excess weight compared to other classification systems. Thus makes WHO suitable for Indian population because obesity is rising and we need a system which can identify greater proportion of overweight and obese subjects. Our prevention strategy would also be more effective when identification is early.

No matter what classification system is used, it is clearly visible that obesity is present among adolescents. Thus the need of hour is initiatives by government and non government agencies to curb the burden of obesity and its associated problems. These initiative can be vigorous nutrition education program (diet and physical activity) in schools involving children, parent and school administration, more games periods in school so as to increase physical activity level, change in menu of canteen to healthy food so as to avoid the junk food and similar to tobacco law, there should be no hawkers or shops selling fast food in nearby areas of school.

STRENGTH

To the best of our knowledge, there is a lack of robust data for estimation of overweight and obesity among adolescents using World Health Organization (WHO), Centers for Disease Control and Prevention (CDC) and International Obesity Task Force (IOTF) body mass index (BMI) classification systems

LIMITATION OF STUDY

Table I. Prevalence of overweight and obesity by sex

| Gender | Weight category | | | Total | p value |
|--------------------|------------------------------|--------------------|--------------------|------------|---------|
| | Neither overweight nor obese | Overweight | Obese | | |
| WHO (2007) | N (%) | N (%) | N (%) | | |
| Male | 377 (66.84) | 79 (14.01) | 108 (19.15) | 564 | 0.669 |
| Female | 208 (66.45) | 50 (15.97) | 55 (17.57) | 313 | |
| Total | 585 (66.7) | 129 (14.71) | 163 (18.59) | 877 | |
| CDC (2000) | | | | | |
| Male | 396 (70.21) | 88 (15.6) | 80 (14.18) | 564 | 0.999 |
| Female | 220 (70.29) | 49 (15.65) | 44 (14.06) | 313 | |
| Total | 616 (70.24) | 137 (15.62) | 124 (14.14) | 877 | |
| IOTF (2000) | | | | | |
| Male | 403 (71.45) | 108 (19.15) | 53 (9.4) | 564 | 0.686 |
| Female | 221 (70.61) | 57 (18.21) | 35 (11.18) | 313 | |
| Total | 624 (71.15) | 165 (18.81) | 88 (10.03) | 877 | |

WHO: World Health Organisation, CDC: Centre for Disease Control and Prevention, IOTF: International Obesity Task Force

Table II: Age wise prevalence of overweight and obesity

| Age | Age (yrs) | | | |
|------------------------------|-------------|-------------|-------------|------------|
| WHO | 12 | 13 | 14 | 15 |
| Neither overweight nor obese | 219 (65.77) | 162 (65.32) | 148 (67.89) | 56 (71.79) |
| Overweight | 57 (17.12) | 36 (14.52) | 29 (13.3) | 7 (8.97) |
| Obese | 57 (17.12) | 50 (20.16) | 41 (18.81) | 15 (19.23) |
| Total | 333 | 248 | 218 | 78 |
| P value= 0.601 | | | | |
| CDC | 12 | 13 | 14 | 15 |
| Neither overweight nor obese | 232 (69.67) | 174 (70.16) | 153 (70.18) | 57 (73.08) |
| Overweight | 56 (16.82) | 37 (14.92) | 33 (15.14) | 11 (14.1) |
| Obese | 45 (13.51) | 37 (14.92) | 32 (14.68) | 10 (12.82) |
| Total | 333 | 248 | 218 | 78 |
| P value 0.987 | | | | |
| IOTF | 12 | 13 | 14 | 15 |
| Neither overweight nor obese | 243 (72.97) | 173 (69.76) | 153 (70.18) | 55 (70.51) |
| Overweight | 68 (20.42) | 47 (18.95) | 37 (16.97) | 13 (16.67) |
| Obese | 22 (6.61) | 28 (11.29) | 28 (12.84) | 10 (12.82) |
| Total | 333 | 248 | 218 | 78 |
| P value 0.245 | | | | |

WHO: World Health Organisation, CDC: Centre for Disease Control and Prevention, IOTF: International Obesity Task Force

Table III: Level of agreement between three international standards

| Weight Category | Neither overweight nor obese | Overweight | Obese | Total |
|---|------------------------------|------------|-------------|-------------|
| | N (%) | N (%) | N (%) | N (%) |
| WHO | | | | |
| IOTF | | | | |
| Neither overweight nor obese | | | | |
| Overweight | 579 (98.97) | 40 (31.01) | 5 (3.07) | 624 (71.15) |
| | 5 (0.85) | 88 (68.22) | 72 (44.17) | 165 (18.81) |
| Obese | 1 (0.17) | 1 (0.78) | 86 (52.76) | 88 (10.03) |
| Total | 585 | 129 | 163 | 877 |
| Agreement=85.86% , Kappa=0.705 , p value<0.001 | | | | |
| WHO | | | | |
| CDC | | | | |
| Neither overweight nor obese | 583 (99.66) | 31 (24.03) | 2 (1.23) | 616 (70.24) |
| Overweight | 1 (0.17) | 98 (75.97) | 38 (23.31) | 137 (15.62) |
| Obese | 1 (0.17) | 0 (0) | 123 (75.46) | 124 (14.14) |
| Total | 585 | 129 | 163 | 877 |
| Agreement=91.68% , Kappa=0.827 , p value<0.001 | | | | |
| CDC | | | | |
| IOTF | | | | |
| Neither overweight nor obese | 604 (98.05) | 19 (13.87) | 1 (0.81) | 624 (71.15) |
| Overweight | 11 (1.79) | 117 (85.4) | 37 (29.84) | 165 (18.81) |
| Obese | 1 (0.16) | 1 (0.73) | 86 (69.35) | 88 (10.03) |
| Total | 616 | 137 | 124 | 877 |
| Agreement= 92.02% , Kappa=0.825 , p value<0.001 | | | | |

WHO: World Health Organisation, CDC: Centre for Disease Control and Prevention, IOTF: International Obesity Task Force

Larger sample size could have provided more vital information, due to resource constraints that could not be achieved. Body fat estimation could have been included in the study to know which BMI classification system adequately reflects the

percentage of fat .Details on socio economic status could have been added, since in this study school fees was taken as proxy indicator of socio economic status of school children.

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Study of Dexamethasone-Cyclophosphamide Pulse Therapy in Systemic Lupus Erythematosus in a Tertiary Care Center in Chhattisgarh

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ABSTRACT

Background and Aims: Treatment of collagen vascular diseases like systemic sclerosis, dermatomyositis, systemic lupus erythematosus (SLE) has been generally discouraging. Methyl-prednisolone pulse therapy has been used for various connective tissue disorders since long. The success of dexamethasone-cyclophosphamide pulse (DCP) therapy in pemphigus has prompted many a dermatologist to try it in other autoimmune diseases. We used intravenous dexamethasone cyclophosphamide pulse therapy to treat SLE.

Materials and Method: Eleven patients (9 females and 2 males) of SLE between the ages of 20-48 years with classical clinical criteria laid by American Rheumatism Association criteria were treated by Dexamethasone-Cyclophosphamide pulse (DCP) therapy at our center for six to nine pulses.

Results: The treatment resulted overall 75% improvement in SLE. In most of the patients, there was complete clinical remission with DCP therapy leading a better quality of life after 4 pulses. The side effects commonly observed with conventional daily dose regimen of corticosteroids were virtually absent, rather bacterial and candidal infections of the skin and oral mucosa were found due to continuous immune suppression in most cases.

Conclusions: We conclude that DCP is relatively safe and effective as compared to methylprednisolone pulse and side effects are also less compared to daily regimen of steroids. Majority of patients had good response after 3-4 pulses to allow them a normal life style.

We also observed that patients who reported early and put on pulse early responded better.

Keywords: *Systemic lupus erythematosus, Dexamethasone-cyclophosphamide pulse therapy, DCP therapy*

INTRODUCTION

Since time immemorial, treatment of collagen vascular diseases has been difficult with varied clinical response. Systemic lupus erythematosus (SLE) is a systemic disease characterized by the association of immunological abnormalities with

pathological changes affecting a number of organ systems.^[1] A range of auto- antibodies including disease specific (anti-ds DNA and anti-Sm) antibodies are found in SLE.^[2] Therapy in SLE has been generally discouraging. Monumental success of dexamethasone-cyclophosphamide pulse (DCP) in autoimmune bullous diseases has encouraged many dermatologists to use DCP in various collagen vascular diseases and other autoimmune diseases, e.g., Reiter's disease, generalized lichen planus, alopecia subtotalis, etc.^[4] Pasricha has reported success with pulse therapy in certain disorders like pemphigus, Reiter's disease and pyoderma

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gangrenosum.^[4] Dhabhai *et al.*^[1] in an Indian study reported significant improvement in systemic lupus erythematosus (SLE) patients after three to four pulses. Our aim was to evaluate the efficacy of DCP in SLE in Indian patients and thus treated an additional 11 cases of SLE with the same regimen.

METHOD

This study was undertaken in the Department of Skin & V.D. and Medicine of a tertiary center in Chhattisgarh between January 2012 and December 2014. Eleven patients (9 females and 2 males) between the ages of 20-50 years of SLE, satisfying

the diagnostic criteria laid by American Rheumatism Association were enrolled in the study after screening for clinical and hematologic parameters (table 1). Detailed history was taken for each of the patients. Patients with history of diabetes, hypertension, and altered renal parameters were not enrolled in the study. Complete hemogram, blood sugar, liver and renal function tests, serum electrolytes, routine urinalysis, blood urea, serum creatinine, ECG and chest x-ray were done in all patients. Antinuclear antibody (ANA) test and specific investigations like anti-ds DNA antibody, Anti-Sm antibody and RA factor tests were performed in all the patients. Written consent was taken from each patient.

Table 1: Clinical features of the SLE cases

| Sl.no. | Sex | Age | Fever | Joint pain | Photosensitivity Including malar rash | Discoid rash | Oral ulcer | Alopecia |
|--------|-----|-----|-------|------------|---------------------------------------|--------------|------------|----------|
| 1 | F | 22 | + | + | + | + | | + |
| 2 | F | 22 | + | | + | + | + | |
| 3 | F | 28 | + | | + | | + | + |
| 4 | F | 30 | + | + | + | | | + |
| 5 | F | 32 | | + | + | | + | + |
| 6 | F | 34 | + | | + | + | | |
| 7 | F | 41 | + | + | + | | + | + |
| 8 | F | 44 | | + | + | + | | + |
| 9 | F | 48 | + | + | + | | + | |
| 10 | M | 34 | + | | + | + | + | + |
| 11 | M | 38 | + | + | + | + | | + |

Patients were treated with DCP, which includes injection dexamethasone 100 mg dissolved in 500 ml of 5% dextrose by slow intravenous infusion over a period of 2-3 hours for 3 consecutive days once in a month. On the 2nd day, 500 mg of injection cyclophosphamide was added to 5% dextrose. Pulse was repeated every 28 days and a total of six to nine pulses were given in each patient. In addition, oral cyclophosphamide 50 mg and hydroxychloroquine 200 mg daily was given between the courses of intermittent high dose therapy. In 3 cases (who were unmarried) we gave only pulse dexamethasone 100 mg in 500 ml of 5% dextrose once in a month and daily dose of hydroxychloroquine 200 mg. Patients were evaluated every 4th week according to clinical features recorded at the starting of the therapy. Routine follow up to assess the response and complication of therapy was done with recording

of blood pressure, history of epigastric pain, weight gain, striae atrophicans, hair loss, menstruation, urinary symptoms and eye examination for cataract. Relevant investigations were also performed during the follow-up period.

RESULTS

Pulse therapy was divided into four phases in which the first phase lasted up to remission of the disease process (clinical or laboratory), and the second phase was for a period of 6 months after disease remission. In the third phase only 50 mg oral cyclophosphamide was given for one year, and follow up was done after that without any treatment in the fourth phase.

There were 9 female and only 2 male patients. The oldest patient was of 48 years who had disease for

the last 8-10. While 3 female patients had amenorrhea, another 3 suffered from irregular menstruation as a part of the disease process. Photosensitivity (100%) was the most common clinical feature of SLE followed by malar rash (93%), hair loss (72%) and discoid rashes (54.5%). Fever and joint pains were present in 80%, oral ulcer in 45%, nephritis in 21.4%, and amenorrhea in 27% patients.

Response was started after the first pulse in almost all the patients. Many of the patients showed significant improvement after three to four pulses (table 2). Six out of 11 patients had complete clinical recovery and are being followed up. The average duration of follow up was 12 months, maximum duration of follow up being two years. Three patients are in phase III, as they are in remission while 2 are still receiving treatment in Phase I.

Table 2: Clinical improvement after 4 DCP therapy

| Parameter | No. patients | No. patients showing improvement | Percentage |
|------------------|--------------|----------------------------------|------------|
| Fever | 9 | 9 | 100% |
| Photosensitivity | 11 | 8 | 71.4% |
| Discoid rash | 6 | 3 | 50% |
| Joint pain | 7 | 5 | 71.4% |
| Oral ulceration | 6 | 4 | 66.6% |
| Alopecia | 9 | 4 | 44.4% |
| Albuminuria | 6 | 5 | 83.3% |

Fever was earliest to resolve in most of the cases after one pulse, oral ulceration cleared after 1-3 pulses. Photosensitivity and malar rash showed remarkable improvement after 2-4 pulses in most cases but discoid rashes were difficult to treat as they took 6-8 pulses to resolve. Three females who had amenorrhea secondary to disease process started menstruating after 6 pulses. In one patient who had lupus panniculitis, size of lesion and pain reduced up to 50% only after 1st pulse. Patients with diffuse alopecia took 3-6 pulses for regaining a good growth of hair. Anti-ds DNA estimation showed good correlation with disease activity but not in all cases. Anti-ds DNA titer became negative/normal after seven pulses in 7 cases.

The side effects usually associated with prolonged treatment of corticosteroids were virtually absent. Weight gain, diabetes, hypertension, striae, peptic ulcer, osteoporosis, cataract and hair loss were not seen. One of our patients was known hypertensive and he received the pulse treatment along with antihypertensive drugs without any complication.

Bacterial and candidal infections of the skin and oral mucosa were the common side effects probably due to continuous immune suppression in almost all patients requiring frequent courses of antibiotics and systemic antifungals. Pasricha *et.al*^[5] also observed such complications.

In a study by McDermott *et.al*^[2] the incidence of premenopausal ovarian failure was 54% and the incidence of premature menopause (occurring before 40 year of age) 41% after treatment with cyclophosphamide pulse therapy.

DISCUSSION

Many studies are done in India and abroad to assess the efficacy and safety of pulse therapy in various dermatological disorders like pemphigus vulgaris,^[6] systemic sclerosis,^[3] SLE,^[1] infantile pyoderma gangrenosum,^[7] and myositis^[8]. Now dexamethasone- cyclophosphamide pulse therapy (DCP) is an accepted modality of treatment in many dermatologic and non-dermatologic diseases. Side effects like obesity, peptic ulceration, osteoporosis are much less compared to conventional daily dose steroid therapy. The only absolute contraindications are pregnancy and lactation. Relative contraindications are severe hypertension, stroke, myocardial infarction, peptic perforation, etc. However, further studies and a long term follow up is required for its assessment to become the most preferred therapy in dermatological disorders. It was possible to induce a complete clinical remission with DCP therapy in most of our patients. Almost all patients had good response after 4-6 pulses to lead a near-normal life style. Fever, malar rash and oral ulceration responded early but photosensitivity, discoid rash, alopecia and joint pains took some more time. Anti-ds DNA estimation has strong correlation with the disease activity; hence in every case of SLE it should be estimated periodically. The chief side effect observed was increased susceptibility to pyogenic and candidal infections of the skin and oral mucosa due to

the immunosuppression induced by corticosteroids. This requires frequent administration of systemic antibiotics and oral antifungals during DCP therapy.

The duration of clinical activity after starting this regimen (phase I) had strong correlation with the time period between onsets of disease activity and initiation of therapy. Patients who reported early had a better response. Patients should be educated well about severity of their disease and the compulsion to follow the treatment schedule strictly.

Therefore, we conclude the following about DCP regime:

- safe and effective new weapon to treat collagen vascular diseases;
- patient compliance was good;
- safer than conventional steroid regime;
- no significant long-term side effect.

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Conflict of Interest : Nil

Funding : Nil

Ethical Clearance : Institutional ethics clearance was obtained before the start of study.

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Helminthiasis and Anemia among School Children

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ABSTRACT

Background: Intestinal parasitic infections are still a serious public health problem in the world, particularly in developing countries. These infections are the result of interrelated social, economic, cultural, historical and political factors. Control strategies involving improved drinking water supplies, excreta disposal, sewage management, sanitation and education have been related with reduced prevalence of intestinal parasitism. Recently, concurrent programmes of nutrition, immunization, family planning and deworming have been shown to effectively promote health by influencing the knowledge, perceptions, and behaviour of mothers towards intestinal parasitic infections in countries like Thailand, Guatemala, Uganda and Egypt. In Vietnam a nationwide estimation on round worm infection is about 60 million people, whipworm is approximately 40 million and hookworm infection is also about 40 million.

Objectives: 1. To estimate the prevalence of Helminthic infestation among school children

2. To estimate the prevalence of anemia among school children

3. To find out the association between helminthic infestation and anemia among school children.

Materials and method: 353 students studying in upper primary schools were selected for the study by multistage cluster sampling. Their haemoglobin level and microscopic examination of stool for helminthes were done.

Results: In the present study 44.2% of children had helminthes infestation and 45.6% of children were anemic. Statistically significant association was found between helminthic infestation and anemia.

Conclusion: School is important for cognitive, creative and social development of the child. It is advisable to deworm children regularly as prevention is better than cure.

Keywords: *Helminthic infestation, Anemia, school children.*

INTRODUCTION

Helminthic infestation and anemia are common in children. The World Health Organization estimates that more than one billion of the world's population is chronically infected with soil helminthes and 200 million are infected with schistosomes. The high prevalence of these infections is closely co-related with poverty and poor environmental hygiene. Intestinal helminth infestations are the most common infestations among school age children and they tend to occur in high intensity in this age group. Also

helminthic infestations lead to nutritional deficiency and impaired physical development, which will have negative consequences on cognitive function and learning ability.¹

Worm infestation is one of the major causes of childhood malnutrition, anemia stunted physical and mental growth. It also causes recurrent gastrointestinal and respiratory tract infections contributing to high morbidity and mortality in children. Despite of improved socio-economic conditions and elevated living conditions, surprisingly it is still a public health problem, even in developed countries like

United States. The reason for being a global public health problem is that helminthic infestation have largely been over looked by clinicians, because although worms can cause severe clinical problems, patients rarely report at health centre due its slow progress of the signs and symptoms. Helminthic infestation is more prevalent among school children aged 5-14 years. They constitute 12% of total disease burden in children. The hook worm infestation is a leading cause of iron deficiency anemia. Whipworm infestation in children causes growth retardation and anemia. Heavy infestation with both roundworm and whip worm causes protein energy malnutrition.²

About half of the population in South India and 50% of school children in tribal areas of Central India are infected with *Ascaris Lumbricoides*, *Trichuris trichuria* and Hook worm. The overall prevalence of helminthic infestation in school age children in India is about 50% in urban and 68% in rural areas. Helminthic infestations are more prevalent among school age children.¹¹

OBJECTIVES

1. To estimate the prevalence of Helminthic infestation among school children
2. To estimate the prevalence of anemia among school children
3. To find out the association between helminthic infestation and anemia among school children.

METHODOLOGY

Research approach: Descriptive

Research design: Cross sectional

Setting: Upper primary schools of Neyyattinkara Taluk

Sample size: 353

Sample: Children studying in upper primary standards of Neyyattinkara and Parasala Educational sub districts.

Sampling technique: Multistage cluster sampling

Exclusion criteria: Students who were not obtained consent from their parents.

Students who were not willing to participate in the study.

Tools and Technique: Structural interview schedule, microscope and Sahalis haemoglobinometer were the tools and interviewing and observation were the techniques used

Hypothesis: There is statistically significant association between helminthic infestation and anemia among school children.

Ethical Consideration: Ethical clearance was obtained from Institutional Ethics Committee of Govt. Medical College, Thiruvananthapuram.

Data Collection process:

Data collection started after getting permission from all authorities. Permission was obtained from DPI Thiruvananthapuram, AEO Parasala, AEO Neyyattinkara, Headmaster / Headmistress of the concerned schools, Research Committee, Medical College, Thiruvananthapuram, Human Ethics Committee of Medical College, Thiruvananthapuram, District Medical Officer, Thiruvananthapuram and Medical Officers of concerned PHCS of the school. Two days before data collection the investigator visited the school, consent form were given to children to obtain consent from their parents on the next day. On the next day sterilized bottles were given to 30 students those who brought consent from the parents for collecting the specimen. Daily nearly 30 samples collected. The investigator interacted with the students and explained to them how to collect and when to collect the specimen and how to transport the specimen to school. On the next day specimens were collected from the school and send to concerned PHC's in the morning itself by the investigator. After that data were collected by using the structured interview schedule. In the afternoon Hb estimation of the student who had given the stool specimen was done at the school by the lab technician of the concerned primary health centre.

RESULT

Table 1. Distribution of students according to age, sex, religion, place of residence and income of family

| | | Frequency | Percentage |
|--------------------------|-----------------|------------|--------------|
| Age in years | 9 | 83 | 23.5 |
| | 10 | 115 | 32.6 |
| | 11 | 155 | 43.9 |
| | Total | 353 | 100.0 |
| Sex | Male | 149 | 42.21 |
| | Female | 204 | 57.79 |
| | Total | 353 | 100.0 |
| Religion | Hindu | 163 | 46.2 |
| | Muslim | 25 | 7.1 |
| | Christian | 165 | 46.7 |
| | Total | 353 | 100.0 |
| Place of Residence | Costal | 78 | 22.1 |
| | Rural | 275 | 77.9 |
| | Total | 353 | 100 |
| Monthly Income of Family | Above Rs. 15000 | 63 | 17.8 |
| | Rs. 10000-15000 | 20 | 5.7 |
| | Rs.5000-10000 | 41 | 11.6 |
| | Below Rs.5000 | 229 | 64.9 |
| | Total | 353 | 100.0 |

The above table shows that majority of students (43.9%) completed 11 years, 32.6% completed 10 years and 23.5% completed 9 years. Majority of students in the study were females (57.79%). The study group consisted of students from Hindu, Muslim and Christian religion, 46.2% Hindus, Muslims 7.1% and Christians 46.7%. In the present study 22.10% of students were from coastal area and 77.90% from rural area. Majority of the students (64.9%) had family income of below Rs.5000 per month.

Table 2: Distribution of students based on presence of helminthes

| Group | Frequency | Prevalence in the study group |
|----------|-----------|-------------------------------|
| Total | 353 | 44.2 |
| Boys | 149 | 39.6 |
| Girls | 204 | 47.5 |
| 9 years | 83 | 45.8 |
| 10 years | 115 | 47 |
| 11 years | 155 | 41.3 |
| Coastal | 78 | 69.2 |
| Rural | 275 | 37.1 |

The above table reveals that prevalence of helminthic infestation in the study group was 42.2%.

Table 3: Distribution of students based on the types of Helminthes present in the stool

| Type of worm | Frequency | Percentage |
|--------------------------|------------|-------------|
| Round worm | 106 | 68% |
| Whip worm | 19 | 12.2% |
| Round worm and Whip worm | 23 | 14.7% |
| Round worm and pin worm | 7 | 4.5% |
| Whip worm and pin worm | 1 | 0.6% |
| Total | 156 | 100% |

The above table shows that majority of children were infected with round worm

Table 4: Distribution of students based on their haemoglobin status

| Haemoglobin status | Frequency | Percentage |
|----------------------------|------------|------------|
| Moderate Anemia (7-9 gm %) | 7 | 2 |
| Mild Anemia (9-11 gm %) | 154 | 43.6 |
| Non anemic (above 11 gm %) | 192 | 54.4 |
| Total | 353 | 100 |

Table 4 depicts that 54.4% of children were not anemic, 43.6% had mild anemia and 2% had moderate anemia. Totally 45.6% children are anemic.

Table 5. Association between prevalence of helminthic infestation and Anemia

| Anemia Status | Presence of helminthes | | | | Total | |
|-----------------|------------------------|------------|------------|------------|------------|------------|
| | Present | | Absent | | | |
| | Frequency | Percentage | Frequency | Percentage | Frequency | Percentage |
| Moderate anemia | 7 | 4.5 | 0 | 0 | 7 | 2.0 |
| Mild Anemia | 82 | 52.6 | 72 | 36.5 | 154 | 43.6 |
| Non anemic | 67 | 42.9 | 125 | 63.5 | 192 | 54.4 |
| Total | 156 | 100 | 197 | 100 | 353 | 100 |

Chi-square = 14.8, P = 0.000

For calculating the value of chi square, the categories of mild and moderate anemia were merged. Table 5 shows that that a significant association exists between presence of helminthes and anemia. The occurrence of anemia is more among those with helminthes than among without helminthes.

DISCUSSION

The first objective of the study was to estimate the prevalence of helminthic infestation among school children and in the present study stool examination of 353 students by saline smear test was done and it was found that 44.2% of children had helmenthiasis. The second objective was to find out the prevalence of anemia among school children. Haemoglobin estimation was done by using Sahalis haemoglobinometer and found that 45.6% children were anemic. The third objective of the study was

to find out the association between Helminthias and anemia. The findings of the study reveals that there was statically significant association exist between presence of helminthes and anemia. So the hypothesis was accepted. The present study also reveals that the prevalence of helminthic infestation was high in coastal area (69.2%) whereas in rural areas it is only 31.1%. The findings of the present study were supported by the study conducted in Madhya Pradesh⁸, Kashmir⁹ and Kerala¹⁰.

CONCLUSION

Helminthic infestation is a health problem faced by school children and a strong association exists between helminthic infestation and anemia. It is time to take collective action to deal with this silent calamity among our children to ensure that they grow up healthy both physically and mentally.

RECOMMENDATIONS

- Helminthic infestation should be included in the curriculum even from the primary classes.

- In every school there should be a school health nurse and she should give health education to children frequently regarding prevention of helminthic infestation.

- Deworming programme should be implemented through school health programme by the PHCS.

- There should be provision for safe drinking water, adequate toilet facilities and adequate hand washing facilities in school and home.

- Hygiene of food handlers in hotels should be supervised and they should also be dewormed regularly.

- The entire family members should be dewormed at the same time to reduce the risk of re-infection by untreated members.

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Conflict of Interest - Nil

Source of Support - Nil

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Profile of Neonatal Septicaemia in a Tertiary Care Hospital of South India –a Retrospective Study

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ABSTRACT

Diagnosis of neonatal sepsis remains challenging till today. Initial signs of neonatal sepsis are nonspecific. Diagnostic standard for sepsis is blood culture. In order to decrease the widespread, prolonged use of unnecessary antibiotics and improve the outcome of the infants with sepsis, reliable identification of sepsis at an earlier stage is paramount. In view of the limited data on microbial and epidemiology, clinical intervention is individualized by the physician discretion.

This study was done to review the clinical, microbial and antimicrobial pattern of neonatal sepsis in the Tertiary care hospital of South India.

Method: Data of 143 cases of neonates with suspected septicaemia were retrospectively analyzed. All data were collected from neonatal unit and microbiology laboratory of the hospital. Bacterial spectrum, perinatal risk factors, antimicrobial susceptibility pattern of antimicrobial drugs were recorded.

Results: Out of 143 cases, early onset sepsis occurred in 128 (90%) and late onset sepsis in 15 (10%) neonates. Neonatal septicaemia was observed in 17 (80.9%) mothers with clinical disease, 16 (48.4%) cases with premature delivery, 05 (23.8%) with perinatal asphyxia, 03 (6.97%) with LBW, 02 (20%) with PROM & 02 (13.3%) with fever. Culture proven sepsis was seen in 45 (31%) cases. Predominant bacteria isolated was *Klebsiella pneumoniae* 13 (33%) and Coagulase Negative *Staphylococcus* (CONS) 8 (18%). 92% *Klebsiella pneumoniae* was sensitive to Amikacin, 61.5% to Ciprofloxacin. 83% of *Acinetobacter* spp was sensitive to Netilmicin, 67% to Gentamicin. 73% of CONS was sensitive to Piperacillin+Tazobactam and Linezolid. 100% *Enterococcus* were sensitive to Amoxycylav and Linezolid.

Conclusion: Emphasis on screening and recording perinatal risk factors, as well as strengthened surveillance on neonatal sepsis could help to obtain information about their etiological pathogens and for empirical therapy and to act rapidly in case of major changes in susceptibility patterns, thus improving the accuracy of early diagnosis neonatal sepsis in the hospital.

Keywords: Neonatal sepsis, risk factors, bacterial isolates, antibiotic resistance, surveillance

INTRODUCTION

According to World Health Organisation (WHO) estimates, there are about 5 million neonatal deaths a year, 98% occurring in developing countries.¹ Some of the factors that lead to perinatal and neonatal

deaths result from inadequate care of mother and babies, while other factors, such as women's status and nutrition are deeply rooted in the cultural fabric of societies.² Bacterial infections bacteremia/sepsis, pneumonia, and meningitis are responsible for a quarter of neonatal deaths. Newborns can acquire infections during birth in particular Group B streptococcus that are present in their mother's reproductive tract and that may or may not cause disease in the mother. Maternal bacteremia is another

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source of bacterial transmission from mother to fetus. Other risk factors for neonatal infection include pre-labor rupture of the membranes (PROM) of the amniotic sac, preterm PROM, and prolonged rupture of membranes.³ The pathogens most often implicated in neonatal sepsis in developing countries differ from those seen in developed countries. Overall, Gram negative organisms are more common and are mainly represented by Klebsiella, Escherichia coli, Pseudomonas, and Salmonella and among Gram positive organisms Staphylococcus aureus, CONS, Streptococcus pneumonia and Streptococcus pyogenes. It is generally assumed that neonatal mortality in developing countries is under-reported by at least 20%.⁴ Antibiotic resistance is now a global problem. Reports of multiresistant bacteria causing neonatal sepsis in developing countries are increasing, particularly in intensive care unit.⁵ The spectrum of organisms that causes neonatal sepsis changes over times and varies from region to region. This is due to the changing pattern of antibiotic use and changes in lifestyle.⁶

Periodic surveillance of organisms responsible for neonatal sepsis is essential for the appropriate management of neonates. Therefore, this study was undertaken to determine the profile and antibiotic susceptibility patterns of isolates from blood cultures of neonates in a tertiary care hospital in Bijapur, South India.

MATERIALS & METHOD

Our study is based on a retrospective analysis of all the suspected cases of sepsis admitted to the neonatal intensive care unit (NICU) of our tertiary care hospital and to analyse the clinical and microbial pattern and antimicrobial susceptibility pattern of organisms isolated. Results of blood culture for all neonates within the study period were retrieved from the microbiology laboratory.. Information retrieved from the registers of the microbiology laboratory and neonatal intensive unit included age at onset of symptoms, gender, gestational age at birth, birth weight, organisms isolated in blood culture if any, antibiotic sensitivity pattern of isolated organisms. The results were categorized into early onset and late onset sepsis.⁷

Data analysis: Data was collected and presented as means and percentages in tabular form. The significance among percentages was calculated with the Chi-square test using Epi-Calc statistical package with a p value of < 0.05 considered statistically significant.

During the study , 143 babies admitted into the intensive unit had blood culture tests done. There were 83(58%) males and 60(42%) females with a male to female ratio of 1.56:1. The age at the time of blood culture sample collection ranged from 30 minutes to 28 days .

RESULTS

45 (31%) of the 143 neonates were blood culture-positive. Out of 143 cases studied, 36(80%) neonates were < 1week(early onset) & 9(20%) were > 1week of age(late onset).

Distribution of organisms: Of the bacterial isolates the most frequent bacteria isolated was Klebsiella pneumoniae 13(29%) followed by CONS 11(24%) (Table 1).

Table 1: Distribution of organisms

| Organism | Number | Percentage |
|--------------------------|-----------|------------|
| Klebsiella pneumoniae | 13 | 29 |
| Escherichia coli | 1 | 2 |
| Acinetobacter spp | 6 | 13 |
| Gram negative fermenters | 5 | 11 |
| CONS | 11 | 24 |
| Enterococcus spp | 4 | 9 |
| Streptococcus spp | 2 | 4 |
| Candida non albicans | 3 | 7 |
| Total | 45 | 100 |

In early onset sepsis (age < 1week), the most common isolate was Klebsiella pneumoniae 12 (33%) and CONS (22%). In late onset sepsis (age>1week) the common isolate was CONS (33%)and Enterococcus species (22%) (table 2).

Table 2. Distribution of organisms by age of onset

| Organisms | < 1 week | % | >1 week | % |
|--------------------------|----------|-----|---------|----|
| Klebsiella pneumoniae | 12 | 33 | 1 | 11 |
| Escherichia coli | 1 | 8 | 0 | 0 |
| Acinetobacter spp | 5 | 14 | 1 | 11 |
| Gram negative fermenters | 5 | 14 | 0 | 0 |
| CONS | 8 | 22 | 3 | 33 |
| Enterococcus spp | 2 | 5.5 | 2 | 22 |
| Streptococcus spp | 1 | 8 | 1 | 11 |
| Candida non albicans | 2 | 5.5 | 1 | 11 |
| | 36 | | 9 | |

Spp - species

Risk factors for neonatal sepsis:

The factors which carried a significant risk for development of neonatal sepsis were mothers with clinical disease 17(81%) cases, premature delivery 16 (48.4%) cases, perinatal asphyxia 05 (23.8%) , low birth weight 03 (7%) cases, and premature rupture of membrane (PROM) 02 (20%) cases.

Table 4: Antibiotic sensitivity pattern of the Gram negative bacterial isolates

| Antibiotics | E coli(n=1) | K pneumonia (n=13) | Acinetobacter spp (n=6) | Gram negative Non Fermenters (n=5) |
|--------------------------|-------------|--------------------|-------------------------|------------------------------------|
| Ampicillin | 0 | 0 | 0 | 1(20%) |
| Amoxycylav | 1 (100%) | 0 | 1 (17%) | 3(60%) |
| Cefuroxime | 0 | 1 (7%) | 0 | 1(20%) |
| Gentamicin | 0 | 2(15%) | 4(67%) | 4(80%) |
| Co trimoxazole | 0 | 4(31%) | 2(33%) | 3(60%) |
| Ciprofloxacin | 0 | 8(61.5%) | 2(33%) | 3(60%) |
| Amikacin | 1(100%) | 12(92%) | 2(33%) | 4(80%) |
| Ofloxacin | 0 | 7(54%) | 2(33%) | 5(100%) |
| Netilmicin | 0 | 4(31%) | 5(83%) | 4(80%) |
| Cefoperazone+ sulbactum | 1(100%) | 0 | 0 | 0 |
| Piperacillin+ tazobactum | 1(100%) | 0 | 0 | 0 |

Table 3: Significance of risk factors for neonatal sepsis

| Risk factors | Total number | Number of sepsis cases | Chisquare test |
|--------------------|--------------|------------------------|----------------|
| PROM | 10 | 2 (20%) | 0.0044 (S) |
| Fever | 15 | 2 (20%) | 0.1981 (NS) |
| Perinatal asphyxia | 21 | 5 (23.8%) | 0.0014 (S) |
| Premature delivery | 33 | 16 (48.4%) | 0.0001 (S) |
| LBW | 43 | 03 (7%) | 0.0299 (S) |
| Clinical disease | 21 | 17 (81%) | 0.0001 (S) |
| | 143 | 45 | |

S- significant

NS – not significant

Antibiotic sensitivity pattern of bacterial isolates:

100% of Escherichia coli was sensitive to Amoxycylav, Amikacin, Cefoperazone+Sulbactum and Piperacillin+Tazobactum .

92% Klebsiella pneumoniae was sensitive to Amikacin, 61.5% to Ciprofloxacin. 83% of Acinetobacter spp was sensitive to Netilmicin, 67% to Gentamicin. 100% of Gram negative non fermenters were sensitive to Ofloxacin, 80% to Netilmicin, Gentamicin, and Amikacin(Table 4). 73% of CONS was sensitive to Piperacillin+Tazobactum and Linezolid.100% Enterococcus were sensitive to Amoxycylav and Linezolid (Table 5).

Table 5: Antibiotic sensitivity pattern of the Gram positive bacterial isolates

| Antibiotics | CONS(n=11) | Enterococcus spp(n=4) | Streptococcus spp(n=2) |
|--------------------------|------------|-----------------------|------------------------|
| Penicillin | 1 (9%) | 2 (50%) | 0 |
| Erythromycin | 4(36%) | 2 (50%) | 0 |
| Cephalexin | 1(9%) | 2 (50%) | 0 |
| Cloxacillin | 0 | 0 | 0 |
| Pefloxacin | 1(9%) | 2 (50%) | 2 (100%) |
| Piperacillin+ tazobactam | 8(73%) | 2 (50%) | 2 (100%) |
| Cefoperazone + sulbactam | 4(36%) | 2 (50%) | 2 (100%) |
| Gentamicin | 4(36%) | 2 (50%) | 2 (100%) |
| Ciprofloxacin | 4(36%) | 2 (50%) | 2 (100%) |
| Amoxyclav | 2 (18%) | 4(100%) | 2 (100%) |
| Cefuroxime | 1(9%) | 2 (50%) | 0 |
| Azithromycin | 3 (27%) | 2 (50%) | 0 |
| Linezolid | 8(73%) | 4(100%) | 0 |

DISCUSSION

Blood culture is the gold standard for the confirmation of sepsis. In our study culture positivity rate was 31% which was similar to Shah AJ et al⁸ (31.75%), and Bhattacharjee et al⁹ (32%). Shaw CK et al¹⁰ showed 54.64%. Thus culture positivity rate is highly variable from region to region. In the present study there was a significant association between premature delivery, clinical disease in mother, low birth weight, perinatal asphyxia and premature rupture of membranes with neonatal sepsis. This was similar to Chacko et al¹¹, and Tallur et al¹². In our study, early onset sepsis was observed in 36 (80%) cases. Other studies showed, 73% by Movahedian et al¹³, 64.7% by Aletayed et al¹⁴, and 53.3% by Vinodkumar et al.¹⁵ This difference probably reflects variations in population characteristics & in predisposing factors. In our study Gram negative bacilli constituted the major group of isolates. *Klebsiella pneumoniae* 13(29%) was the predominant, followed by *Acinetobacter* species 6 (13%) & Gram negative non fermenters 5 (11%). Among Gram positive isolates, CONS 11 (24%) was the commonest followed by *Enterococcus* 4 (9%). This was similar to Bhat SK et al¹⁶, where *Klebsiella* species was found to be predominant pathogen (59.10%) and among Gram positive isolates coagulase negative staphylococci were the most common

(91.4%), similar were the results of Mathur et al¹⁷ and Flear A et al¹⁸. Haque et al¹⁹ showed Coagulase Negative *Staphylococcus aureus* (CONS) (18.4%) and *Staphylococcus aureus* (4.6%) as the most common Gram positive organisms and among Gram negative organisms were *Acinetobacter* (34.4%), *Pseudomonas* (21.8%) and *Klebsiella* spp. (6.9%). According to Shaw CK et al¹⁰, the most common organism to be isolated was *Staphylococcus aureus* (42.75%) followed by *Klebsiella pneumoniae* (18.32%) and *Escherichia coli* (12.21%). As per study by Srinivasa S et al²⁰, among Gram positive organism *Staphylococcus aureus* [52.7%] remained the predominate isolate, followed by Gram negative isolates, *Klebsiella* [12.9%], *Enterococcus* [11.1%], *Pseudomonas* [7.4%], *Enterobacter* [6.4%].

Importance of both vertical transmission from the mother and postnatal acquisition of infection from the environment has been suggested in literature for pathogenesis of neonatal sepsis²¹. The CONS, previously considered as a contaminant, has been recognized as a cause of bacteremia. This has created increased interpretative difficulties for the clinicians, since the great majority of CONS isolates represent contamination rather than true bacteremia²².

Antibiotic resistance is today a global problem. Reports of multi-resistant bacteria causing neonatal sepsis are increasing. The wide availability of over-the-counter antibiotics and the inappropriate use of broad-spectrum antibiotics in the community explains this situation. It is difficult to compare antibiotic resistance between countries because the epidemiology of neonatal sepsis is extremely variable.¹

In the present study, majority of the Gram negative bacilli were sensitive to Amikacin, Ciprofloxacin, Ofloxacin & Netilmicin and resistant to Ampicillin, Amoxycylav, Piperacillin+Tazobactam, Cefoperazone+sulbactam, Cefuroximes. Similar results were observed by Tallur et al¹², Karthikeyan et al.²³

Among Gram positive isolates, CONS was sensitive to Piperacillin+Tazobactam (73%) & Linezolid (73%). Majority CONS were resistant to Penicillin, Cephalexin, Cloxacillin, Pefloxacin, Amoxycylav, Cefuroxime. Enterococcus showed good sensitivity to Linezolid (100%), Amoxycylav (100%). But all were resistant to Cloxacillin. Study conducted by Haque SM et al,¹⁹ concluded that Gram-negative bacteria showed high level of resistance to commonly used antibiotics (Ampicillin, Ceftazidime and Cefotaxime). Gentamicin, Amikacin, Imipenem and Levofloxacin were the most effective drugs compared to others.

According to Shrestha RK et al,²⁴ all of the isolates were sensitive to most of the antibiotics used as the first line drugs like Amikacin, Gentamicin, Cefotaxime and Ampicillin. Sharma CM et al,²⁵ concluded that Gram positive organisms showed high degree of resistance to most Penicillins and Ciprofloxacin but were sensitive to Vancomycin, Amikacin and Cefepime and there was a high incidence of resistance noted with Ampicillin, Gentamicin and Ciprofloxacin amongst most Gram negative organisms' where-in Cefepime, Amikacin and Meropenem were effective in most cases.

CONCLUSION

Neonatal sepsis is a leading cause of neonatal admissions, morbidity and mortality in developing countries. Early identification of organisms causing neonatal sepsis and appropriate use of antibiotics

to minimize the morbidity, mortality and emerging resistance in bacteria is essential to control neonatal sepsis in neonatal intensive care units. It will be important, to continue surveillance of neonatal sepsis in order to follow closely, changes in trends and risk factors, and to obtain information for empirical therapy and to act rapidly in case of major changes in susceptibility patterns. Furthermore, we as authors advise that health education be provided to the public on the dangers of indiscriminate use of antibiotics, which has been responsible for the ineffectiveness of most commonly used antibiotics such as penicillin and ampicillin, as observed in our study.

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Addition of Dexmedetomidine or Ketorolac to Levobupivacaine for Ultrasound Guided Supraclavicular Brachial Plexus Block

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ABSTRACT

Background and Aims: We compared the effects of dexmedetomidine and ketorolac as an adjuvant to levobupivacaine in ultrasound guided supraclavicular brachial plexus block, on postoperative analgesia and rescue analgesic requirement following upper limb orthopaedic surgery. **Design:** A prospective, randomized, double blinded comparative study. **Materials and Method:** A total number of 70, American society of Anaesthesiologist (ASA) class I and II patients, scheduled for elective upper limb orthopaedic surgeries under ultrasound guided supraclavicular brachial plexus block, were randomly assigned into two equal groups. Group D (n=35) received 0.5% levobupivacaine-20 mL + (100 mcg) dexmedetomidine-1ml + normal saline-4 ml and Group K (n=35) received 0.5% levobupivacaine-20 mL + (30mg) ketorolac-1ml + normal saline-4ml. Onset & duration of sensory and motor blocks, first time to analgesic request, total rescue analgesic demand, hemodynamic parameters and side effects were assessed and recorded.

Results: Onset of sensory and motor blockade was 9.19±2.18 min and 10.72±4.1 min in group D, while it was 12.31±4.11 min and 15.49±2.31 min in group K, respectively. The difference was statistically significant (p<0.05). Duration of sensory block was 177±64 min in group D and 130±28 min in group K (p=0.023). Duration of motor block was 163±59 min in group D and 101±47 min in group K (p= 0.011). Duration of analgesia was 292±93 min in group D and 218±67 min in group K (p= 0.026).

Conclusion: In conclusion, dexmedetomidine had better effects on onset and duration of sensory and motor block as well as prolong the demand for rescue analgesia in comparison with ketorolac, as levobupivacaine adjuvant in supraclavicular brachial block.

Keywords: *Levobupivacaine, Dexmedetomidine, Ketorolac, Ultrasound, Supraclavicular block*

INTRODUCTION

The ultrasound guidance to regional anaesthesia in the last decade has resulted in significant renewed interest in the clinical application of the supraclavicular block. The evolution of real time ultrasound guided blocks resulted in ease of performance, increased safety profile and a better quality block.^[1]

The supraclavicular approach to brachial plexus results in a more even distribution of local anaesthetics.^[2] Various drugs have been used as an adjuvant with local anaesthetic to achieve quick,

dense and prolonged block,^[3] but the search for agents with longer duration of action, better nerve fibre selectivity and lower incidences of systemic toxicity continues.

Dexmedetomidine is an agonist of α_2 adrenergic receptors which is usually used as adjuvant to local anaesthetics during peripheral nerve blockade and regional anaesthesia procedures may prove efficacious for the surgical patients.^[4,5] Ketorolac is a parenteral non-steroidal anti-inflammatory drug which is also used as an adjuvant to local anaesthetics produces longer duration and better quality of

analgesia during peripheral nerve block.^[6]

We, therefore, intended to study the variability in the effects of dexmedetomidine and ketorolac as adjuvant to levobupivacaine in ultrasound guided supraclavicular block for upper limb surgery, upon onset & duration of sensory and motor blocks and postoperative analgesia along with rescue analgesic demand.

MATERIALS & METHOD

After obtaining the permission of institutional Ethical Committee approval and written informed consents, 70 adult patients, belonging to American society of Anaesthesiologist physical status I and II, aged 21-55 years, scheduled to undergo elective upper limb orthopaedic surgeries under ultrasound guided supraclavicular brachial plexus block were included in this study. The exclusion criteria were patient with history of any allergic reactions to non steroidal anti inflammatory drugs (NSAIDS), local anaesthetic and α_2 agonists, hypertension, cardiac, hepatic or renal diseases, coagulopathy, pregnant women, drug abusers and psychiatric patients.

Randomization was done by computer-generated random numbers and allocation to each group was done from opaque sealed envelopes. The study drugs were prepared by an independent anesthesiologist blinded to the study and the anesthesiologist giving the supraclavicular block and making the observations in the intra-operative as well as the post-operative period were unaware of the drug used.

The patients were randomly assigned into two groups of 35 each:

Group D-25ml solution containing 20 ml levobupivacaine 0.5% + 1ml dexmedetomidine (100 μ g) + 4ml of normal saline

Group K- 25ml solution containing 20 ml levobupivacaine 0.5% + 1ml ketorolac (30mg) + 4ml of normal saline

All patients were monitored with electrocardiogram, pulse oximetry and noninvasive blood pressure monitoring at the time of their entrance to the operating room and throughout the procedures. Intravenous (IV) access was secured with 18G cannula and all patients received midazolam 0.02

mg/kg intravenously as premedication.

Patients were positioned supine and head rotated towards the non-operative side. Supraclavicular brachial plexus blocks were performed by using ultrasound. Skin is disinfected and the parasagittal linear probe (8-14 MHz) positioned in the transverse plane in the supraclavicular fossa to obtain a cross-sectional view of the subclavian artery. The brachial plexus is seen as a collection of hypoechoic oval structures lateral and superficial to the artery. Using a 25-gauge needle, 2 mL of 1% lidocaine was injected into the skin 1 cm lateral to the probe for anesthetizing the skin. The 50 mm and 22G stimulating needle (B Braun, Germany) was advanced using the in-plane technique from a posterior approach and solution was injected as appropriate for the group of study.

In dexmedetomidine group, 25mL of a solution containing 0.5% levobupivacaine-20 mL plus 100 μ g dexmedetomidine-1mL plus normal saline-4ml was injected after negative aspiration. In ketorolac group, 25 mL of a solution containing 0.5% levobupivacaine-20 mL plus 30 mg ketorolac-1 mL plus normal saline-4ml was injected after negative aspiration. The various block characteristics were

1. Onset of sensory block: It was assessed with 22G needle and taken as the interval between the end of injection and loss of pin-prick sensation in all dermatomes related to musculocutaneous, median, ulnar and radial nerves.

2. Duration of sensory block: The time interval between onset of sensory block and reappearance of sense of pinprick in all related upper extremity dermatomes was recorded as duration of sensory block.

3. Onset of motor block: It was taken as the interval between the end of injection and loss of all flexion and extension movement of elbow, wrist and fingers related to the function of musculocutaneous, median, ulnar and radial nerves.

4. Duration of motor block: The time interval between onset of motor block and returning of all flexion and extension movements was recorded as motor block duration.

5. Quality of anesthesia: It was graded as following numeric scale:

Grade 4 (Excellent) — No complaint from patient.

Grade 3 (good) — Minor complaint with no need for supplemental analgesic.

Grade 2 (Moderate) — Complaint that required supplemental analgesia.

Grade 1 (unsuccessful) — Patient given general anaesthesia.

Block was evaluated every 5 min till complete motor and sensory block after the end of injection of study drugs. Further block assessment was done at hourly intervals up to 24 h by an independent anaesthesiologist. All the patients were monitored in terms of hemodynamic parameters intra-operatively and post-operatively.

The patients were observed in the post operative care unit after surgery and pain assessment was done by using verbal response score (VRS) 0- no pain and 10- worst pain possible.

Rescue analgesia was provided in the form of intravenous Morphine 0.05mg/kg boluses, if the pain score was more than 3. Duration of analgesia was taken as the time interval between onset of sensory blockade and the first rescue analgesic given to the patients.

All the patients were observed for any side effects like sedation, bradycardia, nausea, vomiting, hypotension and complications like pneumothorax, haematoma, and post-block neuropathy.

STATISTICAL ANALYSIS

The data was analysed by SPSS version (statistical package for social sciences) software. A power analysis was performed to determine the necessary number of patients for each group based on duration of analgesia. With a $\alpha=0.05$ and study power at 80%, it was estimated that 25 patients would be needed in each group in order to detect a difference of 35 min in the duration of analgesia between the two study groups. The inclusion of 35 patients in each group was done for better validation of results.

Distributed continuous variables were compared using Student's unpaired t-test, whereas Mann-Whitney U test was used for comparison of VRS pain

scores and supplemental morphine requirements. Categorical variables were compared by Chi-square test or Fisher's exact test, as appropriate. $P<0.05$ was considered statistically significant.

RESULTS

Seventy five patients were assessed for eligibility. Three patients were not included in the study due to hypertension. Two patients were excluded due to history of allergy to analgesics. In total, seventy patients were enrolled for the study. Thirty five patients were randomly allocated to each group. Both the groups were comparable with respect to age, gender, weight, and duration of surgery. [Table 1]

It was found that onset of sensory block was faster in group D than group K ($p=0.012$). The onset of motor block was faster in group D than group K ($p=0.031$) [Table 2]. The mean sensory block duration in dexmedetomidine group was significantly longer than ketorolac group. ($p=0.023$) The mean duration of motor block was significantly longer in dexmedetomidine group compared to ketorolac group ($p=0.011$) [Table 2].

The mean duration of analgesia was also longer in dexmedetomidine group as compared to ketorolac group ($P=0.026$) [Table 3]

In group D, only 6 patients (17.1%) required rescue analgesia while in group K, 33 patients (94.2%) required additional dose of rescue analgesic ($p=0.013$) [Table 3] There was a statistically significant reduced consumption of morphine 5.1 ± 1.72 mg in group D compared with the group K in which it was 18.1 ± 2.11 mg ($p=0.044$) [Table 3]. Quality of block measured in both the groups was insignificant ($p=0.067$).

Table 1: Demographic profile

| Parameters | Group D | Group K | P value |
|---------------------------|-------------|-------------|---------|
| Age (years) | 36.63±14.18 | 40.82±11.53 | 0.711 |
| Weight (kg) | 56.60±8.93 | 55.89±7.41 | 0.632 |
| Sex (male: female) | 25:10 | 22:13 | NA |
| Duration of surgery (min) | 73.80±35.88 | 80.19±26.91 | 0.482 |

Values were expressed as mean±SD, SD=standard

deviation, NA=not applicable

Table 2: Comparison of block characteristics

| Variables | Group D (n=35) | Group K (n=35) | P value |
|---------------------------------|----------------|----------------|---------|
| Onset of sensory block (min) | 9.19±2.18 | 12.31±4.11 | 0.012 |
| Onset of motor block (min) | 10.72±4.1 | 15.49±2.31 | 0.031 |
| Duration of sensory block (min) | 177±64 | 130±28 | 0.023 |
| Duration of motor block (min) | 163±59 | 101±47 | 0.011 |

Values were expressed as mean ± SD, SD= standard deviation

Table 3: Postoperative analgesics

| Variables | Group D | Group K | P value |
|--|----------|-----------|---------|
| Time to first postoperative analgesic requirement (min) | 292±93 | 218±67 | 0.026 |
| Morphine consumption during the first 24hrs after surgery (mg) | 5.1±1.72 | 18.1±2.11 | 0.044 |
| Number of patients required additional doses of morphine | 6 | 33 | 0.013 |

Values are mean±SD, SD = Standard deviation

D=Dexmedetomidine, K=Ketorolac

DISCUSSION

The major findings of this research showed that adding dexmedetomidine as adjuvant to levobupivacaine hastens the onset of blockade, provides a longer duration of sensory and motor blockade and postoperative analgesia, reduce the postoperative rescue analgesic requirement as compared to adding ketorolac 30 mg as adjuvant to levobupivacaine during ultrasound guided supraclavicular brachial plexus block for elective upper limb orthopaedic surgeries.

Dexmedetomidine and ketorolac, have been used as adjuvants to local anaesthetics by intravenous and peripheral nerve blocks routes [7-10] Adjuvant improves

analgesia and reduces total dose of local anaesthetics & their systemic side effects.

Mirkheshti et al [11] demonstrated that the addition of 100 µg of dexmedetomidine to lidocaine 1.5% for infraclavicular brachial plexus block hastens the onset of motor block and prolong sensory and motor block duration in comparison to other group in which ketorolac 50mg, was used as lidocaine adjuvant. Their findings were same as that of our study, but there was no significant difference in the onset of sensory block among the study groups in their study. In our study there was statistically significant early onset of sensory block in dexmedetomidine group, it could be because of lower volume of drug (25ml) in comparison to their study (30ml) leading to comparatively increased concentration of dexmedetomidine or by a change in pH of the drug solution with addition of dexmedetomidine in levobupivacaine.

Esmaoglu et al [12] found that dexmedetomidine 100µg added to levobupivacaine for an axillary brachial plexus blockade shortened the onset time of both sensory and motor blockade and extend the block duration and postoperative analgesia.

In a randomised study performed by Kaygusuz et al [13]dexmedetomidine 1µg/kg added to 0.5% levobupivacaine, significantly increased sensory and motor block duration and time to first analgesic request and reduce total postoperative analgesic requirements.

Our findings about onset and duration of sensory & motor blockade by ketorolac were in agreement with study of Budnyuk et al. [14]The results of our study about ketorolac was different from study by Mirkheshti et al [11] who observed that addition of ketorolac to lidocaine significantly increased the time to first analgesic request in postoperative period. However, in our study addition of ketorolac did not increase the time to first postoperative analgesic request. Reduced dose of ketorolac (30 mg) as compared to their study (50 mg) could be the reason for that effect in our study.

Dexmedetomidine may lead to hypotension, bradycardia and sedation. [15] **But none of these side effects were seen in our study.**

Major limitation of our study was that we could

not biochemically analyze the blood concentration of dexmedetomidine and ketorolac due to non availability of facility in our institution. Moreover, data from literature supporting our results is very sparse. So, further multicenter trials on large scale are needed to yield newer aspects of observation.

CONCLUSION

The results of the present study concluded that the use of dexmedetomidine as an adjuvant to levobupivacaine in supraclavicular brachial plexus block, hasten the onset of block, increases the duration of block. It also prolongs the first analgesic request postoperatively without any side effects in comparison to ketorolac used as an adjuvant to levobupivacaine.

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A Study on Stress amongst Secondary School Children

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ABSTRACT

Introduction: Stress is a reaction to a change or a strain. The change or strain can be primarily physical, such as having an illness or an injury. It can also be primarily emotional, such as being worries, upset, anxious or depressed. **Objectives:** To find out the proportion of stress among school children. **Methodology:** This study was conducted among the selected schools of Bangalore city, 1203 high school students were interviewed of which 600 students were from government schools another 603 were from private schools. Levels of stress was measured using The Holmes Rahe social maladjustment rating scale. **Results:** A total of 1203 students were interviewed of which 600 were from Government schools, 603 were from private schools. Males were 648(53.9%) and females 555(46.1%). The age of the study subjects ranged from 11 to 18 years, maximum numbers of students were in the age group of 14 years 390 (32.3%). Stress levels are as follows mild Stress 59 (4.9%) moderate Stress 27 (2.2%) and Severe Stress 2 (0.2%). It was observed that the difference in distribution of stress among both the sexes were not statistically significant (P = 0.8) **Conclusion:** The relationship between stress and illness, while real, is complex and not a simple matter to study. Lot of research is needed in this area.

Keywords: Stress, Depression, Life events, Adolescents

INTRODUCTION

Stress affects every system within the human organism, as well as every human social system, including the family. Cultural changes exert escalating pressure on modern families, requiring children to endure stressors unknown to previous generations. Helping children and families to cope successfully with life trauma and daily life stress is of increasing concern.¹

Stress is a reaction to a change or a strain. The change or strain can be primarily physical, such as having an illness or an injury. It can also be primarily emotional, such as being worries, upset, anxious or depressed. Everyone has lots of small stress every day. Stress affects most people in some way²

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Stressors in the youth

- **Role and value conflicts:** India has moved from the traditional stable society, to a highly developed, industrial and space society. In such a society, where the youth come from various strata of society, with diverse cultures, religions, economic status, language and life styles, youth experience difficulty in adaptation to the changing roles and values of system.
- **Pressure for performance in schools and colleges:** With growth in the youth population and limited opportunities for admission in schools and colleges and especially in professional courses, the youth are under great pressure to perform.
- **Emotional and sexual adjustment:** Youth is a period of life which is heightened in its emotional aspects. The sexual drive is highest at this time of life, which the youth need to be able to control through socially approvable behaviors.
- **Coping with pressure of living:** In most cases

they have to move away from parents to urban cities, some of them even settling in foreign countries. Lack of social / family support and guidance lays great personal responsibility on the youth to evolve their own life styles to successfully adapt to the society.

Main Concerns of school children are doing well at school, Coming into contact with drugs and alcohol, Bullying from other school children, Future education and Friendships at school.³

AIM AND OBJECTIVES

1) To find out the proportion of stress among school children

MATERIAL & METHOD

STUDY AREA: This study was conducted among the selected schools of Bangalore city, located at Karnataka in South India. Only the schools from which permission could be obtained to conduct the study were included for the study purpose.

STUDY DESIGN: Cross sectional study

METHOD OF COLLECTION OF DATA:

Source of data: The study population consisted of 8 standard, 9 standard and 10 standard students of the selected schools. This study was done for a period of 6 months, 1203 students were interviewed of which 600 students were from government schools another 603 were from private schools. There were 5 government and 5 private schools which participated in the study 120 students were taken from each of the government schools and in each school 40 students were selected from 8, 9 & 10 standards respectively, the students were chosen randomly with the help of attendance registers. The same technique was followed in private schools also, as the total students were 603, these 3 extra students as compared to government schools was chosen from the 10 standard of the last school which was interviewed for the study.

The instrument used for the purpose of the study is a predesigned and pretested structured questionnaire which was administered using the interview method by going to each school. The Questionnaire contains the general information of the person along with Holmes Rahe stress scale to measure stress

Measurement of stress: The Holmes Rahe social maladjustment rating scale was used for measuring stress. This scale consisted of various life events in the past 1 year; each life event was given a unit (number). The number of life events to which students says yes is noted, the units at the end were added to obtain a score. Based on this score the measurement of stress was made.

Score below 150 = normal

Score 150 = Mild stress

Score 150- 299 = Moderate stress

Score 300 and above = Severe stress⁽⁴⁾

DATA ENTRY AND ANALYSIS: Using Micro soft excel and Epi info

STATISTICAL TESTS USED: 1) Descriptive statistics

2) Chi-Square test

OBSERVATION AND RESULTS: A total of 1203 students were interviewed of which 600 were from Government schools, 603 were from private schools. Males were 648(53.9%) and females 555(46.1%). The difference is probably due to the random selection of subjects according to their roll numbers. The age of the study subjects ranged from 11 to 18 years, maximum numbers of students were in the age group of 14 years 390 (32.3%), details are shown in table below. Students from standards 8, 9 and 10 were interviewed, Students of standard 8 constituted 399 (33.2%), standard 9 were 391 (32.5%), and standard 10 amounted to 413 (34.3%).

1) Distribution of study population according to Age

| Age | Frequency | Percent |
|--------------|-------------|--------------|
| 11 | 1 | 0.1 |
| 12 | 58 | 4.8 |
| 13 | 315 | 26.2 |
| 14 | 390 | 32.3 |
| 15 | 339 | 28.2 |
| 16 | 80 | 6.7 |
| 17 | 18 | 1.5 |
| 18 | 2 | 0.2 |
| Total | 1203 | 100.0 |

2) Distribution of study population according to Stress

| Stress | Frequency | Percent |
|-----------------|-------------|--------------|
| Normal | 1115 | 92.7 |
| Mild Stress | 59 | 4.9 |
| Moderate Stress | 27 | 2.2 |
| Severe Stress | 2 | 0.2 |
| Total | 1203 | 100.0 |

This table shows different grades of stress, which are as follows mild Stress 59 (4.9%) moderate Stress 27 (2.2%) and Severe Stress 2 (0.2%) according to the scale adopted in the present study.

3) Distribution of stress according to Sex

| Stress | Female | Male | Total |
|-----------------|------------|------------|-------------|
| Normal | 510(45.7) | 605(54.3) | 1115 |
| Mild Stress | 30(50.8) | 29(49.2) | 59 |
| Moderate Stress | 14(51.9) | 13(48.1) | 27 |
| Severe Stress | 1(50.0) | 1(50.0) | 2 |
| Total | 555 | 648 | 1203 |

Note (Figures in parenthesis includes percentages)

Chi square value = 0.9 df = 3 P = 0.8

This table shows mild stress, moderate stress and severe stress among males and females. It was observed that the difference in distribution of stress among both the sexes were not statistically significant (P = 0.8)

DISCUSSION

Not many studies have been conducted in this area. None of the studies reported the same findings as the present study but there are certain similar studies, such as a study on academic stress and mental health of Indian high school students and the associations between various psychosocial factors and academic stress. A total of 190 students from grades 11 and 12 (mean age: 16.72 years) from government and private schools of Kolkata, India were surveyed in the study. 63.5% of the students

reported stress due to academic pressure – with no significant differences across gender, age, grade, and several other personal factors. Parental pressure for better academic performance was found to be mostly responsible for academic stress, as reported by 66.0% of the students, psychiatric problems are found to present in 32.6% of the participants. Academic stress was positively correlated with parental pressure and psychiatric problems.⁵

Our study has focused on 8, 9 and 10 std students there fore majority of the subjects were around 14 yrs. We have tried to measure the level of overall stress levels as compared to the quoted study which has focussed on academic pressure alone. As academic stress is a single variable there is higher percentage (63.5%) of academic stress in contrast to our study findings where overall stress levels are as indicated - mild Stress 59 (4.9%) moderate Stress 27 (2.2%) and Severe Stress 2 (0.2%)

Another study was done by Akbar Husain, ashotosh kumar and abid husain in delhi to examine the level of academic stress and overall adjustment among Public and Government high school students and also to see relationship between the two variables (academic stress and adjustment). Results indicated that magnitude of academic stress was significantly higher among the Public school students where as Government school students were significantly better in terms of their level of adjustment. However, inverse but significant relationships between academic stress and adjustment were found for both the group of students and for each type of school.⁶

According to the findings of our study the difference in stress levels between male and female is not statistically significant. These observations are in contrast to the findings of authors Bhasin SK Sharma R and Saini NK who conducted a study at delhi to assess Depression, Anxiety and stress (DAS) among 242 adolescent students belonging to class 9-12th. DASS-21 questionnaire was used for assessing DAS. The scores in the three domains (DAS) were found to be remarkably correlated. It was seen that depression was significantly more among the females (mean rank 132.5) than the males (mean rank 113.2), p=0.03. Depression and Stress were found to be significantly associated with the number of adverse events in the student’s life that occurred in last one year.⁷ Even our

study has considered number of adverse events in the past one year as given in the stress scale which we have adopted in the study.

There is another study which supports the above findings. In a study by Menaga . S, Chandrasekaran . V on academic stress of higher secondary school students from different Government and Private Schools in and around Thiruvannamalai District of tamil nadu, It was found that there is significant difference in the Academic Stress of higher secondary students in relation to their Gender which says that Boys have less Academic Stress than girls.²

Chandra R, Srinivasan S, Chandrasekaran R, Mahadevan S conducted a study to find the prevalence of mental disorders in school-age children at Pondicherry in India. This study does not directly give the proportion of stress in school-age children but tells us how multiple stressors can have an effect on mental disorders. The findings of the study indicate that children above 8 years (74%) registered higher morbidity. There was no sex difference in overall morbidity.⁸

To quote an international study related to the present topic. According to authors Haugland S, Wold B, Torsheim T in a study of Norwegian sample of 15-year-old students (N = 1,670) which was a part of World Health Organization cross-national survey. Objective was to examine the relationship between school-related stress, leisure time physical activity, and adolescent health complaints. The results showed that high levels of complaints were associated in a linear relationship with high levels of school-related stress and low levels of leisure time physical activity.⁹

CONCLUSION

The relationship between stress and illness, while real, is complex and not a simple matter to study. However following are the suggestions for coping with stress.

- It is suggested that technical and skill oriented educational programmes be initiated by the public and private institutions of India.

- Youth should be encouraged to pursue careers in line with their vocational interests rather

than being attracted to those careers which give better status and income.

- Parents should find time to spend time with the youth to understand the adjustment problems with the youth might be experiencing and be friends with them, in guiding them with regards to studies, friends, vocational choices, and decisions regarding marriage.

- Both in the family and in the educational institutions the youth should be trained in yoga, meditation and other techniques to cope with the distress situations.

- The parents should always accept their children, irrespective of the sex and love their children irrespective of their performance in the schools and colleges or in life.³

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Ethical Clearance: Taken from the ethics committee

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Practices of Smokeless Tobacco use (SLT) among Married Women

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ABSTRACT

Background: Smokeless tobacco consumption is a common tradition especially common in south Asian origin. In spite of its global use and the serious health risks linked to it, the issue of using smokeless tobacco has not gained much attention. ⁽¹⁾ Tobacco accounts for around 5 million deaths every year which makes it the second major cause of death worldwide. By 2020, this may reach up to 9 million the majority being in the developing countries. ⁽²⁾ **Objective:** The main objective of the study was to identify the practices of smokeless tobacco use among married women (20-50 years). **Materials and method:** The study population consisted of 800 women from selected villages of Peranankila Panchayat, Udupi district. Four villages of the Panchayat were selected through simple random sampling technique. Purposive sampling was used to select the samples. Data were collected by administering background proforma and self-reported questionnaire on practices of smokeless tobacco use. **Results:** Out of the 800 women surveyed, 90 were using smokeless tobacco. Frequency and percentage distribution were used to analyze the practices. **Conclusion:** Smokeless tobacco use is still prevalent in the society and measures need to be undertaken to disseminate awareness on smokeless tobacco use.

Keywords: *smokeless tobacco, married women, practice*

INTRODUCTION

Smokeless tobacco consumption has become an emerging problem among women of reproductive age. An article published in the Times of India in September 2013 has uncovered the alarming situation of tobacco consumption in India. It says that 250 million adults from the 11 countries of South East Asia contribute to 90% of the world's smokeless tobacco (SLT) users. Taking into account the high number of users and its grave consequences, these countries have established a goal of 30% reduction in tobacco use prevalence. ⁽³⁾

Although some are aware about the detrimental results of SLT use, the majority are ignorant about the

dangerous relation between tobacco and maladies like cancers. Most of them are unaware that products like betel quid or mishri or gutka are deleterious. ⁽⁴⁾

The IARC has found that people who consume both the arecanut and betel leaf have higher risks of ruining their gums and having cancers mainly oral, oesophagus, stomach etc. Mishri, gudaku and toothpastes are directly applied to the gums which increases the risk of cancer of the gums. These forms are very common among the women. ⁽⁵⁾

According to the Global Adult Tobacco Survey, India (2010), 34.6% of adults were tobacco users of which 47.9% are males and 20.3% are females. Smokeless tobacco use in adults consists of 25.9%, out of which 18.4% is contributed by the female population. This report also highlighted that the average age at initiation of tobacco use was 17.8 with 25.8% females starting tobacco use before the age of 15. ⁽⁶⁾

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The prevalence of smokeless tobacco use among

adults in WHO South East Asia stated that around 22.7% of adults above the age of 15 in Karnataka uses some form of smokeless tobacco.⁽⁷⁾ A cross sectional study to estimate the prevalence and determinants of tobacco use carried out in a rural community in Southern India among 832 revealed that 15.7% of the women were daily users of tobacco. Among them, 55.7% used chewing tobacco. The commonest reason reported for initiating tobacco chewing was to relieve toothache.⁽⁸⁾

The current study highlights the use of smokeless tobacco use among women in the region in spite of the continuing efforts by the Government to lessen the burden caused by it. The main objective of the study was to identify the practices of smokeless tobacco use among married women (20-50 years).

MATERIALS & METHOD

A cross sectional study was carried out among 800 married women (20-50 years) residing in selected villages of Udupi district. Four villages were selected through simple random sampling technique. Before conducting study permission was taken from Dean, Manipal College Of Nursing Manipal. The women were approached during the house to house visit. **Study was conducted after obtaining approval from District Health Officer.**

Ethical clearance was obtained from Institutional Ethics Committee of Kasturba Hospital, Manipal (ECR/146/Inst/KA/2013). Informed consent was taken from all participants after giving subject information sheet.

Data collection instruments were developed by the researcher. Pretesting was done after establishing the validity and reliability (r=0.8). The instruments used for the data collection were a Demographic proforma which consisted of 24 items related to personal history and partner's history. Information was collected on the participants' age, education, occupation, religion, monthly income, type of family and marital history. Brief information was collected about their partners also. The other tool used was Self-reported questionnaire on practices of smokeless tobacco use which consisting of 18 items on practices of smokeless tobacco use. Questions mainly included regarding duration and frequency of SLT use, reasons for initiating and continuing its use, availability of SLT and awareness on SLT use.

RESULT & DISCUSSION

The **data were first coded and** summarized in a master sheet and analyzed using SPSS 16.

Description of sample characteristics:

Among the 800 women surveyed, 90 were using smokeless tobacco.

Table 1: Frequency and percentage distribution of sample characteristics (n=800)

| Sl.no | Sample characteristics | SLT users n=90 | | SLT non users n=710 | | Total f |
|-------|---------------------------------|-------------------|-------|------------------------|-------|------------|
| | | F | % | F | % | |
| 1. | Age (in years) | | | | | |
| | 20-30 | 7 | 10.5 | 60 | 89.5 | 67 |
| | 31-40 | 42 | 9.9 | 382 | 90.1 | 424 |
| 2. | 41-50 | 41 | 13.3 | 268 | 86.7 | 309 |
| | Education | | | | | |
| | Illiterate | 21 | 20.3 | 82 | 79.7 | 103 |
| 3. | Up to PUC | 69 | 10.5 | 587 | 89.5 | 656 |
| | Graduate & above | 0 | 0 | 41 | 100 | 41 |
| | Religion | | | | | |
| 4. | Hindu | 87 | 11.43 | 674 | 88.57 | 761 |
| | Christian | 0 | 0 | 26 | 100 | 26 |
| | Muslim | 3 | 23.08 | 10 | 76.92 | 13 |
| 5. | Occupation | | | | | |
| | Housewife | 31 | 10.16 | 274 | 89.84 | 305 |
| | Agriculture | 15 | 10.56 | 127 | 89.44 | 142 |
| 6. | Office work | 0 | 0 | 17 | 100 | 17 |
| | Others | 44 | 13.09 | 292 | 86.90 | 336 |
| | Monthly income in rupees | | | | | |
| 7. | less than 5000 | 9 | 100 | 0 | 0 | 09 |
| | 5001-10000 | 67 | 14.2 | 406 | 85.8 | 473 |
| | more than 10000 | 14 | 4.4 | 304 | 95.6 | 318 |
| 8. | Type of family | | | | | |
| | Joint | 45 | 12.71 | 309 | 87.29 | 354 |
| | Nuclear | 45 | 10.09 | 401 | 89.91 | 446 |
| 9. | BMI | | | | | |
| | Underweight | 10 | 10.53 | 85 | 89.47 | 95 |
| | Normal | 72 | 13.69 | 454 | 86.31 | 526 |
| 10. | Overweight | 08 | 4.76 | 160 | 95.24 | 168 |
| | Obese | 0 | 0 | 11 | 100.0 | 11 |

Data given in Table 1 show that majority of the women who use smokeless tobacco were in the age group of 31-40 years and few of the women were illiterate and most of them had an education up to PUC. There were no graduates or post graduates who use smokeless tobacco. Some of the studies also have showed that tobacco use is more conventional among those who are illiterate and less educated in the region of Bangladesh, India, Indonesia, Sri Lanka and Thailand. (9)

Majority of the women were Hindus by religion. Most of the women were house wives and most of the women had a monthly income of 5001-10000 rupees. Among the users, 50% belonged to joint family and the other 50% to nuclear family. Maximum of the women surveyed had normal BMI.

Description of Practices of Smokeless Tobacco Use.

Total 800 women residing in Udupi district were surveyed to assess the prevalence of smokeless tobacco use by administering a self-reported questionnaire. It consisted of 18 items on practices of smokeless tobacco use. Questions mainly included regarding duration and frequency of SLT use, reasons for initiating and continuing its use, availability of SLT and awareness on SLT use.

Out of 800 women surveyed, 90 (11.25%) were currently using smokeless tobacco. The prevalence of smokeless tobacco use among women is depicted in the Fig; 1

Table 2: Frequency and Percentage of Type of SLT use (n=90)

| Category | f | % |
|----------|----|------|
| Type | | |
| Maruti | 16 | 17.8 |
| Goa | 11 | 12.2 |
| Madhu | 26 | 28.9 |
| Star | 8 | 8.9 |
| Siddhu | 26 | 28.9 |
| Others | 03 | 3.3 |
| Snuff | 0 | 0 |

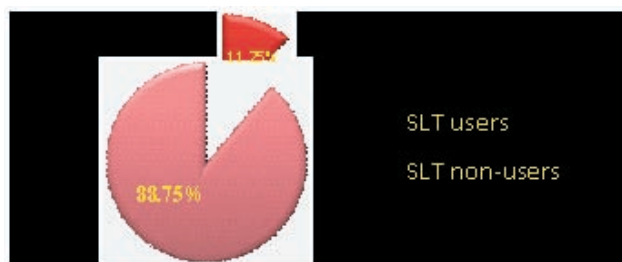


Fig.1 Pie diagram showing prevalence of smokeless tobacco Description on type of SLT Use

Data presented in Table 2 shows different types of smokeless tobacco which is commonly used by the rural women. Out of 90 SLT users 28.9% of women reported 'Madhu' as their preferred brand, whereas another 28.9% chose Siddhu. The next popular brand was 'Maruti' (17.8%). There were 12.2% of women who preferred 'Goa'.

Description on duration and frequency of SLT Use

Table 3: presents frequency and percentage distribution of duration and frequency of SLT use. n=90

| S.no | Category | f | % |
|------|--------------------------|----|------|
| 1. | Duration of use | | |
| | < 2 years | 3 | 3.3 |
| | 2-5 years | 26 | 28.9 |
| | 6-10 years | 46 | 51.1 |
| | >10 years | 15 | 16.7 |
| 2. | Frequency of use per day | | |
| | 2-3 times | 53 | 58.9 |
| | 4-5 times | 35 | 38.9 |
| | > 5times | 2 | 2.2 |

Data presented in Table 3 shows that majority (51%) of the women reported that they have been using smokeless tobacco for 6 to10 years. There were 28.9% of women who have been using smokeless tobacco for 2-5 years. Majority (58.9%) of the women reported that they use smokeless tobacco 2-3 times a day. There were 38.9% of the women who chew tobacco 4-5 times a day. Only 2.2% of the users reported they use smokeless tobacco more than 5 times a day.

Description of the influence on initiating and

continuing SLT Use.

Table 4: describes the frequency and percentage distribution of influences on initiating and continuing SLT use and is depicted in table 4.

| Sl.no | Category | F | % |
|-------|----------------------------------|----|------|
| 1. | Reason for initiating SLT Use | | |
| | Parental influence | 6 | 6.7 |
| | Peer influence | 12 | 13.3 |
| | Just for fun | 22 | 24.4 |
| | Personal problems | 24 | 26.7 |
| | Tooth ache | 26 | 28.9 |
| 2. | Reason for continuing SLT | | |
| | Relieves tension | 33 | 36.7 |
| | Habituated | 57 | 63.3 |
| 3. | SLT used by other family members | | |
| | No | 4 | 4.4 |
| | Yes | 86 | 95.6 |
| 4. | Ever thought about quitting SLT | | |
| | No | 79 | 87.8 |
| | Yes | 11 | 12.2 |

Data presented in Table 4 shows that majority (28.9%) of the women reported that they started using smokeless tobacco as a remedy for tooth ache. There were 26.7% of women who started using smokeless tobacco due to personal problems. The other major reasons were just for fun (24.4%), peer influence (13.3%) and parental influence (6.7%). 63.3% of the women answered that they continue SLT use because they are habituated. 11% of the women have reported that they have thought about quitting tobacco use but have never tried.

Table 5: Frequency and Percentage of awareness on SLT

| Sl.no | Category | F | % |
|-------|------------------------------------|----|------|
| 1. | Awareness on SLT | | |
| | No | 75 | 83.3 |
| | Yes | 15 | 16.7 |
| 2. | SLT is less dangerous than smoking | | |
| | No | 04 | 4.4 |
| | Yes | 86 | 95.6 |

Data presented in Table 5 shows that maximum (83%) women are unaware of the dangers of smokeless tobacco use. There were 95.6% of women who believe that tobacco is less dangerous than smoking. But an article titled “Chemical composition and carcinogenicity of SLT” by Hoffmann and Djordjevic highlights that the adverse health effects of SLT. The article states that chewable tobacco is linked to higher risk of carcinoma of oral cavity. Dip snuff is specifically related to carcinoma of cheeks, gum and pharynx. Studies have shown that snuff induces oral carcinoma. Several carcinogens like the tobacco-specific N-nitrosamine, N'-nitrosonornicotine etc have been identified. These are formed from nicotine during aging, and especially during fermentation of tobacco.⁽¹⁰⁾

Description on availability of SLT.

Table 6 : describes the frequency and percentage distribution on information regarding the availability of SLT

| Sl.no | Category | f | % |
|-------|------------------------------|----|------|
| 1. | Easily available in locality | | |
| | Yes | 90 | 100 |
| 2. | Family members provide SLT | | |
| | No | 44 | 48.9 |
| | Yes | 46 | 51.1 |
| 3. | Buy SLT themselves | | |
| | No | 7 | 7.8 |
| | Yes | 83 | 92.2 |

Data presented in Table 6 show that all women reported that SLT is easily available in their community. There were 92.2% of the women who buy smokeless tobacco themselves. Family members provided smokeless tobacco to 51.1% of the women.

DISCUSSION

In the present study, among the 800 women surveyed, 90 (11.25%) women were using SLT at present. Most of the women who use SLT were in the age group of 31-40 years. Majority of the women had an education up to 10th standard. All the women who use SLT reported some kind of oral problems. On the other side, only 11.8% of the non-users reported oral problems.

These findings were supported by a study that was to estimate the prevalence of tobacco consumption, its triggers, and influences and associated oral problems among the patients of a Dental college in rural Maharashtra. Data was collected on their habits, influences and triggers through a pretested structured questionnaire. Clinical examination was done to find tobacco related oral lesions. The prevalence of tobacco consumption was 16.38%. SLT was commonly used by both males (81.84%) and females(100%). Maximum of the subjects (males 68.22% and females 90.62%) were light tobacco consumers. Most of the participants reported that they started the use due to peer influence. Triggers reported for tobacco consumption was work related in males (69.14%) and after-meals in females (53.13%).⁽¹¹⁾

A cross sectional survey was done by Bloch and Althabe to study the use of tobacco by antenatal mothers and their exposure to cigarette smoke in 9 countries of Latin America, Africa and Asia. A total of 7961 women were covered in this face to face survey. The use of SLT was reported in India and the Republic of Congo. One third of the women surveyed in India were current users of SLT.⁽¹²⁾

A cross sectional study was conducted by Hossain et al to estimate the prevalence and correlates of SLT use among married women in rural Bangladesh. 8074 women participated in the study. The prevalence of current SLT use was 25%. The mean age of initiation was 31.5 years. Existing consumption was associated with age, education, occupation, religion, marital status and age of initiation⁽¹³⁾.

A study was conducted by Rooban et al to estimate prevalence of SLT use among Indian women. Secondary data was obtained from cross sectional population-based household survey. 124385 women aged 15-49 years were included in the study. The results showed that 13309 participants used one or the other chewing products and the use was more among the poor and less educated women. There was a variation in prevalence according to the geographical situation.⁽¹⁴⁾

A study was done by Daniel A.B. et al to estimate the prevalence and determinants of tobacco use in a rural community in Southern India. 832 individuals were included in the study. The findings revealed

that 15.7% of the women were daily users of tobacco. Among them, 55.7% used chewing tobacco. The commonest reason reported for initiating tobacco chewing was to relieve tooth ache. This study highlights the use of SLT use among women in the region in spite of the continuing efforts by the Government to lessen the burden caused by it.⁽¹⁵⁾

CONCLUSION

Tobacco consumption continues to be the leading preventable cause of death in the world. The list of health hazards caused by tobacco has grown. Based on the methodology and within the limitations of the study it can be concluded that smokeless tobacco use is still prevalent in the society and measures need to be undertaken to disseminate awareness on smokeless tobacco use.

Based on the present study the following future recommendations were made for further research. Similar study may be conducted with a large sample and in different setting. Random sampling method may be used in similar study or Qualitative studies can be conducted to understand the factors affecting the practices of SLT among women.

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Conflict of Interest is mentioned in Materials and Methods part of the article.

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Assessment of Quality of Life among Elderly of Tumkur City

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ABSTRACT

Ageing is a normal inevitable, biological and universal phenomenon, generally 60 and above years is used to refer to the elderly population. In India proportion of older persons has risen 5.5 percent in 1951 to 6.5 percent in 1991, 7.7 in 2001 and projected 12 percent in 2025. In this regard, it's time now to assess their quality of life which is an holistic approach towards their life. **Objectives:** To assess quality of life of elderly aged 60 years and above in urban area of Tumkur using WHOQOL-BREF questionnaire and to study various factors associated with their quality of life. **Materials and Method:** Urban field practice area of Department of Community Medicine was the study area and all elderly men and women aged 60 years and above who were willing to participate in the study and residing in the field practice area for more than 1 year were included in the study. Total of 240 members were included in the study and duration of study was between June 2015 to August 2015. **Results:** About 75% of the study subjects were in the age group of 60-70 years. The mean domain score was more for Social relationship (58.28 ±4.96) as compared to others which was 52.41± 6.20 for Psychological domain, 52.06 ±5.22 for Environmental domain and 49.51±7.22 for Physical domain. The mean score for physical domain was more for females (57.0± 7.5) as compared to males (52.5±5.7) which was statistically significant whereas other domains did not have statistically significant difference scores. The psychological domain score was more in age group 60-69 as compared to old which was significant. **Conclusion:** The quality of life was average among elderly in all domains. An holistic approach in their development is need of the day in order to have a healthy independent aged in the community.

Keywords: Elderly, Quality of life, Domains, WHOQOL-BREF.

INTRODUCTION

Ageing is a normal inevitable, biological and universal phenomenon, generally 60 and above years is used to refer to the elderly population.¹ The concept of quality of life has gained significance in aging due to the need for integrated approach towards understanding the aged. Elderly account for 7.5% of total population at present which is going to increase in coming years. In India proportion of older persons has risen 5.5 percent in 1951 to 6.5 percent in 1991, 7.7 in 2001 and projected 12 percent in 2025 (Vinod Kumar 2003). This increasing number of elderly has a great demand for health services and social security measures. Quality of life is a holistic approach that not only emphasizes on individuals physical, psychological, and spiritual functioning but

also their connections with their environments; and opportunities for maintaining and enhancing skills.¹

² Ageing, along with the functional decline, economic dependence, and social cut off, autonomy of young generation, compromises quality of life.⁴

OBJECTIVES

- To assess quality of life of elderly aged 60 years and above in urban area of Tumkur using WHOQOL-BREF questionnaire.
- To study various factors associated with their quality of life.

MATERIALS & METHOD

Urban field practice area of Department of Community Medicine was the study area and all

elderly men and women aged 60 years and above who were willing to participate in the study and residing in the field practice area for more than 1 year were included in the study. Total of 240 members were included in the study and duration of study was between June 2015 to August 2015.

The questionnaire consisted of 2 parts ,in part 1 information regarding socio demographic profile and self reported co morbid conditions were recorded.

In part 2, quality of life was assessed using WHO quality of life BREF questionnaire.⁹ The WHOQOL-BREF is an abbreviated version of the original WHOQOL-100.

Physical health: dependence of treatment, energy and fatigue, mobility, presence of pain and discomfort, sleep and rest, activities of daily living and perceived working capacity.

Psychological well being: affect, positive self concept, negative feelings, higher cognitive functions, body image and spirituality.

Social relations: social contacts, family support, sexual activity.

Environment: freedom, quality of home environment, physical safety and security, involvement in recreational activity, quality of health and social care and accessibility to services.

DATA ANALYSIS

The information collected by the questionnaire was compelled in Microsoft excel and analyzed with Epi info.

The results were expressed in terms of mean and SD.

Table 4: Asociation b/w socio demographic factors and mean score domain among study participants

| Factors | Physical Mean (S D) | Psychological Mean(S D) | Social Mean (S D) | Environmental Mean (S D) |
|-----------------|----------------------|--------------------------|-------------------|--------------------------|
| Gender : | | | | |
| Male | 52.5(5.7) | 51.9(8.2) | 58.5(4.9) | 52.4(4.8) |
| Female | 57.0(7.5) | 52.6(5.0) | 58.1(5.2) | 51.9(5.4) |
| P value | 0.02* | 0.65 | 0.77 | 0.72 |
| Age: | | | | |
| 60-69 | 55.4(7.7) | 57.1(5.8) | 57.8(4.07) | 51.3(5.1) |
| >70 | 55.6(6.7) | 52.5(7.0) | 58.9(6.1) | 53.2(5.2) |
| P value | 0.91 | 0.02* | 0.41 | 0.16 |

Student T test and ANOVA were applied to compare the mean scores of different variables under 4 domains. p value of <0.05 was considered significant.

Table 1: Age And Gender Wise Distribution Of Elderly:

| Age group | Male N (%) | Female N (%) | Total |
|--------------|-----------------|------------------|-----------------|
| 60-70 | 58(32.3) | 122(67.7) | 180(100) |
| >70 | 24(40) | 36(60) | 60(100) |
| Total | 82(34.2) | 158(65.8) | 240(100) |

Table 2: Distribution of study subjects according to quality of life score

| Total QOL score | N | Percentage (%) | QOL |
|-----------------|-----|----------------|-----------|
| 0-25 | 10 | 4.16 | Poor |
| 26-50 | 124 | 51.6 | Moderate |
| 51-75 | 102 | 42.5 | Good |
| 76-100 | 4 | 1.66 | Very good |

Table 3: Domain wise mean QOL Score

| Quality of life domains | N | Mean | S D |
|-------------------------|-----|-------|------|
| Physical | 240 | 49.51 | 7.22 |
| Psychological | 240 | 52.41 | 6.26 |
| Social relationship | 240 | 58.28 | 4.96 |
| Environmental | 240 | 52.06 | 5.22 |

Cont... Table 4: Association b/w socio demographic factors and mean score domain among study participants

| | | | | |
|-------------------------------|--------------|--------------|--------------|------------------|
| Marital status: | | | | |
| Single | 53.6(6.7) | 51.2(7.3) | 58.9(4.4) | 51.5(5.1) |
| With spouse | 57.5(7.3) | 56.7(4.6) | 57.5(5.4) | 52.5(5.3) |
| P value | 0.03* | 0.02* | 0.29 | 0.46 |
| Education: | | | | |
| Illiterate | 57.17(6.5) | 52.5(4.4) | 56.7(5.0) | 51.2(5.1) |
| Literate | 54.4(7.5) | 57.3(7.2) | 59.2(4.7) | 52.5(5.2) |
| P value | 0.16 | 0.02* | 0.064 | 0.35 |
| Socio economic status: | | | | |
| Upper | 55.3(4.5) | 52.2(5.6) | 50.6(6.8) | 57.3(5.3) |
| Upper middle | 53.8(5.7) | 53.5(6.2) | 51.6(7.5) | 56.8(6.2) |
| Lower middle | 56.2(4.9) | 57.3(7.5) | 56.8(5.6) | 52.4(4.9) |
| Upper lower | 52.3(7.5) | 58.3(6.4) | 58.7(4.5) | 51.2(5.2) |
| Lower | 51.4(5.7) | 56.3(7.8) | 53.7(6.5) | 50.3(7.2) |
| P value | 0.17 | 0.02* | 0.03* | 0.01* |

DISCUSSION

According to distribution of quality of life score majority (51.6%) were in the moderate QOL score followed by good score (42.5%) and the least score was for very good quality of life score. About 65.85 of study subjects were females as compared to males (34.15%). About 75% of the study subjects were in the age group of 60-70 years. The mean domain score was more for Social relationship (58.28 ±4.96) as compared to others which was 52.41± 6.20 for Psychological domain ,52.06 ±5.22 for Environmental domain and 49.51±7.22 for Physical domain.

The mean score for physical domain was more for females (57.0± 7.5) as compared to males (52.5±5.7) which was statistically significant whereas other domains did not have statistically significant difference scores. The psychological domain score was more in age group 60-69 as compared to old which was significant.

Single/widow/widower elderly have poor scores in physical and psychological domains as compared to elders living with spouse. The scores for psychological domain amongst married elderly population was higher than single or widowed elder people, and was found to be statistically significant while Barau et al. (2007)² state that environmental and social domain is significantly affected. In a cross-sectional study in Kerala, the author Bhattathiri found

that being widowed or single was associated with poor QOL (Bhattathiri 2007).

Illiterates in this study had more affected in psychological domain and literates had better QOL which is same as the study conducted by Bhatia et al. (2007)⁴ who conducted a study in 10 villages of district Ludhiana, Punjab, reported that Quality of Life was found to be significantly associated with education while according to Barau et al.(2007) ²it is not associated.

Social and psychological domains were more in upper lower and lower middle class of socio economic status as compared to others groups and environmental domain score was more among upper class which was significant.

CONCLUSION

The quality of life was average among elderly in all domains.an holistic approach in their development is need of the day in order to have a healthy n independent aged in the community

Recommendations: Community health programmes like elderly club, self help groups ,effective participation and rehabilitation should be organised for better care and support of elders. Suitable measures should be taken that would lead to longer period of health of elderly and thus preserving

their quality of life. Traditional role of respecting and caring elders should be reinforced at school level and interventions from primary level. Our womb to tomb social security policy should be strengthened.

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Source of Funding: Nil

Conflict of Interest: Nil.

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Study of Knowledge and Attitude of Child Rearing Practise among Mothers of Under 5 Children in Urban Area of Rajahmundry, A.P

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ABSTRACT

Background: India contributes a large proportion to global under-five child mortality. One of the determinants of child morbidity and mortality is the “child rearing practices.” **Materials and Method:** Information was collected by house to house interviews from married women residing in the urban field practice area. Data was collected during 1st October 2014 using pretested questionnaire Married women in reproductive age group with child in the age group of 1-5 years were eligible for inclusion. To assess the child rearing knowledge and practices (CRKP), a score was calculated based on 10 variables and categorized into satisfactory and unsatisfactory. **Results:** A total of 247 eligible married women were included in the study. **Conclusion:** The knowledge, attitude and practice regarding child rearing practices among mothers of under 5 was found to be satisfactory overall. Mothers’ education has a significant role in determining her child rearing practices, which in turn would lead better child survival.

Keywords- Child rearing practices, Under 5 Mothers, Breast feeding, Weaning, immunisation, Common illnesses, Urban

INTRODUCTION

India accounts for 24% of all under-five child deaths that occur globally.¹

Socioeconomic environment, child rearing practises and nutrition and health status play a synergistic role that can alter growth and development of a child.^{2,3,4}

The reasons usually cited for the poor state of infant and child health in India are inadequate neonatal care, insufficient breastfeeding, malnutrition, low immunity and high incidence of communicable diseases.

One of the determinants of child morbidity and mortality is the “child rearing practises.”

Thus, child rearing practises and mother’s knowledge about breast feeding, complementary feeding and immunization becomes important. Large population based surveys like the National Family Health Survey-3 (NFHS-3), 2005-06⁵ has shown the knowledge and practices are associated with literacy. India is culturally diverse and practices differ from region to region. Hence, it is important to understand the local practices to comprehend fully the determinants of child morbidity

This study aimed to assess the knowledge, attitude and practices regarding child rearing among married women residing in and attending the OPD of urban health centre located at Ambedkar Nagar, Rajahmundry, A.P the urban field practice area of G.S.L Medical College, Rajahmundry

METHODOLOGY

Rajahmundry is one of the major cities in the Indian state of Andhra Pradesh. It is located on the banks of Godavari River, in East Godavari district of the state. The city is the divisional headquarters

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of both Rajahmundry (rural) and Rajahmundry (urban) mandals. G.S.L Medical College and General Hospital is located 12 km away from Rajahmundry city on national highway no 16 i.e.; Rajahmundry Visakhapatnam highway.

The urban health centre the field practice area of G.S.L medical college which is located at Ambedkar Nagar was selected for this study. A community based cross-sectional approach was used to collect information by house to house interviews from married women attending OPDs. Data was collected from 1st October 2014 to 31st December 2014 using pretested semi-structured questionnaire that contained questions on socio-demographics, child immunization, breast feeding and other child rearing related practices. Immunization was considered complete if the child was given all age appropriate vaccines until date. The socioeconomic status was recorded according to the Modified Prasad's Scale.^[6] Married women in the reproductive age group with the child in the age group of 1-5 years were eligible for inclusion in the study. Women who were having children more than 5 years of age (to avoid recall bias) were excluded. The study was conducted in compliance with "ethical principles for medical research involving human subjects" of Helsinki declaration. Confidentiality of information from each participant was ensured and probable ethical concerns were discussed prior to starting the survey. The study participants were explained the purpose of the study and informed consent was obtained from them. To assess the child rearing knowledge and practices (CRKP), a composite score was calculated based on 10 variables namely - (1) Mother knows the importance of breast feeding, (2) Mother has correct knowledge about ideal duration of exclusive breast feeding, (3) Breast feeding for the youngest child was started within one hour of birth, (4) Duration of breast feeding for the youngest child was ≥ 6 months, (5) Weaning for the youngest child was started at 6 months, (6) Mother knows the importance of immunization to the child, (7) Mother knows the names of common childhood illnesses, (8) Mother has correct knowledge regarding treatment of diarrhoea, respiratory infection and malnutrition (9) Mother has no male child preference, (10) Immunization of the youngest child was complete until date. Statistical analysis like Chi-square test and test for trend were

applied wherever applicable and a P value of <0.05 was considered significant. All analyses were done using Statistical Package for Social Scientists (SPSS) Statistics version 20.

Study Design: Community Based Cross-sectional Questionnaire Based Study.

Study Setting: Urban Field Practice Area of G.S.L Medical College, Rajahmundry.

Study Subjects: Mothers of under 5 children.

Study Period: 1st October 2014 to 31st December 2014

Sampling Technique: Method of Systematic Random Sampling was followed.

Sample Size: 247 mothers of under 5 children.

Materials: Pre-tested, Pre-determined questionnaire was used.

RESULT

A total of 247 eligible married women were included in the study.

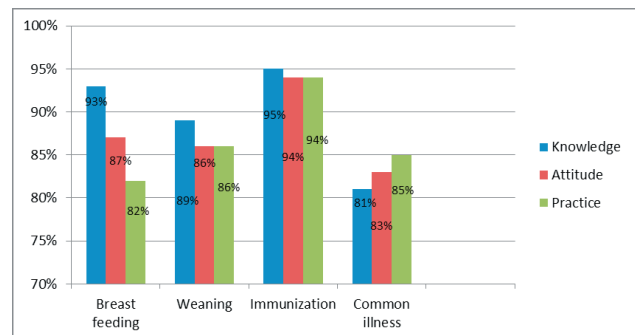


Fig.1

Among the mothers 93% of them had proper knowledge about breast feeding.

87% of the mothers were having correct attitude towards breast feeding practices and 82% were actually practising correctly

Out of 247 mothers 89% had adequate knowledge about weaning.

86% of the mothers had the right attitude and actually practiced the weaning.

Common foods given for weaning are soft rice, mashed potato, boiled local vegetables.

For immunization 95% of mothers had good knowledge and 94% of the mothers had good attitude

towards immunization and were actively visiting the health centre to get their child immunized on weekly immunization days.

Among the selected sample frame only 81% of mothers had adequate knowledge about common illnesses occurring in children

But the attitude of the mothers was found to be 83% and practice for prevention of the illness was 85%. This suggested that even though the mothers didn't have adequate knowledge about the illnesses but still they were actively visiting the health centre and following the advice given by the health personals regarding any illnesses.

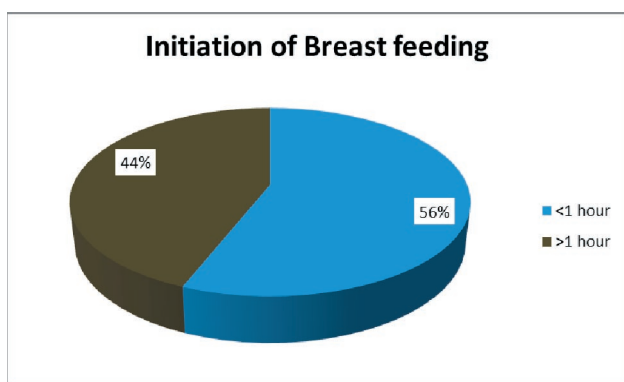


Fig.2

In the study it was seen that breast feeding was initiated within 1 hour by 56% of the mothers.

Rest 44% delayed breast feeding because either the mother or the baby were not available

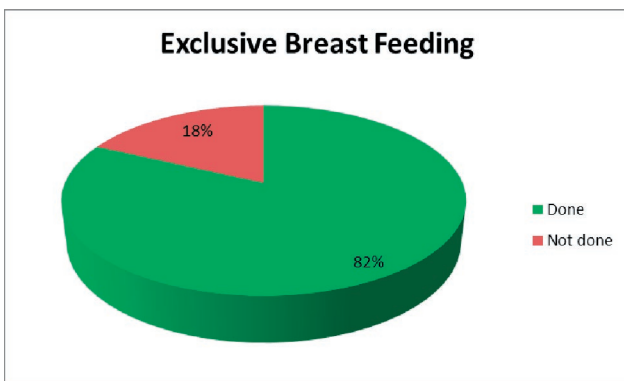


Fig.3

In the present study 82% of the mothers gave exclusive breast feeding to the child. While 18% of mothers gave pre-lacteal feeds. In this aspect literacy and parity played some role. Majority of the mothers who practiced exclusive breast feeding were literate or multipara. That means they had some knowledge

about the same.

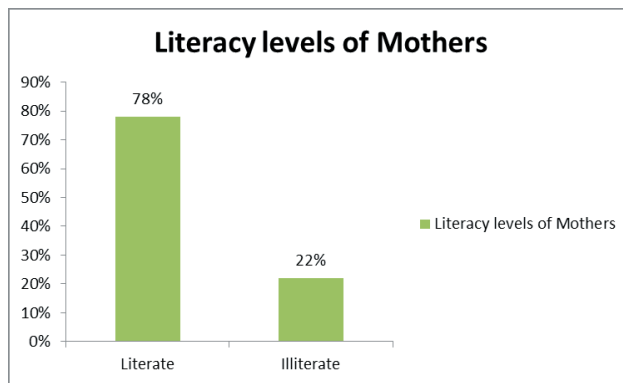


Fig.4

In the present study literacy level of mother's was also taken into account. To be called literate they should be at least able to read and write in local language (telegu). It was seen that 78% of the mothers were literate.

In this study 62% of mothers were found to be multipara. They had better knowledge about child rearing practices than the primi gravida mothers.

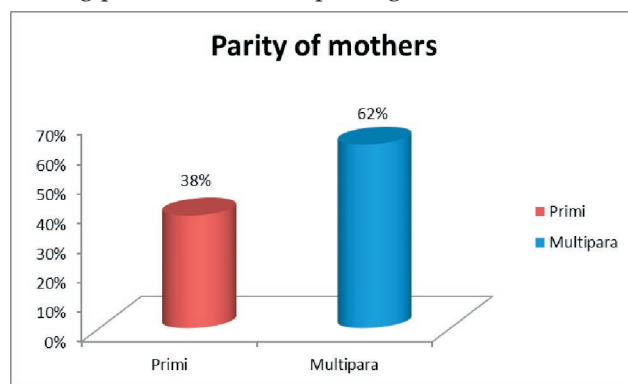


Fig.2

DISCUSSION

This study was able to determine the child rearing practices of mothers of under 5 attending the UHC. This study also provides a window to examine the extent to which health services have been able to influence child rearing practices of these women.

It was seen that more educated women had better child rearing practices. A number of studies have also come to a similar conclusion that maternal education was associated better breast feeding practices. [7],[8],[9]

A trend was also apparent in the practice of giving pre-lacteal feeds with more illiterate women giving pre-lacteal feeds, which is considered an unfavourable

practice in new born care. NFHS-3 data ^[5] shows that the practice of giving pre-lacteal feeds was higher illiterate mothers (67.5%) as compared with literate mothers (51.4%).

There was an interesting observation with regard to completeness of child immunization. Literate women were as likely to give full immunization. Repeated contact with health service functionaries for reasons like delivery, attending OPD, out-reach activities aimed to increase awareness may be some of the reasons that might have resulted in this trend. A study from India also showed that maternal education had a significant role in the immunization coverage of children. ^[10] Many studies carried out outside India also have documented the role of maternal education in the vaccination coverage of children. ^{[11],[12],[13],[14],[15],[16],[17]} NFHS-3 data ^[5] shows that immunization was higher among children of literate mothers (51.8%) as compared with children of illiterate mothers (26.1%).

In conclusion the overall knowledge, attitude and practice regarding child rearing was found to be satisfactory. It can be stated that mothers' education has a significant role in determining her child rearing practices, which in turn would lead better child survival. The government should give more emphasis to improving maternal education as a long-term strategy in controlling child morbidity and mortality, apart from focusing on measures like improving new born care and childhood disease management.

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Ethical Clearance- Ethical clearance was obtained from the Institutional Ethical Committee before the study.

Source of Funding - Self

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Evaluation of Integrated Skills Development Training Under RCH of Multipurpose Health Workers in a Rural Block of Haryana

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ABSTRACT

Background: India in 1951 became the first country in the world to launch a state sponsored family planning programme with the goal of lowering fertility and lowering growth rate. The Programme lays utmost emphasis on quality of services. The quality of services in turn is dependent upon the training of the medical and para-medical man power. **Objective:** To analyze the deficiencies in the working of Health workers and the areas requiring training. **Study design:** The study design was cross-sectional. **Participants:** 34 Health Workers (15 male&19 female) **Material & Method:** Block Beri is a field practice area attached to Pt. B.D.S. PGIMS Rohtak. All the 24 sub centers of Block Beri were personally visited by the investigator. The workers employed at the time of the study were interviewed using a pre tested semi-structured Proforma. The activities of the workers were observed, both at the sub center as well as the field. **Results:** the investigator observed that 93.33% male worker check red blood pressure correctly and 88.66% prepared correctly annual action plan while 89.7% female worker correctly measured Hb and 73.68% female worker conducting deliveries. **Conclusion:** Updating of knowledge and improvement in skills is associated with the development of favorable attitudes, motivation and feeling of commitment in work.

Keyword: Training, ICT, Health Worker, Skill, Knowledge

INTRODUCTION

India in 1951 became the first country in the world to launch a state sponsored family planning programme with the goal of lowering fertility and lowering growth rate.^{1,2} The Reproductive and Child Health (RCH) Programme was launched in India on 15th October 1997 with the aim of providing integrated Reproductive & Child health care, on the basis of needs assessed through area specific micro planning.³ The Programme lays utmost emphasis on quality of services. The quality of services in turn is dependent

upon the training of the medical and para-medical man power. Updating of knowledge and improvement in skills is associated with the formation of favorable attitudes, motivation and feeling of commitment in work. RCH Programme is implemented through the net-work of sub centers, primary health centers, community health centers and hospitals provided under the Government Health System. Under the RCH Programme two types of training courses have been organized namely Awareness generation Training (AGT) and Skill Based Training. Integrated Skill Training (IST) under RCH programme covers a comprehensive RCH package along with appropriate managerial and communication skills⁴. An important component is development of skills for involving community and thus activating participatory planning of annual activities and work schedules.

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Similarly, development of skills to ensure quality services to the people receives due attention. For integrated skill training of ANM, LHV, MO (PHC), HW (M), HA (M) and Staff Nurse at PHC/CHC the training guidelines curricula and modules have been prepared by NIHFW incorporating Maternal Health, Child Health, Adolescent Health, Management and communication components. After the start of RCH Programme it was seen that health workers lack certain basic clinical skills expected out of them. IST aims to improve the basic clinical knowledge and their practical use by the health workers.⁵

MATERIAL & METHOD

The present study was conducted in Community Development Block Beri, which is a rural field area attached to Department of Community Medicine, PGIMS, Rohtak. The block which falls in district Jhajjar, has a population of 1,48,235 spread over 33 villages. The Community Health Centre of the block is located in village Dighal which is about 19 Kms from Rohtak on Rohtak – Jhajjar road. There are 3 PHCs (Bhambewa, Dubladhan Majra & Jahazgarh) and 24 subcentres in the block. The study population comprised of all the multipurpose health workers, posted in the block that had undergone their Integrated Skills Development Training (IST) under RCH. The total number of multipurpose health

workers, who had undergone their IST was 34 out of which 15 were male while 19 were female workers.

The 10 parameters like Checking of B.P Weight, Identification of Severity of anaemia clinically, Measurement of Symphysis Fundal Height (SFH) and abdominal girth (AG), Haemoglobin estimation, Packing of Vaccine carrier, Administration of vaccines, Preparation of ORS (Demonstrations to mothers), Counting of respiratory rate, Preparation of blood slides for malaria, Maintenance of record and reports were used to assess the competencies of the female Health Workers. Similarly the 10 parameters like conducting meeting in villages, Technique of administration of DPT, Technique of administration of BCG, Calculation of number of doses of vaccines, vitamin –A solution, IFA, syringe requirement, B.P. checkup, Urine test for sugar and albumin, Technique of administration of measles, Recognition of dehydration on diarrhea, Weight of child, Preparation of ORS and HAF, Recognition of anaemia were used to assess the competencies of the male Health Workers. The score was given to each parameter and then all scores of each parameter is divided and divided into grades. The grades are divided on the basis of score as follows: Score 0-2 = Grade poor, score 2-4 = Average Grade, score 4-5 = grade good

RESULTS

Table 1: Assessment of Competencies of MPHWH (F) in a rural block (n=19)

| Competencies | Grading | | |
|--|------------|---------------|------------|
| | Poor (0-2) | Average (2-4) | Good (4-5) |
| Checking of B.P. & Weight | 0 (0) | 11 (57.9%) | 8 (42.1%) |
| Identification of severity of anaemia clinically | 0 (0) | 8 (42.1%) | 11 (57.9%) |
| Measurement of SFH and AG | 0 (0) | 15 (78.9%) | 4 (21.1%) |
| Haemoglobin Estimation | 19 (100%) | 0(0) | 0(0) |
| Packing of vaccine carrier | 0 (0) | 4 (21.1%) | 15 (78.9%) |
| Administration of vaccine | 0 (0) | 4 (21.1%) | 15 (78.9%) |
| Preparation of ORS | 0 (0) | 0(0) | 19 (100%) |
| Counting of respiratory rate in a child | 0 (0) | 16 (84.2%) | 3 (15.8%) |
| Preparation of blood slide for malaria | 0 (0) | 13 (68.4%) | 6 (31.6%) |
| Maintenance of record and report | 0 (0) | 10 (52.7%) | 9 (47.3%) |

The table 1 shows that only the 42.1% worker knew the exact measurement of BP of patients and were scored good, 57.9% worker had capable of identify the severity of anaemia clinically, 78.9% had graded as average in respect to measurement of SFH and AG, all female worker were graded poor for haemoglobin estimation, majority of workers (78.9%) were scored good grade in respect to packing

of vaccine carrier and administration of vaccine, all female worker were graded good for preparation of ORS, maximum workers (84.2%) were graded average for counting of respiratory rate in a child, two third (68.4%) were score average for preparation of blood slide for malaria while nearly half of subjects were scored good in respect to maintenance of record and report.

Table 2: Assessment of Competencies of MPHWH (M) in a rural block (n=15)

| Competencies | Grading | | |
|---|------------|---------------|------------|
| | Poor (0-2) | Average (2-4) | Good (4-5) |
| Conducting meeting for villages | 1 (6.7%) | 14 (93.3%) | 0(0) |
| Calculation of number of doses of vaccines, vitamin –A solution, iron folic acid tablets, syringe requirements. | 6 (40%) | 9 (60%) | 0(0) |
| BP check up | 2 (13.3%) | 12 (80%) | 1 (6.7%) |
| Urine test for sugar and albumin | 15 (100%) | 0 (0) | 0(0) |
| Weight of child | 3 (20%) | 12 (80%) | 0(0) |
| Recognition of Anaemia | 0(0) | 9 (60%) | 6 (40%) |
| Technique of administration of DPT | 0(0) | 14 (93.3%) | 1 (6.7%) |
| Technique of administration of BCG | 0(0) | 0(0) | 15 (100%) |
| Technique of administration of Measles vaccine | 0(0) | 0(0) | 15 (100%) |
| Recognition of dehydration in diarrhoea | 0(0) | 15 (100%) | 0(0) |
| Preparation of ORS and home available fluids | 0(0) | 2 (13.3%) | 13 (86.9%) |

The present study shows that no MPHWH (M) had scored good for conducting meeting for villages, 40% worker scored poor scored for calculation of number of doses of vaccines, vitamin –A solution, iron folic acid tablets, syringe requirements, 80% had average scored for measurement of BP of patients, 100% worker had no knowledge about urine test for sugar and albumin, 80% had graded as average in respect to weight of child, only 6.7% scored good for technique of administration of DPT but all workers scored good scored in respect to technique of administration of BCG and Measles vaccine, 100% worker graded average for recognition of dehydration in diarrhoea while majority of subjects (86.9%) were scored good in respect to preparation of ORS and home available

fluids (Table 2).

DISCUSSION

Integrated skills development training was started under RCH programme as a need was felt to train the medical staff including MOs, Nurses and MPHWHs to make them proficient in the implementation of RCH programme. The present study carried out in the Community Development Block Beri revealed that gain in knowledge of the workers was minimal. There was just average gain in most of the areas covered under training. Maximal gain in knowledge in case of female workers was seen in the areas of CNAAs and sub centre action plan formation (47.3%) and in counseling skills and IPC (36.9%). The male workers

also did not fare very well and only 20% of them had a maximum gain in the task of involving community workers and counseling. The female workers did not have any night duties or labour room duties. 68.4% of MPHWS (F) did not receive the module meant for their reading. 47% of male workers also did not receive any module during their training period.

Assessment of the competence gained by the workers was also done by the investigator himself by observing certain parameters. Even after undergoing IST, the workers were not able to perform most of these efficiently. There were certain constraints which did not make it possible to observe activities, such as haemoglobin estimation. More than half on the female workers could not measure BP and almost 80% were not able to measure Symphysis Fundal Height & Abdominal Girth properly. 52.7% MPHWS (F) had not completed and maintained their registers regularly.

The male workers were also found to be lacking in many areas especially in the calculation of vaccines demand, IFA tablets, vitamin, -A solution etc. None of them could perform urine test for sugar and albumin. The salient finding of this study was that the IST was did not result in the intended impact on the competencies of MPHWS.

The IST was first started in the state of Gujarat and West Bengal. A study was carried out by NIHFWS in the state of Gujarat. All the training institutions included in the study were doing evaluation of integration skill development training of MPHWS (F) by giving a pre and post test. However evaluation reports were available in 45% of these institutions. This study revealed a gain in knowledge of the trainees. 75% of the institutions were doing certification of training and this was based on the attendance of trainees and not on the proficiency test recommended in the norms.⁶

Among all the health workers interviewed the job satisfaction level was found low. The major reasons were not receiving salary in proper time (21.7%), insecure physically at the work places (42.6%), absence of promotional channel in the system (71%), inefficient supervisory practices by the supervisors (62.4%) and feeling overburdened while doing their job (84.5%).⁶

About 93.89 percent posts of MPHWS (F) on an average have been found in position in the study area. However, the average vacancy of the posts of MPHWS (M) was 67.98 percent except in the state of Chattisgarh, where it was 16.67 percent. This has an effect on the functioning of sub health centres. 8.68 percent of all the centres did not have any building for proper rendering of health care services, mostly they were providing services in a small room either in the temple premises or in the school or even in the panchayat bhavan. 43.63 percent of centres were functioning through rented buildings, however facilities related to the future and equipments were found grossly inadequate in almost all the centres including the centres operating in government buildings.⁶

During observation of some of the activities of MPHWS, both male and female, it was observed that 34 percent of them were not following essential steps of the activities. This definitely reflected on the quality of the services provided and also on the status of skill based training.

CONCLUSION AND RECOMMENDATIONS

Updating of knowledge and improvement in skills is associated with the development of favorable attitudes, motivation and feeling of commitment in work. Training institutes of states such as SIHFWS and also central agencies like NIHFWS are playing a very important role in this regard by providing different kinds of training. IST is one such training.

On the basis of observations following recommendations are suggested:

1. The Training of all MPHWSs was held in either SIHFWS or district training centres. It would be beneficial if such trainings are provided in their own PHCs.
2. To make the IST really meaningful, the teaching and training should be practical oriented rather than being lecture based. The workers tend to forget newer concepts taught to them but would easily grasp newer concepts and techniques by observing them and then performing these themselves.
3. Training of trainers is another area which needs much more emphasis. The trainers themselves should have the zeal to motivate the workers to

acquire new knowledge and learn new skills.

4. To decrease the work load of MPHWS the maintenance of five registers should be done away with and a single register should be kept for recording all the information on the pattern followed in Maharashtra where a single register is used.

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Conflict of Interest - Nil

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Patterns in Consumption of Alcohol among Medical Interns in Mangalore, South India

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ABSTRACT

Background: College students in many countries are at elevated risk for heavy drinking, with serious immediate health risks, such as drunken driving and other substance use; and longer term risks, such as alcohol dependence.

Objectives:

1. Prevalence of alcohol use among medical students.
2. Patterns and causes associated with alcohol consumption.

Materials and Method: A community based cross sectional study was undertaken in 5 medical college interns with 30% of interns (30 from 4 and 60 interns from another as intake is 100 and 200 respectively) in each medical college who were selected using random numbers and the pre-tested validated questionnaire was introduced to the interns to know the prevalence and different associated cause of intake of alcohol among them. Girls and boys were proportionally selected in each college. Proportions, Chi square were calculated.

Results: The prevalence of alcohol use was found to be significantly more in students living away from their homes. The alcohol consumption was significantly more in males [83.3%] when compared to females [38%]. About 58% of the students consuming alcohol were found to be regular users and 16% were binge drinkers. 64% of the students started consuming alcohol at an early age [15-20 yrs.]. From the study it was found that 18% of the students were in trouble due to alcohol consumption. A significant no. of students consuming alcohol were found to be performing average [50-65% of the marks]

Conclusion: Alcohol consumption is highly prevalent among medical interns and common with students away from home.

Keywords: Alcohol use, medical interns, patterns of alcohol consumption, prevalence of alcohol consumption.

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BACKGROUND

In recent years the consumption of licit (tobacco, alcohol) as well as illicit substances has increased greatly throughout the world. ¹ Particularly alarming is the fact that age of initiation of substance abuse is falling and students are particularly involved due to increasing academic pressures.¹ Peer pressure, the

lure of popularity and easy availability of substances like alcohol and other drugs make a teenager an easy prey. In India, approximately 5500 children and adolescents start using tobacco products, some as young as 10 years old with a majority of users having first use prior to 18 years.¹

College students are at elevated risk for heavy drinking, with serious immediate health risks, such as drink-driving and other substance use; and longer term risks, such as dependence. But still, prevalence of hazardous drinking is lower in Africa and Asia compared to that in Australia, Europe and the Americas.²

College students' alcohol consumption has received considerable attention in the scientific literature and the media for its impact on students and the college community. The prevalence of substance use was higher in urban students (37.9%) as compared to rural students.⁴

Alcohol policies need to be reviewed and prevention programmes initiated in light of research evidence, for this high-risk population.²

But there is lacunae in Indian research on alcohol consumption among young adults to revive on alcohol policies, particularly pertaining the professional college students. So this study was planned to determine the prevalence and the factors associated with use of alcohol among medical students.

MATERIAL & METHOD

Mangalore has five medical colleges and there are at a total of 600 interns at a given point in time in these 5 medical colleges in 2013. The present cross sectional study was conducted among medical Interns of all the five medical colleges in Mangalore. Thirty percent of interns were proportionally selected in each college depending on their strength (30 interns each as the intake is 100 in four medical colleges and 60 in one college as there are 200 interns in that college). So the total sample size worked out to be 180 interns. From each medical college, a list of all the medical interns were made using the roll numbers and the participants were selected randomly from this list. Care was also taken to have proportionate representation from the girls and boys. A pre-tested, face validated questionnaire where content

validation was done by 3 experts was administered to the interns. It was a self-administered questionnaire and each component was given equal priority. The participants were explained the nature and purpose of the study before administering the questionnaire. The questionnaire contained questions to know the prevalence and patterns, effects and cause of intake of alcohol. As it was a cross-sectional study effects pertained to immediate effects like fights, police case etc was considered.

Operational definitions: 1.ABUSE: It is called abuse when the consumer fail to fulfill role obligations at work, school or home. Physically hazardous situations to the consumers. They might have legal problems. Continued use alcohol despite serious social and interpersonal problems.¹

2. Dependence: Consumers have tolerance, withdrawal symptoms, persistent desire to cut down drinking, Great amount of time of consumers is spent with activity related to alcohol, Social, occupational or recreational activities are given up by dependents, Continued use despite of knowledge of serious social, psychological and physical problems.¹

3. Social Drinkers: This type of consumers drink slowly, know when to stop, does not drink to get drunk, never drives after drinking, they respect non-drinkers also knows and obeys laws related to drinking.¹

4. Binge Drinking = Consumption of five or more drinks at a single sitting for a man and four drinks at a single sitting for a woman.¹

5. Ever user: The respondent, who accepts having taken one or more mentioned substances ever in life.¹

6.Regular user: The respondent, who accepts having used one or more mentioned substances during past one year and has been taking it at least once a week or several times in the previous month¹

Anonymity of the participants were maintained. As no interventions or risks were involved in the study, ethical clearance was not taken.

Statistical analysis: Proportions to know the prevalence, risk factors and effects was be used and Chi-square to find the association was used.

RESULTS

There were a total of 180 participants in this study. The prevalence of alcohol use was found to be 69.8% (n=125) among the medical interns.

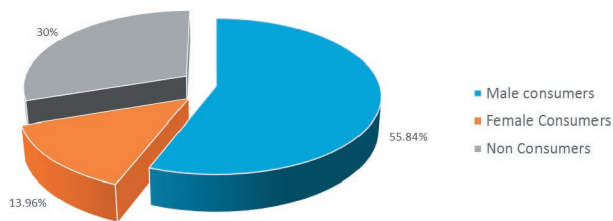


Figure 1: Pie chart showing the prevalence of alcohol consumption among the participants (n=180)

Of those who consumed alcohol, 40% (n=50) were found to be regular users; 30% (n=38) were binge drinkers; 13.3% (n=17) had ever used alcohol and 36.6% (n=46) were only social drinkers. Although none of the interns were found to indulge in alcohol abuse, 10% (n= 12) of them were alcohol dependent (Figure 2).

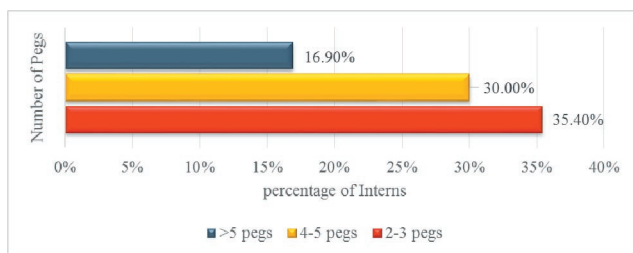


Figure 2: Figure showing the classification of alcohol consumption (n=125)

More than half of the study subjects (n=65; 51.74%) who consume alcohol do not stay with parents. One fifth (n=25) of alcohol consumers in our study were females; and further among them 8% (n=2) were binge drinkers and 60% (n=15) were social drinkers and 32% (n=8) were ever users. None among females who consume alcohol were abusers or dependent. Alcohol consumption was significantly (p<0.005) more in males [83.3%] when compared to females [38%]. 25.6% (n=32) of the students started consuming alcohol at an early age [15-17 yrs.], and 10.4% (n=13) of them started at <15 yrs. It says majority (n=89; 71.2%) of them start the consumption of alcohol at a very early age (<20yrs).

Most interns (n=103; 82.4%) who drink alcohol, consume more than 2 pegs at one sitting. Figure 3 depicts that 35% (n=36) of them consume 2-3pegs, and

16.9% (n=17) of them consume more than 5 pegs.

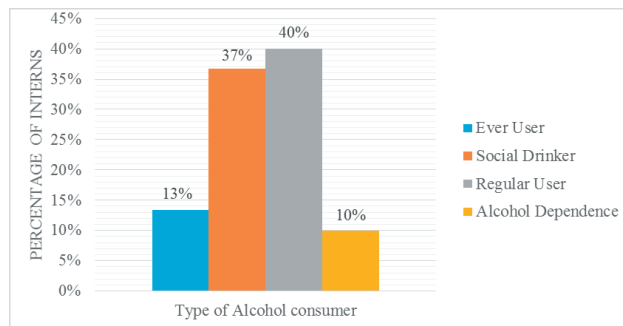


Figure 3: Figure showing the number of pegs consumed by the participants consuming 2 or more pegs (n=103)

Table 1: Table showing the frequency of and reason for alcohol consumption among the interns who consume alcohol (n=125)

| Frequency of alcohol consumption | Number | Percentage |
|----------------------------------|--------|------------|
| Consume alcohol every day | 13 | 10.4% |
| Consume alcohol twice a week | 21 | 16.70% |
| Consume alcohol once a week | 50 | 40% |
| Occasional consumers | 41 | 33% |
| Reasons for alcohol consumption | | |
| Peer pressure | 75 | 60% |
| Parental influence | 13 | 10% |
| Others(media) | 37 | 30% |

Table-1 depicts 10.4% (n=13) of the Interns who consume alcohol, drink every day, 40% (n=50) once a week. Only 1/3rd (n=42) of the alcohol consuming interns, drink occasionally of which 11.9% (n=5) of them had alcohol once till date. It was significant that 8.8% (n=11) of the alcohol consuming interns were unaware of the health hazards.

Half (n=63) of the alcohol consumers also smoke with alcohol. One third (n=42) of the alcohol consuming interns could not resist alcohol consumption whenever they wanted to stop and 23.2% (n=29) of consumers wanted to stop the habit. Only 10% (n=13) of the interns consuming alcohol

had tried quitting the habit and 16% (n=20) of them also feel bad about their drinking habit. It was seen that 44% (n=55) of the interns consider it was safe to consume alcohol. It was also observed that 88% (n=110) of them believe their drinking patterns are mood dependent and 81% (n=101) of their parents are unaware of their alcohol consumption. It is alarming to note that 70% (n=88) of the alcohol consumers have room-mates who also consume alcohol. Peer pressure was the reason for starting drinking in 60% (n=75) and 10% (n=13) with parental influence (Table-1).

From the study it was found that 22% (n=28) of the students had some trouble which they attribute to alcohol consumption; of which 46% (n=13) of them with police (caught by police), 53.5% (n=15) of them had an RTA and 30% (n=8) of them had a fight with a friend. It is also important to note that significant number of students consuming alcohol (n=108; 86%) as compared to other students not consuming alcohol (p<0.005) were found to be performing average [50-65% of marks] in exams.

DISCUSSION

The study shows that there is an increasing trend of alcohol consumption among the young professional fraternity; also the trend of consumption of alcohol in females is increasing in India where almost 14% of total consumers being females. Regular alcohol consumers is similar to previous studies with 30% of them binge drinking as compared to earlier study where 58% of them were regular users.⁵ Approximately one-third of participants reported binge drinking 3 or more times in earlier study.⁶ 82.5% of alcohol consuming interns went for more than 2 pegs in one sitting which is alarming. Nearly half of them (47.4%) consume more than 4 pegs of alcohol which is of concern as all the health professionals were of age group 22-23 years and excessive binge drinking at this age is dangerous to them and society. This is similar to earlier studies college students in many countries are at elevated risk for heavy drinking, with serious immediate health risks, such as drink-driving and other substance use; and longer term risks, such as alcohol dependence.⁵ Findings from earlier study and also our study provides initial data for investigating further associations between risky drinking behavior, lifestyle, and psychosocial factors, as well as effectiveness of curriculum or campus-wide

policy interventions to reduce over-consumption of drinking among this population.⁴ Our study poses more of risk as the medical interns knowing the ill effects are yet into binge drinking and regular use which says that they are similar to other college students. This also speaks of peer pressure and style statement associated with alcohol consumption.

Majority (71%) of medical interns had started alcohol at very early age (<20yrs) and 10% of them before 15years. It is alarming as these are the potential candidates for alcohol dependence as seen in earlier studies, that early start of habit are the potential candidates for alcohol dependence and abuse in their middle age attaining health problem.⁴ Studies have also shown being of younger age, male, unmarried, using illicit drugs, smoking tobacco products and alcohol consumption within the last 30 days, have low perception of risk, showing impulsive behavior, being depressed, and having gambling problems.⁴

Alcohol consumption had led into indication of depression, violence, weapon possession, & gang membership, school problems (attendance, grades, connectedness), victimization and harassment (to lesser extent), feeling unsafe at school and around 68% of the students showed decreased skill and irregularity in attendance in earlier study.⁷ 50% of the alcohol consumers in our study also smoked during drinking which is more hazardous. Our study also says 61% of the alcohol consuming interns had significantly lower performance as compared to non-consumers and 22% of the consumers had faced problems due to alcohol consumption like RTA and with friends. This issue of over drinking and regular use has to be addressed among the medical interns seriously also that around 8.5% were unaware of harmful effect which says that they are being misled or they are themselves closing eyes against the harmful effect. There is need for the proper education among the medical interns on their alcohol consumption.

CONCLUSIONS AND RECOMMENDATIONS

The prevalence of alcohol consumption was quite high among the medical interns. So as public health personnel, and with rising incidence of RTA and CHD, there is a need to educate the young medical fraternity about the ill effects of alcohol consumption.

Probably it would be of help if behavioral change communication regarding the health effects of licit and illicit drug use is embedded with the medical education curriculum.

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Climate Change, Public Health and Sustainable Development: The Interlinkages

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ABSTRACT

Development is a holistic concept which includes healthy and educated people; preserving environmental resources for future generations; protecting people from harmful consequences of climate change and eradicating poverty & hunger by ensuring distributive justice. This will result in more healthy and productive workforce and more development. The driving forces such as population growth and economic development put pressures on the environment and exposure to environmental hazards results in “risks to health” of people. Climate change results in food insecurity due to direct impact on crop yields resulting in malnutrition and poverty. Heat waves, floods, droughts and other extreme events result in loss of health and productivity. This is due to loss of shelter, increase in food & water borne diseases and also an increase in vector borne diseases. It is a joint responsibility of government, NGOs, civil society and private sector to break this vicious cycle of unplanned development, climate change, poverty and ill health. The study advocates converging together public health efforts, sustainable development efforts, environmental planning efforts and poverty alleviation efforts and to converse & co-ordinate with each other for a better future of whole humanity.

Keywords – Public health, Sustainable development, Climate change, Poverty.

INTRODUCTION

During the 20th century, average surface temperature of earth has increased by about 0.6 degree Celsius which is very likely human induced and is due to greenhouse gas concentrations.^[1,2] Human influence has also led to warming of atmosphere and oceans, ocean acidification, changes in precipitation patterns, reduction in ice & snow, changes in sea level, extreme climate conditions, loss of biodiversity, loss of coral reefs, and extinction of many species.^[3] There are projections for the year 2100 that warming will increase by 1.5 and 2 degree Celsius in the presence of strong mitigation efforts and warming could increase by 4 degree Celsius in

the absence of or with low mitigation efforts.^[4] A 4 degree Celsius warmer world certainly must be avoided because of its implications on agriculture, water resources, ecosystems, biodiversity, human health, economic growth, development and human survival utmost. Unplanned development has led to emission of greenhouse gases over decades and thus climate change. As a result development itself suffers, because lots of resources get wasted to cope up with adverse consequences of climate change which otherwise would have added to better health, education, and better socio-economic status of people. Environment and human beings are interdependent. At one hand human beings are increasingly altering the environment and on the other hand climate change is adversely affecting health of people and pushing more people in to poverty.^[5] Thus climate change is a ubiquitous challenge in front of all people of world irrespective of their profession, departments and specialisations. All the seven billion children of mother earth must come together to save its environment.

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MATERIALS & METHOD

The paper is a review article. Rigorous literature review was done to extract the information. Thematic analysis was done to generate main themes and sub-themes. The paper was then structured, analysed and concluded at the end.

ENVIRONMENT & HEALTH

Climate change alters the natural environment and affects the health of people by causing malnutrition, vector borne diseases, food & water borne diseases and diseases associated with air pollutants & aero-allergens. The risk to health of people by these diseases will increase significantly in coming decades.^[6] Infectious diseases are highly sensitive to climate change. Temperature, precipitation and humidity play an important role in reproduction & survival of vectors & infectious agents. Climate change results in abnormal patterns of precipitation, humidity & temperatures; which results in mosquito breeding sites, increased survival & development of mosquitoes. Thus prevalence of malaria and dengue has increased over recent years.^[7,8] As a result of climate change, disasters have become more frequent; such as hurricanes, typhoons, earthquakes, tsunamis and floods. During disasters epidemic outbreaks occur, particularly of cholera and other diarrhoeal diseases.^[9] Meningococcal meningitis is another seasonal infectious disease favoured by dry, hot and dusty climate. Morbidity and mortality from meningitis have increased over the past 10 years particularly in meningitis belt of sub-saharan countries like Burkina Faso.^[10] High temperature itself is a threat to human health particularly for elderly, chronically ill and children. It is projected that by 2050s, heat events will be very frequent.^[11] Excessive exposure to UV radiations of sun results in premature ageing of skin and more severe outcomes like skin cancer.^[12] A hole in ozone layer over Antarctica region, was discovered in 1985, which exposes the human population to harmful UV radiations. Industrial chemicals and chlorofluorocarbons (CFCs) further destroy the stratospheric ozone and the ozone hole is increasing year by year. Air pollution is also directly related to morbidity and mortality, particularly exposure to unsafe levels of fine particulate matter (PM₁₀) has

severe consequences to health.^[13] According to WHO, about 235 million people worldwide suffered from Asthma. Due to climate change, seasons of pollens start earlier and last longer, leading to asthma associated with pollen allergens. To avoid this effect, low allergenicity ornamental plants could be selected for homes, gardens, residential areas and streets to reduce the allergy to pollens. Indoor air pollution carries even greater risk for health, mostly in women and children. The sources of indoor air pollution include inefficient use of solid fuels for cooking^[14] and tobacco smoke^[15]. Wild fires and forest fires have become very frequent. Emissions from fires contain gas and particle pollutant which has adverse health outcomes for humans and animals. Nuclear accidents are major catastrophe and large scale dispersion of radiological materials from nuclear incidents causes cancers and genetic mutations in large populations.

WHO is running a project called Global Information Management System on Health and Environment (GIMS). It is taking the help from WMO (World Meteorological Organization) and regional meteorological services to predict extreme events of climate change and associated epidemics and endemics.^[16] GIMS could help in predicting episodes of malaria, diarrhoea and other climate related epidemics months in advance and accordingly public health task force could be deployed for prevention and control of these diseases at particular time periods and at particular places.^[16]

Health impacts of climate change are felt globally but these health impacts are more severely felt by poor and vulnerable. Thus poverty is both a catalyst & consequence of climate change & poor health.

Poverty as a consequence of climate-change –

It takes decades for development to take place but a few moments of disastrous effects of climate change could undo all the development efforts and poor countries are particularly vulnerable to the destructive effects of climate change.^[17,2] Also there is a direct correlation between availability of drinking water, sanitation and outbreaks of cholera & diarrhoeal diseases. The poor and developing countries already suffer from reduced access to safe drinking water, sanitation and health services. Climate change increases these shortages^[18] and

also threatens food security due to direct impact on agriculture & crop yield^[19]. In most of the developing countries, agriculture is dependent on rain water for irrigation. Decreasing precipitation over the years has increased the burden on fresh water supplies. In addition to this increasing environmental exploitation through overgrazing, deforestation, desertification and mineral extraction has led to degradation of a large portion (about 40%) of land globally.^[20] Also poor countries have limited resources to cope with climate change and its destructive effects.^[17,21] In recent years El Nino has caused lots of destruction and loss of alternate livelihoods for the poor and vulnerable. Degradation activities and unusual patterns of rainfall have led to soil erosion, thus loss of agriculture and biodiversity.^[21] Even a minor rise in temperature of oceans can lead to vast damage of coral reefs and thus has an impact on ecological balance and human survival.^[21] Impact of climate change on limited resources of poor and developing countries leads to unrest and wars over decreasing resources and also mass migrations. Paradoxically poor countries contribute a little to climate change, yet these people are first ones to bear the adverse impacts of climate change.^[2,18] More than a billion i.e. majority of poor people in developing countries do not have access to electricity and those who have access to electricity suffer from long cuts & only unreliable access to electricity.^[22] Greenhouse gas emissions per capita, are higher for developed countries than developing countries. Carbon dioxide emissions are more than four times higher and methane & nitrous oxide emissions are two times higher in advanced economies as compared to less advanced or poor economies.^[20] The environmental degradation and exploitation of natural resources has led to more poverty generation.^[23] Thus poverty is a consequence of climate change. It poses a limitation on access to all the fundamental rights of poor people i.e. right to health & basic education, right to security, right to income & material needs. Safe drinking water is not available to poor people, either due to floods or droughts, leading to water-borne diseases and thus morbidity & mortality.^[24] Poor people also have limited physical & financial access to medical treatment. Natural disasters also destroy property and means of income for the poor people. Such episodes of extreme climate change events leads to epidemic outbreaks and thus loss of productivity.^[25] Resources

which could be better utilised for development of a country are wasted in coping with disasters and other adverse effects of climate change.

Breaking the vicious cycle: Sustainable development –

The world leaders showed concerns for environment for the first time in a global conference on the “environment and development” in Stockholm in 1972. The simultaneous publication of “limits to growth” pointed out challenges of economic growth towards environmental sustainability. It catalysed a series of global efforts towards sustainable development. From time to time such efforts were discussed and sustainable development plans were formulated in Agenda 21, 1992 Earth Summit, 1997 Kyoto protocol, 2002 Johannesburg summit, millennium development goals and now sustainable development goals.^[26,27] Millennium development goals were a set of comprehensive eight goals which addressed poverty, hunger, gender, education, health, environment and development. They have already established linkages between all these social issues and were successful in addressing them altogether. Now there is a time for transition towards sustainable development goals or post 2015 agenda. Global sustainability panel led by UN Secretary-General Ban Ki-Moon in the Rio +20 Summit in June 2012 recommended the adoption of Sustainable Development Goals (SDGs).^[28] Sustainable development include adoption of green technologies in all fields, from antimalarial bed-nets to high yield seeds to solar energy. There is a need to adopt green technologies which are market-driven solutions for reducing harmful impact of industries on environment. Few of the solutions are suggested here.^[29] a) Recycling of waste by-products of one industry that could be used as raw materials for some other industry. For example, Molasses (by-product of sugar industry) could be used for distillery in alcohol manufacturing. The dry fly-ash of thermal power plants could be used as a filler material in cement manufacturing/ brick-making industries. b) Effluents from industries should be segregated at their source, which removes the need for further treatment and enhance utilisation. For example, coloured and non-coloured streams from textile industries should be segregated at their source. Non-coloured stream requires mild treatment for recycling. Small volumes

of coloured streams will require lower inputs as compared to large volumes of non-segregated streams. c) The approval of building plans by municipal corporations should be strict and only eco-friendly design architectures should be approved. d) In transport sector, electric vehicles should be encouraged and use of public transport system should be encouraged. e) There is a huge potential for “waste to energy”. Organic matter present in garbage could generate organic compost. Plastic could be recovered and mixed with bitumen for construction of roads. Plastic could also be converted to fuel through gasification. f) Green zones could be developed in vacant lands and capped landfills.

Dr Vandana from Navdanya emphasized the importance of small scale bio-diverse organic farms, agro-forestry, green manures, earthworms, mycorrhizal association, mixed cropping, ancient seeds and biodiversity in farming practices. These practices help in mitigating climate change, conserve biodiversity, increase food security and produce higher incomes for farmers. As compared to industrial agriculture, organic farming uses less fossil energy, conserve more water in the soil, uses less resources and enhance soil quality.^[30] Dr Subramanya from Tata BP Solar India Ltd. emphasized the benefits of using solar energy from the individual level to the industrial level. This free, clean and renewable source of energy is abundantly available in Asian countries like India. Solar energy could be used at individual level like solar lamps, solar cooker, solar battery chargers etc. It could be used at household level like solar water heaters or to lit the whole house or street or village or hostel or industrial plant. Solar energy has been used at large scale in the form of mega power projects like the one in the runn of Kutch, Gujarat.^[31]

Population growth is also putting pressures on limited resources. World’s carbon emissions could be lowered by an estimate 17 percent by 2015 by meeting the unmet needs for family planning of the women.^[20]

Low emission cookstoves could improve indoor air quality and thus lowering the risk of respiratory tract infections in children and adults.^[32]

In several developed countries like London, an increase in walking and cycling activities by people

has led to decreased emissions due to decline in motor car use and also has led to substantial health benefits of physical activity like decline in cardiovascular diseases, diabetes, cancers and mental illness.^[33]

CONCLUSION

The world is already facing “tragedy of commons” and is heading towards “Malthusian Catastrophe” in coming decades. Thus efforts to mitigate harmful consequences of climate change should come from all spheres of human development. Industrial sector, public health sector, policy makers, development sector, social scientists, NGOs, civil society must all come together to make a task force and join the battle against their own bad habits that resulted in devastation of environment. Now it’s the time to take a holy dip and do the good “karma” in a way that saves our unique planet earth.

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Evaluation of Primary Vaccination Coverage in Rural Area of Maharashtra, India by 30 Cluster Sampling Technique

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ABSTRACT

Infectious diseases constitutes a major cause of childhood morbidity and mortality worldwide. Immunization is a cost effective and easy way of child survival. Despite of all efforts being done by the government for 100% vaccination coverage there are some areas especially In rural and tribal areas where vaccination coverage is still low, even though immunization facilities are offered free of cost by government. That's why here we tried to evaluate what is the exact level of immunization coverage in rural area of Solapur district of Maharashtra.

Research Question: What is the level of Primary immunization coverage in children in the Rural area of Solapur? **Objective:** To find out the primary Immunization coverage in children (12 to 23 months) at rural area of Solapur **Study Design:** Community based cross sectional study. **Study Setting:** Rural Health Training Center Vairag field practice area of Department of Community Medicine, of Dr. V. M. Govt. Medical College Solapur. **Study Subjects:** children in age groups 12-23 months. **Sampling method & Sample Size:** WHO recommended Cluster Sampling Technique, 218 from 30 clusters. **Statistical Analysis:** done on Microsoft excel, Percentage and Proportion, Chi square Test were applied whenever necessary.

Results: A total of 218 children aged 12-23 months were included in the study. It was found that 95.87%, of the children were fully immunized against all the six vaccine-preventable diseases and 4.13% children's were partially immunized. The proportion of fully immunized children was marginally higher in males (97.27%) than in females (94.24%). Using cluster samplings, the percentage of completely immunized, partially immunized and unimmunized children were 95.87%, 4.13% and 0%, respectively.

Keywords: Evaluation, Immunization coverage, cluster sampling, dropout rate.

INTRODUCTION

Infectious diseases constitutes a major cause of childhood morbidity and mortality worldwide. Immunization is a cost effective and easy way of child survival. Despite of all efforts being done by the government for 100% vaccination coverage there

are some areas especially In rural and tribal areas where vaccination coverage is still low, even though immunization facilities are offered free of cost by government. EPI is regarded as the instrument of Universal Child Immunization.⁽¹⁾ At the beginning of the programme in 1985-96, vaccine coverage was 29% for BCG, and 41% for DPT. In 2012 coverage level has gone up to 86.9% for BCG 71.57% for DPT and 70.4% for OPV.⁽²⁾ Universal Immunization programme was started in India in 1985. The Aim was to achieve at least 85% coverage of infants with 3 doses each of DPT, OPV, one dose of BCG and one dose of measles vaccine by 1990.⁽³⁾

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Currently vaccination program is included under RCH PHASE-2. But still the vaccination coverage estimate obtained from various sources like NFHS-3 for rural was 34.5% and urban 46.2%, according to DLHS-3 (2007-2008)⁴ rural area of Maharashtra 67.8% children were fully immunized, 1.2% of the children were unimmunized, while the total rates in the state of Maharashtra were 69.1 and 1.1, respectively. WHO has recommended a 30 cluster sample survey method for estimating the immunization coverage among infants in developing countries, because it is rapid, and cost-effective.⁽⁵⁾ the present study was conducted with an objective to find out the rural vaccination coverage.

OBJECTIVES

To find out the Immunization coverage in the field practice area of rural health training center Vairag district Solapur, Maharashtra.

MATERIAL & METHOD

This was a cross sectional study, carried out at Rural Health Training Center Vairag, district Solapur, a field practice area of Dept. of community Medicine of DR. V. M. Govt. Medical College, Solapur having total population of 20040 during October-November 2014.

The study sample was a 30 clusters from the entire population of 20040 of Vairag, selected as per the 30×7 cluster sampling method, as recommended by WHO. A total of seven (07) children aged 12-23 months were interviewed from each cluster and a pre-tested, pre-designed proforma were used for recording data, thus a total sample size of 218 were obtained. Although the sampling unit was the individual subject, the sampling was conducted on the household level. The children's were chosen by selecting a household and every eligible child in the household was included in the sample. The total number of houses surveyed was 220.

Selection of study cluster:-

A list of all the 30 Gallis/wards with their population under Rural Health Training Centre Vairag, district Solapur was obtained and arranged in cumulative frequency. cluster interval of 668 was obtained by dividing the total population by 30 (No.

of clusters). Probability proportionate to the size (PPS) $20040 \text{ (Total population)} / 30 \text{ (No. of clusters)} = 668$ (cluster interval). To obtain the first random number, a random number less than the cluster interval was generated with the help of table of random numbers, it was came to 575. The first cluster (Santnath Galli) was having a cumulative frequency equal to or more than 575, was picked up as the first cluster and subsequent clusters were selected by adding the cluster interval (668), that is, $(575 + 668 = 1243)$. Thus, in this manner, 30 clusters were selected. The first household was selected randomly and every next household was studied in a sequence, until a total of seven eligible children in the age group of 12-23 months were covered.

Proof of immunization

The child was labeled as immunized or not immunized based on available information on the immunization card. For those children's without an immunization card, information from the mother or father or any other reliable person in the family stating that the child had been immunized was taken into consideration. The child was labeled as a fully immunized if he/she had received one dose of BCG, three doses of DPT, three doses of OPV, and one dose of measles, and as unimmunized if he/she had received none of these vaccines, and partially immunized if some doses were given, but immunization was not complete. The OPV doses given under National Pulse Polio Immunization programme was not considered for purpose of vaccination coverage.

RESULTS

In our study 95.87% children were fully immunized 4.13% children were partially immunized and 0% were unimmunized 97.27% male and 94.44% female were immunized. 2.73% male 5.56% female were partially immunized. Only 0% were unimmunized. Sex wise immunization coverage was given in table 1. (see Table 1).

In the study overall coverage for BCG, DPT and OPV was 100%, and measles was 95.87%. In this study 95.87% children were fully immunized. (Table 2)

The rate of partially immunization coverage among children of mothers with secondary schools was higher i.e 50.45% as compared to 12.84% partially

immunized children of illiterate mothers. However the rate partially immunization coverage was lowest in children with maternal education was above HSC and graduate i.e. 9.17% and 5.05% respectively. The difference was statistically highly significant. Chi-square value was $X^2 = 245.52$ $df= 3$ $p<0.01$ highly significant. See table 3.

Also It is observed that the major sources for vaccination were Anganwadi 71.77%, followed by 12.91% at P.H.C. hospital, 8.61% in the health centre and 6.69% see Image 1

Also In our present study 94.50% children had completed full course Hepatitis-B vaccine in Government setup; Coverage of MMR, Chicken pox, Typhoid, Hib vaccine were very low (1.83%, 4.58%, 1.83%, 6.88%.10.04% of these vaccine doses were administered in private hospital. (see Table4).

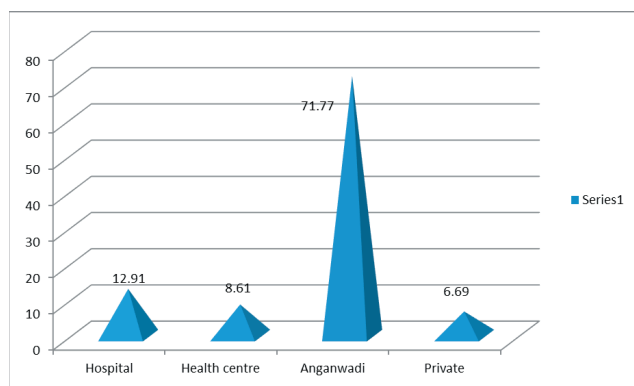


Image 1: Source of Vaccination

In our study most frequent reason for partial immunization was unawareness about need of immunization 44.44 %. Followed second frequent reason were the place and time of immunization unknown to parents. (see Table 5)

In our study BCG to Measles dropout rate was 4.13%. Out of these 2.73% were in male and 5.56% were in female, and also same dropout rates were found for DPT-1 to Measles. i.e. 4.13%. Out of these 2.73% in male and 5.56% in female.(see Table 6).

DISCUSSIONS

As per cluster sampling methodology, in our study the percentage of completely immunized children was 95.87%, while partially immunized and unimmunized children were 4.13% and 0%, respectively. The percentage of fully immunization

coverage was marginally higher among male children's than females. However there was no statistically significant difference in the immunization status of male (50.45%) and female (49.54%) children.

As per NFHS -3 (2005-2006) see table-7 data for rural Maharashtra the percentage of fully immunized children was 49.8%, it is lower than the our study, where as it is still lower i.e 39.6% for Rural India (NFHS-3, 2005-2006, Rural India). Similarly a survey done by DLHS-3 (2007-2008)⁴ has shown that full immunization coverage in rural Maharashtra is 67.6%. DLHS-3 data also shows a higher percentage of immunization in males than in females, Gupta P.K et al.⁸⁻⁹ The percentage of full immunization coverage in our study is higher, may be due to the area is town place and near to the Rural health training centre and Primary health centre and DLHS/NFHS data is for the entire state of Maharashtra, which includes the backward districts, tribal areas. Our study finding are comparable to the DLHS-3 2012-2013 data for Solapur district, which shows coverage of 69.8%. and for rural Solapur district it was 70.6%. The full immunization coverage of children against all vaccine preventable diseases in other studies conducted by Chaturvedi M.¹⁰ in the urban area of Agra (49.7%), Sharma *et al.*¹¹ in Surat (25.1%), Singh and Yadav¹² in the BIMARU states (48%), and a study by Varsha Chaudhary and Rajeev Kumar¹² in Bareilly city (61.9%) have been much lower than in the present study. This could be due to regional variation. However, the same and higher coverage of full immunization (73.33, 84.09, and 93.25%) has been reported by various other studies like Punith K et al.¹⁴⁻¹⁵⁻¹⁶

The coverage of BCG, DPT-3 and OPV was 100% and Measles were 95.87%. 12.84% of the mothers were illiterate & 87.16% were literate. The major source of immunization was Anganwadi center followed by P.H.C., Health center and private practitioners. 94.50% children had completed full course Hepatitis-B in Govt. setup vaccination. The coverage of MMR, Chicken pox, Typhoid, Hib vaccine were 1.83%, 4.58%, 1.83%, 6.88%. 10.04% of these vaccine doses were administered in private hospital. Most common reason for partial coverage of immunization were unawareness of need for immunization that is 44.44% followed by 22.22% place and time of immunization unknown, 11.11% child ill not brought, and 22.22% vaccine not available. BCG to Measles dropout rate

% was 4.13%. Out of these 2.73% in male and 5.56% in female and DPT-1 to Measles dropout rate % was 4.13%. Out of these 2.73% in male and 5.56% in female. There is no statistical significant difference in the immunization status of male (50.45%) and female (49.54%) children.

The DLHS-3 data has mentioned that the percentage of the unimmunized in rural Maharashtra was 1.1%, which was not similar to our study (1.43%)⁴ the percentage of un-immunization in our study was zero %.

The dropout rate in the our study was lower than the dropout rates in the study by Sharma, *et al.*⁶ in Surat and the National level also. The present study was in a rural area, where the population was defined, and the services by provided by the Health care givers was better than in the urban area. For rural area the contact between field staff and population is also better, that might be resulting in a lesser dropout rate.

The Comparison between immunization of present study with NFHS-3 and DLHS-3 & 4 is shown in Table 8 (see table 8.)The coverage of BCG is higher in present study (100%) than in the NFHS-3 (78.1%) and for rural Maharashtra (93.5%) and DLHS-3.⁴ for rural Maharashtra 95.4%. The higher coverage of BCG may be because of more hospital deliveries and the study area being under filed practice area dept. of community medicine & also it was near to a Primary Health Centre Vairag. Similar to BCG, the coverage of OPV3, DPT3, and measles was also higher in the present study than in the NFHS-3 for rural Maharashtra and DLHS-3 for rural Maharashtra. The coverage for all vaccinations was found to be increased over a period of time, indicating a move

toward universal immunization.

CONCLUSION & RECOMMENDATION

As per National Population Policy 2000 the aim of 85% immunization coverage has been achieved. The primary immunization coverage in the above rural area was 95.87%. The common reasons for the partial immunization were Unawareness of need for immunization (44.44%), Place and time of immunization unknown (22.22%) and Child ill not brought by parents (11.11%) respectively in descending order. Consistency of efforts and Information education and communication activities are needed to avoid partial immunization of children.

Table 1: Immunization coverage with reference to sex of child.

| Immunized Status | Sex | | | | Total | |
|-------------------|------|-------|--------|-------|-------|-------|
| | Male | | Female | | | |
| | N | % | N | % | N | % |
| Fully immunized | 107 | 97.27 | 102 | 94.44 | 209 | 95.87 |
| Partial immunized | 3 | 2.73 | 6 | 5.56 | 9 | 4.13 |
| Total | 110 | 100 | 108 | 100 | 218 | 100 |

Table 2: Vaccination coverage

| Vaccine | Coverage rate % |
|-----------------|-----------------|
| BCG | 100 |
| DPT | 100 |
| OPV | 100 |
| Measles | 95.87 |
| Fully immunized | 95.87 |

Table 3: Primary immunization coverage according to education of mother.

| Education of mother | Fully Immunized | | Partially Immunized | | Total | |
|---------------------|-----------------|-------|---------------------|-------|-------|-------|
| | No | % | No | % | No | % |
| Illiterate | 23 | 82.14 | 5 | 17.86 | 28 | 12.84 |
| Primary | 48 | 97.96 | 1 | 2.04 | 49 | 22.48 |
| Secondary | 107 | 97.27 | 3 | 2.73 | 110 | 50.46 |
| Higher secondary | 20 | 100 | 0 | 0 | 20 | 9.17 |
| Graduate | 11 | 100 | 0 | 0 | 11 | 5.05 |
| Total | 209 | 95.87 | 9 | 4.13 | 218 | 100 |

($\chi^2 = 245.52$ df= 3 $p < 0.01$ highly significant.)

Table 4: Immunization Coverage of newer vaccine

| Vaccine | No of children | | Source | | | |
|---------------|----------------|------|---------|------|-------|-------|
| | | | Private | | Govt. | |
| | No | % | No | % | No | % |
| Hepatitis-B-1 | 218 | 100 | 12 | 5.50 | 206 | 94.50 |
| Hepatitis-B-2 | 218 | 100 | 12 | 5.50 | 206 | 94.50 |
| Hepatitis-B-3 | 218 | 100 | 12 | 5.50 | 206 | 94.50 |
| MMR | 4 | 1.83 | 4 | 100 | 0 | 0 |
| Chicken pox | 10 | 4.58 | 10 | 100 | 0 | 0 |
| Typhoid | 4 | 1.83 | 4 | 100 | 0 | 0 |
| Hib | 15 | 6.88 | 15 | 100 | 0 | 0 |

Table 5: Reasons for partial immunization coverage.

| Reasons | No (n) | % |
|--|----------|------------|
| Unaware of need of immunization | 4 | 44.44 |
| Place and time of immunization unknown | 2 | 22.22 |
| Child ill not brought | 1 | 11.11 |
| Vaccine not available | 2 | 22.22 |
| Total | 9 | 100 |

Table 6: BCG to Measles dropout rate among study subject.

| Vaccination status | Male | | Female | | Total | |
|--------------------|------|-------|--------|-------|-------|-------|
| | No | % | No | % | No | % |
| BCG | 110 | 50.45 | 108 | 49.54 | 218 | 100 |
| DPT-1 | 110 | 50.45 | 108 | 49.54 | 218 | 100 |
| Measles | 107 | 49.08 | 102 | 46.79 | 209 | 95.87 |
| Dropout rate % | | | | | | |
| BCG to Measles | 2.73 | | 5.56 | | 4.13 | |
| DPT-1 to Measles | 2.73 | | 5.56 | | 4.13 | |

Table 7: Comparison between immunization of present study with NFHS-3 and DLHS-3 & 4 ⁽⁴⁻⁶⁻⁷⁾

| Vaccines | NFHS-3 Rural India 2005-2006 | NFHS-3 Rural Maharashtra 2005-2006 | DLHS-3 Rural Maharashtra 2007- 2008 | DLHS-4 Solapur district 2012-2013 | DLHS-4 Solapur Rural 2012-2013 | Present study 2014 |
|-------------------|------------------------------|------------------------------------|-------------------------------------|-----------------------------------|--------------------------------|--------------------|
| Full Immunization | 38.6% | 49.8% | 67.6% | 69.8% | 70.6% | 95.87% |
| BCG | 78.1% | 93.5% | 95.4% | 90.6% | 90.2% | 100% |
| OPV | 78.2% | 63.7% | 85.3% | 81.3% | 84.4% | 100% |
| DPT | 55.3% | 69.7% | 77.8% | 85.4% | 86.3% | 100% |
| Measles | 58.8% | 82.6% | 84.3% | 82.3% | 80.8% | 95.87% |

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A Study of SNOT 22 Scores in Adults with no Sinonasal Disease

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ABSTRACT

Objective: To identify a normal SNOT-22 score in subjects not known to be suffering from rhinosinusitis in medical students of govt. medical college srinagar.

Study design: Analysis of SNOT 22 scores in participants with no sinonasal disease.

Setting: Tertiary care hospital (SMHS associated Medical College ,Srinagar,Kashmir, India)

Participants: 203 participants from medical institution.

Results: Results were obtained from 102 men and 101women with a mean age of 21 (range 18-24). SNOT scores ranged from 0–35 with a mean score of 41.4. The mode was 0 and the median score 40.5.

Conclusion: Due to the skewed nature of the data, the median score (40.5) is taken as the normal SNOT 22 score. It is recommended that in a clinical situation a SNOT 22 score of 40.5 be used as a guide for “normal”, and that caution be exercised when suggesting treatment to patients with a score below 40.5. It appears feasible that this test be applied pre and post operatively for appropriate selection and judging the outcome respectively.

Keywords: SNOT-22, SNOT, Chronic rhinosinusitis (CRS).

BACKGROUND

Chronic rhino sinusitis (CRS) is a common medical condition of a multi-factorial origin that can affect the quality of life (QoL). It poses a considerable burden to health care providers and the patients. In this respect, it is comparable to diabetes and heart disease^[1, 2] Affecting 15% of the grown-up US population; it is the most common chronic disease in the US^[3] The Indian National Institute of Allergy and Infectious Diseases' (NIAID) estimates 134 million Indians- CRS. Treatment is often symptomatic and may lead to repeated surgeries and lifelong nasal steroids.

Often there is difference between occurrence of symptoms and development of disease. Not all the symptoms can be precisely defined by the patients.

Hence a need arises for a quantifiable scale for nasal symptoms as is the VAS (visual analog scale) for pain. The European position paper on rhinosinusitis and nasal polyps recommends the subjective assessment of symptoms using validated questionnaires^[4] A correct diagnosis and staging for treatment is very much the need of the hour. Research on QoL is gaining more weight within otolaryngology. The use of a reliable outcome measure is a must in such research.

Hence a need arises for a simple, reliable, system specific standardized outcome measure that can help us explore CRS in a more uniform way, measure patients' QoL and prevent inappropriate surgery. This has led to the development of a number of CRSspecific assessment tools that are as follows:

SF36: Medical Outcomes Study Short-Form 36-

Item Health Survey. Hays *et al* Boston, 1992.

RSOM-31: RhinoSinusitis Outcome Measurement Piccirilo *et al.* Missouri. 1995.

RSUI: Rhinitis Symptom Utility Index. Bethesda, USA 1998

RQLQ: Rhinitis Quality of Life Questionnaire Juniper *et al.* Canada. 1999.

SNOT-16: Sino-Nasal Outcome Test. Anderson. USA.1999.

SNOT-1: Sino-Nasal Outcome Test. Fahmy, Surrey, UK. 2000

SN-5: Sinus and Nasal Quality of Life Survey (pediatrics). David kay *et al.* Colorado. 2001 SNOT-11: Sino-Nasal Outcome Test. Fahmy, Surrey, UK. 2000 , 2013 Vol. 1, No. 17

SNOT-20: Sino-Nasal Outcome Test. Picciril Missouri. 200 SNAQ-11: SinoNasal Assessment Questionnaire, Surrey. UK 2002.

NOSE: Nasal Obstruction Symptom Evaluation. AAOHNS. 2004

CQ7: Congestion Quantifier seven-item test. Bethesda, USA. 2007

SNOT-20 GAV: Sino-Nasal Outcome Test-20 German 2008

CQ5: Congestion Quantifier five-item test. London 2010

SNOT-20 and SNOT-22 are validated patient reported measures of symptom severity and health-related QoL in sinonasal conditions [5,6]. SNOT-22 (2009) is a modified version of SNOT-20 and RSOM-31. The SNOT-22 is the latest version of the SNOT Questionnaires and is based on the SNOT 20, but with the removal of the importance rating and the addition of two questions related to symptoms of nasal blockage and loss of sense of smell. SNOT-22 covers the physical problems, functional limitations and also the emotional consequences of patients suffering from CRS [7]. The SNOT-22 has already been adopted by many clinicians both for the assessment of CRS and also for evaluating the outcome of treatment of nasal polyposis [8] and in nasal septal surgery [9]. Morley AD, Sharp HR *et al.* [10] analysed indices on reliability, validity and responsiveness and concluded that SNOT can be applied as a tool for QoL. Hopkins C,

Gillett S, Slack R, Lund VJ, Browne JP [11] concluded that SNOT significantly discriminated between healthy and the diseased and further identified differences in subgroups of CRS. Pannu KK *et al.* [12] evaluated of benefits nasal septal surgery on nasal symptoms and general health and proved SNOT-22 score as a useful and reliable tool in nasal septal surgery (20.67 to 10.48). It is vital that inappropriate surgeries in patients with CRS are avoided and it has been suggested that the SNOT 22 may provide a robust tool for the subjective assessment of patients' symptom [13]

AIM

- To identify a normal SNOT-22 score in subjects not known to be suffering with Rhinosinusitis.

- To establish a 'normal' value for the SNOT 22 within the general population.

- To establish a reference point to identify those who may benefit from treatment.

METHOD

After informed consent, 203 subjects divided into two groups based on sex. Subjects agreeing to take part were asked to complete the SNOT-22 questionnaire. An information sheet was provided and participation was voluntary. The information sheet included questions on age and asked if respondents had ever been diagnosed with CRS, or if they were currently using nasal medication. All completed forms were collected and results analysed. Those who positively indicated a history of rhinosinusitis, nasal polyps or taking medication for rhinosinusitis were excluded from the analysis. Forms were graded with a numerical score for each response ranging from 0 for 'no symptoms', to 5 for 'as bad as things could be'. The SNOT-22 total score can range from 0 to 110.

RESULTS

All analysis was performed on spss v 16.0. one hundred and eighteen forms were received out of which 5 were excluded. Hence a total 203 completed forms were included in the study, comprising 102 males and 101 females. The mean age of respondents was 21 years (range 18-24). The SNOT scores ranged from 0 to 35 with a mean score of 44.3 for males and 38.8 for females. Figure 1. The median score was and the modal score was 0, with 32 (13.9%) of the

respondents reporting this score. The normal SNOT 22 score is taken as median rather than the mean value because of the skewed nature of the data. (Table 1). SNOT 22 score

| SNOT 22 score | Frequency | Percent |
|---------------|------------|--------------|
| 0 | 32 | 15.8 |
| 1 | 4 | 2.0 |
| 3 | 10 | 4.9 |
| 4 | 18 | 8.9 |
| 5 | 35 | 17.2 |
| 6 | 40 | 19.7 |
| 7 | 28 | 13.8 |
| 8 | 30 | 14.8 |
| 9 | 3 | 1.5 |
| 10 | 1 | .5 |
| 11 | 1 | .5 |
| 13 | 1 | .5 |
| Total | 203 | 100.0 |

Figure 1: Table of frequency of SNOT scores in 203 subjects(study subjects)

DISCUSSION

Identifying the ‘normal’ SNOT 22 score is vital if this tool is to be used in day to day clinical setting. Although the most common response was a score of 0, most participants in this study were not symptom free when assessed with the SNOT-22. The median ‘normal’ score was 40.5. Conversely, not all patients with a score of >40.5 require intervention. It is vital that this is considered if the SNOT 22 is to be used as a guide of symptom severity in the pre-treatment patient. A median SNOT 22 score of 40.5 may be an indication of the prevalence of undiagnosed rhinosinusitis within the population, However it may also be related to some of the generic questions in the SNOT 22 (such as waking at night, fatigue and lack of a good night’s sleep). These questions may indicate the presence of other medical conditions or indeed may just show the range within a non-diseased population. The validity of this study hinges on what is considered a normal population. Our study population was uniform with respect to age and sex. Ethnicity details were not collected for this study

SNOT-22 questionnaire is quick and easy for the patient. For the researcher, SNOT-22 is a rational, easily applicable tool with a wide range. It may be

used both to measure health status and QoL and diagnose and assess the degree and effect of CRS on health status, and of treating patients with CRS. We believe that SNOT-22 may well be used on a regular basis by the clinician to obtain information about the full range of problems associated with rhinosinusitis. If routinely used, it is suggested that the SNOT-22 can measure the effectiveness of treatment, including surgery, and maybe identify patient factors that predict maximum treatment response [9, 14]. In conclusion, we found the median SNOT 22 score in a cohort thought to be free of sinonasal disease to be 40.5. It is hence recommended that a score of 40.5 be used a guide for “normal”, and that care be taken when suggesting treatment on patients with a score below this level.

Ethical Clearance: Sought from ethical committee GMC Srinagar.

Conflict of Interest: Nil

Source of Funding: Self

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A Cadaveric Study of Anatomical Deviations in the Position of Vermiform Appendix

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ABSTRACT

Background: Identification of the normal position of appendix is important because in appendicitis variable positions may produce symptoms and signs related to position and hence can mimic other diseases. Hence knowledge of these variations is essential for accurate diagnosis and treatment of the condition.

Aims: It was undertaken to investigate certain anatomical features and different positions of the vermiform appendix and caecum in cadavers of Nandyal region. T

Method : This study was carried on 35 human cadavers irrespective of sex and age from the Department of Anatomy over a periods of 12 months.

Results : In the present study the commonest position was retrocaecal(34%), followed by pelvic(28%), postileal(17%), subcaecal(11%) and midinguinal(8%). Preileal variety was not established. Average length of appendix, outer girth of appendix and distance of appendix from ileocaecal junction was 5.93 cm, 2.8 cm and 2.47 cm, respectively .

Conclusion : A systematic knowledge of normal anatomy and variations in the position of vermiform appendix is of significant value during surgical and radiological procedure to avoid any catastrophic complication.

Keyword: Vermiform appendix, pathology of appendix, different positions

INTRODUCTION

The vermiform appendix is a narrow worm like diverticulum which arise from the posteromedial wall of the caecum about 2cm below the ileocecal junction and has no constant position. The length of appendix varies from 2 to 20cms with an average of 9cm¹. The vermiform appendix is considered as a vestigial organ occupying variable positions. Histological differentiation of vermiform appendix shows that it

is a specialized organ¹. Its importance in surgery is due to mainly its potentiality for inflammation that results in the clinical syndrome known as 'acute appendicitis'. Acute appendicitis is the most common cause of acute abdomen in young adolescents and it is often the first major surgical procedure performed by a surgeon in training^{2,3}. The appendix usually lies in the right iliac fossa. The base of appendix is fixed whereas the remaining part may occupy any of the following positions which indicated with an hour hand of a clock. Retrocaecal (12 o'clock), Pelvic (4 o'clock), Subcaecal (6 o'clock), Preileal & Post ileal (2 o'clock), Promonteric (3 o'clock) positions. But there is no definite rule about the position of the vermiform appendix. It is thought that the position appendix is closely related to development of caecum and is highly variable⁴. A thorough knowledge of normal

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anatomy and variations in the position of appendix is the important for the surgeons while performing surgery such as appendectomy.

Moreover, a retrocaecal appendix may lie behind a caecum distended with gas and thus it may be difficult to elicit tenderness on palpation in the right iliac region. Irritation of the psoas muscle conversely may cause the patient to keep the right hip joint flexed (psoas sign). An appendix hanging down in the pelvis may result in absent abdominal tenderness in the right lower quadrant but deep tenderness may be experienced just above the pubic symphysis. In pelvic appendicitis, diarrhea results from an inflamed appendix being in contact with rectum. Rectal or vaginal examination may reveal tenderness of the peritoneum in the pelvis on the right side. An inflamed appendix when it is in contact with the urinary bladder may cause increased frequency of micturition. If such an inflamed appendix perforates, a localized pelvic peritonitis may result. Long retrocolic inflamed appendix also called sub hepatic appendix and it causes confusion with cholecystitis. In retrocaecal and retrocolic variety of appendix, the chances of gangrenous complication are more because in these cases blood vessels get kinked. In preileal position appendix directs towards the spleen and if it becomes inflamed it is liable to result in general peritonitis and is the most dangerous position. Postileal appendix called missed appendix is common in children and in early adult life. Postileal inflamed appendix may cause diarrhea. Perforation of the appendix or transmigration of bacteria through the inflamed appendicular wall results in infection of the peritoneum of the greater sac. Inflammation of atypically located vermiform appendix may initiate inflammation of other organs which leads to diagnostic errors and life threatening complications^{17,18}. With this rationale in mind, this study has been undertaken to investigate certain anatomical features and different positions of the vermiform appendix and caecum in cadavers of Nandyal region, AP.

MATERIALS & METHOD

Thirty five (35) cadavers allotted to MBBS students were selected. The study was conducted in Santhiram Medical College, Nandyal, AP region. Both male and female cadavers were included in the study. The present study was undertaken in form January

2013 to December 2013. The sample size taken was 35 adult human cadavers irrespective of age and sex from dissection hall of Anatomy department. Specimen were cleaned by routine dissection method and cleared specimen were brushed with the solution of acetone. Appendices were identified by tracing the taeniae coli on the external surface of colon and caecum and then positions of appendix were noted. Photographs of the selected specimens taken at suitable magnification and specimens preserved in 10% formalin jars. The vermiform appendix was located by following the anterior taenia coli and its position was determined. Based on position, the appendix was categorized into retrocaecal, pelvic, preileal, postileal, paracolic, subcaecal and paracaecal groups. Photographs were taken of cadaveric appendix specimens. The length of the appendix from the base to the tip was measured with the help of thread. Thread's length was measured by measuring scale and the values were recorded.

RESULTS

The following observations were made in specimens taken from 50 human cadavers irrespective of age and sex. Position of appendix: Retrocaecal/retrocolic, Pelvic, Subcaecal, Pre ileal, Postileal and Midinguinal. Photograph 1-4 showing various position of appendix. Commonest position of appendix noted is retrocaecal / retrocolic [34%] followed by pelvic position [28%], post ileal [17%], subcaecal [11%] and midinguinal [8%]. We had not noted any pre ileal position or any ectopic position of appendix (table 1).

Average length of appendix was 5.93 cm with range from 2.8 cm to 12 cm. Average outer girth of appendix was 2.8 cm with range from 1.4 cm to 5.3 cm. Moreover, average distance of appendix from ileocaecal junction was 2.47 cm with range from 1 cm to 4.1 cm.

DISCUSSION

The vermiform appendix has base, body and tip. Base of appendix has constant relationship with caecum, i.e on posteromedial aspect of caecum 2cm below ileocaecal opening but the tip can point in various directions and depending on the position of tip appendix.

Wakely[1933]⁵, Solanke[1970]⁶, Ajmani M L Ajmani K[1983]⁷, Ojeifo Jo et al[1989]⁸, Liucid et al[1997]⁹ and R J Last[2006]¹⁰ described retrocaecal/retrocolic as commonest position with frequency ranging from 58 to 65%. In the present study retrocaecal/retrocolic is the commonest position with 38% frequency.

Katzurskj M.M et al [1979]¹¹ and Gotalipour M et al [2003]¹² mentioned pelvic as common position of appendix. In the present study it is second common position with 28% frequency. In the present study subcaecal position [10%] was comparable with Solanke [11.2%] and Gotalipour [12.8%]. No pre ileal position of appendix noted .

Midinguinal position described as rare by all authors, but in the present study the occurrence was 4%.

Solanke [1970] observed ileocaecal position in 29.2% and in the present study post ileal position was 20%. Wakeley [1933] mentioned ectopic position in 0.05%, in the present study no such position noted. Buschard & Kjaddgaard[1973]¹³ mentioned anterior positions more frequent i.e pelvic and ileocolic than posterior positions i.e retrocaecal and subcaecal type which is comparable with the present study.

Average length of appendix was 5.93 cm with range from 2.8 cm to 12 cm. Length of the vermiform appendix varies from 2 cm to 20 cm, with an average length of 9 cm ¹³ . Ajmani and Ajmani (1983) found average length of the appendix as 9.5 cm in male and 8.7 cm in female ¹⁴ . Thus, in the present study length of vermiform appendix was comparable to the study conducted by previous authors.

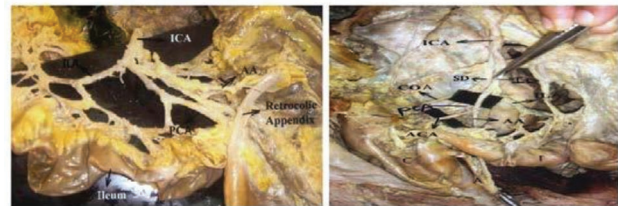
In our study , average outer girth of appendix was 2.8 cm with range from 1.4 cm to 5.3 cm. Distance of vermiform appendix from the ileocaecal junction varies from 2 cm - 3 cm, with an average of 2.5 cm ¹⁵ . The origin of appendix is about 2.5 cm below the ileocaecal valve from the posteromedial aspect of caecum ¹⁶ .

Therefore, both the outer girth and distance of vermiform appendix from the ileocaecal junction in the present study outer girth of appendix was comparable to the study conducted by previous authors.

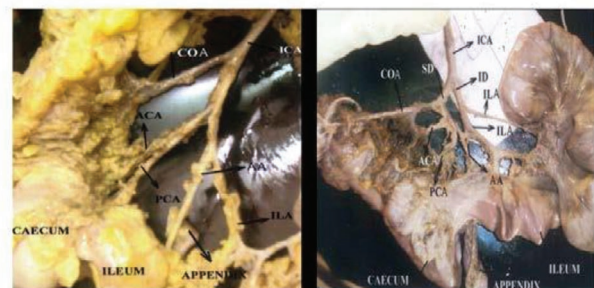
In human beings due to lack of definition of its true function, the vermiform appendix was considered as a rudimentary and vestigial organ. But if the position, length, outer girth and distance from ileocaecal junction of vermiform appendix are detected, it will help to decrease the complications of appendicular pathology ¹⁷.

Table 1 : Displaying the different position of appendix

| Position of Appendix | No.of specimens | Percentage% |
|----------------------------|-----------------|-------------|
| Retrocaecal/ Retrocolic | 12 | 34 |
| Pelvic | 10 | 28 |
| Post ileal | 6 | 17 |
| Pre ileal | - | - |
| Midinguinal | 3 | 8 |
| Subcaecal | 4 | 11 |



Photographs 1 & 2 showing the retrocaecal and pelvic position of appendix



Photographs 3 & 4 showing the postileal and subcaecal position of appendix

CONCLUSION

This study was carried out in 35 human cadavers irrespective of age and sex. With reference to position of appendix the commonest position was retrocaecal or retrocolic (34%) followed by pelvic (28%). It is to be noted that pre ileal appendix was not observed in the

present study. Therefore, it is very important for the surgeons to be aware of the possible variations in the positions of vermiform appendix, which may pose challenging, diagnostic and therapeutic problems while doing many abdominal surgeries.

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Conflict of Interest : Nil

Source of Funding : Nil

Ethical Approval: The study was approved by the Institutional Ethical Committee

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Prevalence of Asymptomatic Bacteriuria in Pregnant Women

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ABSTRACT

The risk of morbidity and complications with urinary tract infection (UTI) are more in pregnancy because UTI may be associated with asymptomatic bacteriuria in pregnant woman. This study was conducted with 200 cases of asymptomatic pregnant women attending the antenatal clinic for routine checkup. Midstream urine specimen was collected from these pregnant woman and immediately processed for culture. Growth in those plates with significant bacteriuria were subjected to standard biochemical tests for identification and antimicrobial sensitivity. Out of the 200 specimens, 31 (15.5%) showed the significant bacteriuria concluding that the prevalence of asymptomatic bacteriuria in pregnant women in this study was 15.5%. Predominant isolate under the gram negative bacteria was Escherichia coli in 12 cases (38.72%) followed by Klebsiella species in 5 cases (16.13%) and under the gram positive bacteria Coagulase negative Staphylococcus (CONS) was predominant isolate in 7 case (22.58%) followed by Staphylococcus aureus in 5 cases (16.13%).

Keywords: Asymptomatic bacteriuria, pregnancy, urinary tract infection, urine culture

INTRODUCTION

Urinary tract infection (UTI) affects all age groups, but women particularly are more susceptible than men due to anatomical relationship of the urinary tract. Further Pregnant women are at high risk of UTI due to the morphological and physiological changes that takes place in the genitourinary tract during pregnancy along with transient changes in immune response. The risk of complications due to UTI are more in pregnancy because UTI may be associated with asymptomatic bacteriuria in pregnant woman. Asymptomatic bacteriuria is defined as the presence of actively multiplying bacteria within the urinary tract and culture reveals a significant growth of pathogens that is equal or greater than 10^5 bacteria per ml of urine, at a time when the patient has no clinical symptoms of urinary tract infection 1, 2,3. Asymptomatic bacteriuria is considered as a risk

factor during the pregnancy causing complications. The potential adverse effects of the undiagnosed asymptomatic bacteriuria during pregnancy on mother and child have made the clinicians to recommend for routine bacterial culture screening for all pregnant women attending the antenatal clinic⁴. In different studies the prevalence of asymptomatic bacteriuria in pregnant woman was reported as 3 – 20 % 1-15 . Asymptomatic bacteriuria is a microbial diagnosis based on the isolation of significant count of bacteria in a properly collected specimen of urine from pregnant women without signs or symptoms of UTI. Urine culture is the standard test for diagnosing asymptomatic bacteriuria during pregnancy. This study was therefore undertaken to determine the prevalence of asymptomatic bacteriuria in pregnant women attending antenatal OPD in the department of Obstetrics and gynecology at PESIMSR, Kuppam, to identify the organism involved and to study their antibiotic sensitivity pattern.

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MATERIAL & METHOD

A total of 200 pregnant women who do not have

clinical signs and symptoms of UTI with ages ranging from 18 to 45 years attending the antenatal clinic of PESIMSR during one year period were randomly included in this study. Pregnant women who were on antibiotic treatment two weeks prior to their visit to the antenatal clinic, those who exhibited clinical signs and symptoms of urinary tract infection (UTI) and those at or above 38 weeks gestation were excluded from this study. Oral consent was taken from the patient and suitable instructions to collect mid stream urine in to the sterile container provided to them was given to all those patients. Midstream urine specimen thus collected was the laboratory sample for this study of prevalence of asymptomatic bacteriuria in pregnant women. Specimen was transported to the Department of Microbiology, PESIMSR without delay and processed in the laboratory. All the samples were inoculated on to Blood agar, Macconkey agar and Cystine Lactose Electrolyte Deficient (CLED) agar using calibrated loop as per the standard procedure for semi quantitative technique for urine culture. Those culture plates with bacterial growth showing 10^5 bacteria per ml of urine were taken up for further processing. Bacterial growth from those plates was identified using standard biochemical tests. Antimicrobial sensitivity was performed as per the Kirby - Bauer disc diffusion method using commercially available discs (Hi-media) on Muller-Hinton Agar plates. After overnight incubation, the zone of inhibition formed around each antibiotic disc was measured and interpreted as sensitive, intermediate and resistant.

RESULTS

Out of 200 urine specimens processed in this study, 31 (15.5%) showed significant bacteriuria. Thus the prevalence of asymptomatic bacteriuria in pregnant women in this study was 15.5%.

Table 1: Age wise distribution and asymptomatic bacteriuria

| Age group | No.of samples | No. of cases with significant bacteriuria n=31 | % |
|--------------|---------------|--|--------|
| 18- 25 Years | 129 | 18 | 58.06% |
| 26- 35 Years | 70 | 13 | 41.94% |
| 36- 45 Years | 1 | 0 | 0 |

Table 2: Distribution of isolates with respective age group

| Type of bacteria isolated | 18- 25 yrs n=18 | 26 – 35 yrs n=13 | 36 - 45 yrs | Total n=31 |
|---------------------------|-----------------|------------------|-------------|-------------|
| GPC | 8 (44.44%) | 5 (38.46%) | 0 | 13 (41.94%) |
| GNB | 10 (55.55%) | 8 (61.54%) | 0 | 18 (58.06%) |

Table 3: Details of isolates

| Name of the isolate | No. of isolates | Percentage N= 31 |
|-----------------------|-----------------|------------------|
| Escherichia coli | 12 | 38.72 % |
| Klebsiella sp | 5 | 16.13% |
| Providencia sp. | 1 | 3.22% |
| Staphylococcus aureus | 5 | 16.13% |
| CONS | 7 | 22.58% |
| Enterococcus faecalis | 1 | 3.22% |

Analysis of antimicrobial sensitivity pattern shows that among the 13 isolates of gram positive cocci, they were sensitive to Vancomycin (100%), followed by Nitrofurantoin (92%), Amikacin (64%), Gentamicin (55%), Norfloxacin (50%), Co-trimoxazole (42%), Clindamycin (28%), Amoxicillin/clavulanic acid (25%) and Ciprofloxacin (15%). Analysis of antimicrobial sensitivity pattern among 18 isolates of gram negative bacilli, they were sensitive to Imipenem (100%), Amikacin (93%), Nitrofurantoin (92%), Norfloxacin (30%), Ciprofloxacin (23%), Cefotaxime (23%), Amoxicillin/clavulanic acid (23%) and Co-trimoxazole (13%).

DISCUSSION

Urinary tract infections are common bacterial infections encountered during pregnancy. These can be both asymptomatic and symptomatic. Asymptomatic bacteriuria during pregnancy is a common and important medical condition, which will result in overt renal infections such as pyelonephritis, and other complications if not detected and treated^{16,17}. The prevalence of asymptomatic bacteriuria among the pregnant women in this study was 15.5%. Varying prevalence rates of asymptomatic bacteriuria in pregnant women were reported ranging from 3.3%

to 23.9% depending on the population studied. In the present study, it was observed that pregnant women in the age group 18- 25 years had highest percentage of infection (58.06%) followed by 26-35 years (41.94%). This is in contrast with some of the previous studies in which age group of 26-35 years and age group of 35-45 years were also at higher risk of asymptomatic bacteriuria^{2,6}. The most common bacterial isolate from asymptomatic pregnant women enrolled in this study was *Escherichia coli* in 12 cases (38.72%) and *Klebsiella* species in 5 cases (16.13%). This is similar to many studies conducted in the past. Gram positive organisms have also received more attention as causative agents of asymptomatic bacteriuria and urinary tract infection. Coagulase negative *Staphylococcus* (CONS) was the second most common isolate in 7 cases (22.58%), *Staphylococcus aureus* was in 5 cases (16.13%) and *Enterococcus faecalis* in 1 cases (3.22%) were under Gram positive organisms. This is correlated with the reports of previous studies.

CONCLUSIONS

Asymptomatic bacteriuria in pregnancy if not detected and treated may be a cause for significant morbidity in pregnant woman. Various studies including this study identified that prevalence of asymptomatic bacteriuria is a real problem among pregnant woman. It may be a good practice to undertake mandatory screening of all cases attending antenatal clinic for asymptomatic bacteriuria and accordingly the management of positive cases to avoid complication during pregnancy and later in the life.

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Conflict of Interest - Nil

Source of Funding - Self

Ethical Committee Clearance – I Presented in front of appropriate committee of PES MEDICAL COLLEGE, kuppam and get approved by the

Committee. The Committee chairman is my principal Dr. H.R. Krishna Rao. Guide Dr G. Latha Professors & HOD Microbiology Co- Guide L. Krishna Professor of OBG, and Members Dr. Munasira sultana and Dr. Devaprasanna rajan Professors in Microbiology

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Affordability of Healthcare in the Eight North Eastern States of India

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ABSTRACT

The government dominates the healthcare sector in the eight North Eastern States of India and hence the average expenditure on treatment is much lower as compared to the all-India average where private sector dominates. However, as a proportion of total expenditure, a substantial portion goes into non-medical expenses, thus offsetting the advantage of lower cost of medical care. Expenditure on medicines accounted for the largest share of expenditure item in medical treatment, which can be contained through public procurement by the government through tendering process. Loans from banks at minimum cost/ interest rate could be made available for expenditure on non-medical expenses. There is need to improve public (government) healthcare sector terms of quantity, quality and reach especially in the rural areas by providing adequate infrastructure (including road connectivity, accommodation, etc), manpower and facilities. This calls for huge public expenditure.

Keywords: North Eastern States, healthcare, cost, urban, rural, institutional, non-institutional

INTRODUCTION

The healthcare sector constitute an important social sector in an economy. A universal access to adequate healthcare without excessive financial burden on the patients with constant improvement in its quality is critical. Expenditure on treatment is never voluntary and information about the cost is asymmetric. The choice not to incur the cost or to defer it is not an option and hence the economic cost of treatment has huge negative impact on the welfare of citizens.

NORTH EASTERN (NE) STATES / REGION OF INDIA

As per the National Health Profile (NHP), 2015¹, there are 1663 Government Hospitals (including CHCs), 7635 Sub Centres, 1615 PHCs and 297 CHCs in the eight NE States of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura. With regard to manpower, there are 8,304 government allopathic doctors, 66,398 registered nurses (ANM, RN&RM) and LHV) and 5,444 pharmacists. This paper analyse the healthcare cost in the Region especially of the rural households that constituted the majority of the households as per the Government of India's Socio Economic and Caste

Census (SECC) -2011.

SOURCE OF DATA AND REFERENCE PERIOD

Data was taken from the National Sample Survey (NSS) published by the NSSO, Ministry of Statistics & Programme Implementation, i.e., the 68th NSS Round (July 2011-June 2012) titled "Household Consumption of Various Goods and Services in India" and the 71st NSS Round (January- June 2014) titled "Key Indicators of Social Consumption in India: Health". Definitions of various concepts are given in the NSS Reports and hence are not repeated here.

PUBLIC AND PRIVATE HEALTHCARE SECTOR IN THE NE REGION

As per Table 1, the government (public) sector accounted for about 73.56% male patients and about 66.19% female patients being treated in the NE Region². The reasons could be because of wide spread availability of government health care centres as compare to private health centres/ hospitals, its affordability or because of both factors. This is quite the opposite at all-India level where private doctors/ private hospitals treated more than 75.60% male patients and 71.80% female patients (Table 1).

Table -1: Per thousand distribution of spells of ailment treated on medical advice over levels of care (Rural + Urban)

| State | Male | | | | Female | | | |
|-------------------|---------------------|-----------------|----------------|------------------|---------------------|-----------------|----------------|------------------|
| | HSC/PHS and others* | Public hospital | Private doctor | Private hospital | HSC/PHS and others* | Public hospital | Private doctor | Private hospital |
| Arunachal Pradesh | 594 | 387 | 10 | 9 | 704 | 292 | 3 | 2 |
| Assam | 325 | 440 | 200 | 35 | 596 | 199 | 191 | 14 |
| Manipur | 165 | 276 | 324 | 236 | 152 | 447 | 333 | 68 |
| Meghalaya | 863 | 111 | 15 | 11 | 430 | 55 | 446 | 69 |
| Mizoram | 452 | 238 | 287 | 22 | 462 | 49 | 416 | 73 |
| Nagaland | 479 | 447 | 74 | 0 | 281 | 139 | 483 | 97 |
| Sikkim | 487 | 290 | 151 | 72 | 628 | 162 | 124 | 86 |
| Tripura | 135 | 196 | 554 | 115 | 329 | 370 | 300 | 2 |
| All India | 79 | 164 | 513 | 243 | 90 | 174 | 479 | 239 |
| NE Region@ | 73.56% | | 26.44% | | 66.19% | | 33.84% | |
| All India @ | 24.30% | | 75.60% | | 26.40% | | 71.80% | |

Note (i)*includes ANM/ASHA/AWW/dispensary/CHC/Mobile Medical Unit.

@ Calculated by author by adding separately for public and private sector and converting to percentage.

Source: 71st NSS.

MEDICAL AND NON-MEDICAL EXPENDITURE IN NE REGION

Since the public sector dominates the healthcare sector in the NE Region, it is not surprising that the medical expenditure for treatment is much lower as compared to the all India level (Table 2). Even the average non-medical expenditure is comparable to the all-India level. What is of concern is the higher proportion of non-medical expenditure to the total expenditure (Table 2, Graphs I). It can be as high as 29.2% of the expenditure in the rural areas (in rural Meghalaya, its share is 50%) and 17.2% in the urban areas (it is more than twice as compared to the national average). This is an alarming trend since such expenditures are not reimbursable under health insurance scheme. Only, government employees are able to reimburse such expenditure and that too upto some permissible limit. It is not an enviable situation since less than 10%¹ of the rural households with members employed in the government sector.

(Footnotes) ¹As per SECC, 2011.

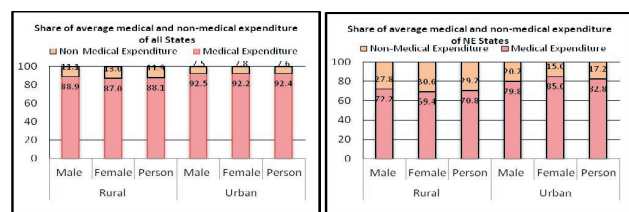
Table - 2: Average expenditure (Rs) for treatment per hospitalization during stay at hospital over last 365 days

| State | Category of expenditure | Average expenditure | |
|-------------------|-------------------------|---------------------|-------------|
| | | Rural | Urban |
| Arunachal Pradesh | ME | 5678(70.6) | 8926(83.3) |
| | NME | 2363(29.4) | 1789(16.7) |
| | Total | 8041(100) | 10715(100) |
| Assam | ME | 6966(81.8) | 47064(89.9) |
| | NME | 1554(18.2) | 5304(10.1) |
| | Total | 8520(100) | 52368(100) |
| Manipur | ME | 6061(66.9) | 10215(74.0) |
| | NME | 2997(33.1) | 3595(26.0) |
| | Total | 9058(100) | 13810(100) |
| Meghalaya | ME | 2075(50.6) | 18786(86.2) |
| | NME | 2023(49.4) | 3004(13.8) |
| | Total | 4098(100) | 21790(100) |
| Mizoram | ME | 8744(75.0) | 13461(78.2) |
| | NME | 2908(25.0) | 3756(21.8) |
| | Total | 11652(100) | 17217(100) |
| Nagaland | ME | 5628(72.6) | 15788(85.4) |
| | NME | 2122(27.4) | 2689(14.6) |
| | Total | 7750(100) | 18477(100) |
| Sikkim | ME | 8035(63.5) | 9939(63.1) |
| | NME | 4613(36.5) | 5813(36.9) |
| | Total | 12648(100) | 15752(100) |
| Tripura | ME | 5694(78.6) | 11638(83.5) |
| | NME | 1547(21.4) | 2294(16.5) |
| | Total | 7241(100) | 13932(100) |
| NE Region | ME | 6110(70.8) | 16977(82.8) |
| | NME | 2516(29.2) | 3531(17.2) |
| | Total | 8626(100) | 20508(100) |
| All India | ME | 14935(88.1) | 24436(92.4) |
| | NME | 2021(11.9) | 2019(7.6) |
| | Total | 16956(100) | 26455(100) |

Note: ME = Medical Expenditure, NME = Non-Medical Expenditure.

Figures in brackets are calculated by the author, they are share to total.

Source: 71st NSS Round.



Graph-I: Representation of medical and non-medical expenditure per hospitalisation

BREAK-UP OF ITEMS OF MEDICAL EXPENDITURE

To understand the share of various items of expenditure in medical treatment, we refer to the 68th NSS Round since the 71st NSS Round did not publish such information. From Table 3, the overall per capita expenditure in institutional medical treatment in urban areas in the NE Region is more than three times in the rural areas. In case of non-institutional, it is twice the amount. At the all India level, the average expenditure is more than 1½ times in urban areas for both institutional and non-institutional medical treatment. The reason being the dominance of public sector in the NE Region.

Table -3: Monthly per capita value of consumption expenditure in healthcare sector

Value per 30 days (Rs)

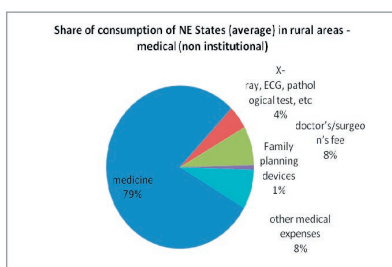
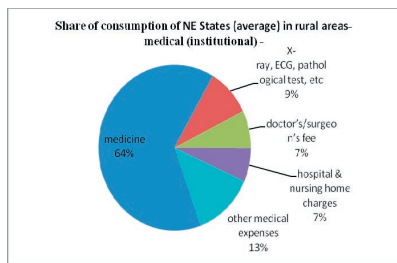
| Particulars | Area | Arunachal Pradesh | Assam | Manipur | Meghalaya | Mizoram | Nagaland | Sikkim | Tripura | NE Region (Average) \$ | All India |
|---------------------------------------|------|-------------------|-------|---------|-----------|---------|----------|--------|---------|------------------------|-----------|
| Medicine | R | 10.99 | 1.58 | 4.33 | 0.59 | 1.69 | 1.91 | 1.36 | 6.96 | 3.68 | 13.46 |
| | U | 17.08 | 8.39 | 3.08 | 1.38 | 3.81 | 2.14 | 0.13 | 15.13 | 6.39 | 17.53 |
| X-ray, ECG, pathological test, etc | R | 1.27 | 0.56 | 0.58 | 0.11 | 0.08 | 0.03 | 0.42 | 1.24 | 0.54 | 3.29 |
| | U | 2.39 | 4.40 | 0.99 | 0.14 | 0.36 | 0.03 | 0.07 | 6.13 | 1.81 | 5.64 |
| Doctor's/surgeon's fee | R | 0.18 | 0.45 | 0.47 | 0.19 | 0.13 | 0.31 | 0.09 | 1.55 | 0.42 | 4.16 |
| | U | 0.71 | 3.11 | 0.59 | 0.34 | 0.39 | 0.49 | 0.01 | 1.42 | 0.88 | 7.58 |
| Hospital & nursing home charges | R | 0.03 | 0.70 | 0.99 | 0.36 | 0.13 | 0.03 | 0.10 | 0.67 | 0.38 | 6.32 |
| | U | 0.72 | 11.47 | 0.62 | 2.97 | 0.86 | 0.00 | 0.07 | 5.01 | 2.72 | 13.67 |
| Other medical expenses | R | 3.35 | 0.34 | 0.95 | 0.07 | 0.10 | 0.08 | 0.22 | 0.79 | 0.74 | 3.57 |
| | U | 10.38 | 13.13 | 0.93 | 0.15 | 0.18 | 0.27 | 0.03 | 2.62 | 3.46 | 7.01 |
| Medical, institutional: sub-total | R | 15.82 | 3.62 | 7.32 | 1.32 | 2.13 | 2.37 | 2.19 | 11.22 | 5.75 | 30.81 |
| | U | 31.28 | 40.50 | 6.23 | 4.98 | 5.61 | 2.96 | 0.32 | 30.31 | 15.27 | 51.44 |
| | | | | | | | | | | | |
| Medicine | R | 24.64 | 21.78 | 13.19 | 8.83 | 18.46 | 11.52 | 10.65 | 33.13 | 17.78 | 51.24 |
| | U | 38.06 | 55.31 | 11.10 | 18.93 | 31.58 | 16.12 | 24.21 | 79.12 | 34.30 | 70.83 |
| X-ray, ECG, pathological test, etc | R | 2.52 | 1.29 | 0.41 | 0.33 | 0.20 | 0.34 | 0.42 | 2.80 | 1.04 | 3.73 |
| | U | 3.56 | 5.89 | 1.11 | 1.05 | 1.01 | 0.09 | 0.00 | 6.69 | 2.43 | 6.70 |
| Doctor's/surgeon's fee | R | 1.70 | 1.91 | 2.56 | 1.63 | 0.38 | 0.52 | 1.22 | 4.05 | 1.75 | 7.21 |
| | U | 2.63 | 11.59 | 2.96 | 3.80 | 1.95 | 0.72 | 7.73 | 11.37 | 5.34 | 13.41 |
| Family planning devices | R | 0.10 | 0.21 | 0.14 | 0.01 | 0.00 | 0.00 | 0.00 | 1.15 | 0.20 | 0.19 |
| | U | 0.60 | 0.57 | 0.06 | 0.00 | 0.04 | 0.01 | 0.00 | 1.61 | 0.36 | 0.39 |
| Other medical expenses | R | 9.10 | 0.46 | 2.23 | 0.35 | 0.26 | 0.54 | 0.25 | 0.93 | 1.77 | 2.00 |
| | U | 27.55 | 2.16 | 1.79 | 0.72 | 1.11 | 0.35 | 0.03 | 1.05 | 4.35 | 2.94 |
| Medical, non-institutional: sub-total | R | 38.05 | 25.64 | 18.53 | 11.14 | 19.29 | 12.92 | 12.54 | 42.06 | 22.52 | 64.37 |
| | U | 71.86 | 75.51 | 17.02 | 24.49 | 35.69 | 17.28 | 31.97 | 102.84 | 47.08 | 94.27 |

Note: R = Rural, U = Urban.\$: Average for NE Region calculated by author.

Source: 68th NSS Round.

MONTHLY PER CAPITA VALUE OF CONSUMPTION EXPENDITURE ON MEDICAL TREATMENT:

Rural areas: Graph II indicated that purchase of medicines constituted a major share in the monthly per capita expenditure in the rural areas (64% in institutional treatment and 79% in non-institutional treatment) in the NE Region. On X-ray, ECG, pathological test, etc it accounted for more than 9% in institutional treatment and almost 5% in non-institutional treatment. Doctor's/ surgeon's fee accounted for more than 7% of the treatment (institutional and non-institutional). Similar trends are also observed at the all India level.

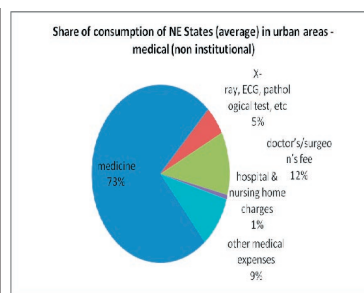
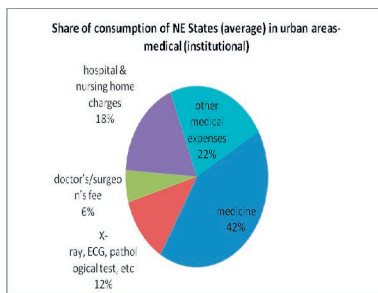


Graph-II: Representation of item wise medical expenditure – rural areas
URBAN AREAS

Graph III indicated that purchase of medicines also constituted a major share in the monthly per capita expenditure in the urban areas (41.85%¹ in institutional treatment and 72.85% in non-institutional treatment) in the NE States (average). On hospital & nursing home charges it was 17.81% in institutional treatment and on X-ray, ECG, pathological test, it was 11.85% in institutional treatment while it is only 5% in non-institutional treatment in the NE Region. Doctor's/ surgeon's fee accounted for around 6% of the institutional treatment and 11% in non-institutional. Similar trends are also observed at the all India level.

(Footnotes)

¹ It is more than 55% if we exclude Assam and Meghalaya.



Graph-IV: Representation of item wise medical expenditure - urban areas

Thus, in both the rural and urban areas of the NE Region, expenditure on purchase of medicines constituted a major share in the total expenditure in medical treatment. This is despite the fact that the prices of medicines or formulations are being regulated under various Drug Price Control Orders (DPCOs)¹ from time to time.

(Footnotes)

¹Price control of medicines has been in existence in India since 1962. Latest DPCO announced in 2013.

AFFORDABILITY OF HEALTHCARE (HOSPITALIZATION) IN THE NE REGION

In order to broadly analyze the burden of hospitalization in the NE Region, we would first touch upon the rural households (85% of the total households are rural households and 76% of it have the highest earning member within come less than Rs. 5,000/- per month)⁶.

In a paper "Cost of illness: Evidence from a study in five resource-poor locations in India"⁷, David M. Dror, Olga van Putten-Rademaker & Ruth Koren (April, 2008), showed that "The median ratio for the entire sample was 0.73, signifying that half the population spent an amount equivalent to at least 73% of the monthly per capita income for one illness episode". For the NE Region, it showed that half of the 76% rural households spent 165.61% of their monthly income on a single hospitalization (Table 4). Even if we consider per capita income of the States, we find that on average, a single case of hospitalization would wipe out 40.42% of per capita income of the individual (Table 5).

Table 4: Average medical expenditure (Rs) per hospitalisation during stay at hospital

| States/ Region | Percentage of rural households as per SECC | Average expenditure for treatment (Rs) per case (rural) @ | Percentage of expenditure as a share of income due to a single hospitalization for rural household having highest earning member with income of#: | | | |
|-------------------|---|---|---|---------------------------|---------------------------|--------------------------------|
| | | | Rs. 5,000/- per month | Rs. 60,000/- per annum | Rs. 10,000/- per month | Rs. 1,20,000/- per annum |
| Arunachal Pradesh | 76.33 | 8041 | 160.82 | 13.4 | 80.41 | 6.70 |
| Assam | 89.36 | 8520 | 170.40 | 14.2 | 85.2 | 7.10 |
| Manipur | 77.41 | 9058 | 181.16 | 15.1 | 90.58 | 7.55 |
| Meghalaya | 87.69 | 4098 | 81.96 | 6.8 | 40.98 | 3.42 |
| Mizoram | 49.36 | 11652 | 233.04 | 19.4 | 116.52 | 9.71 |
| Nagaland | 74.98 | 7750 | 155.00 | 12.9 | 77.5 | 6.46 |
| Sikkim | 73.93 | 12648 | 252.96 | 21.1 | 126.48 | 10.54 |
| Tripura | 79.53 | 7241 | 144.82 | 12.1 | 72.41 | 6.03 |
| NE Region | 85.54 | 8626 | 165.61 | 13.8 | 82.81 | 6.90 |

Note: @ Taken from Table 2. # Data calculated by author based on the rural household's income of the higher earning member divided by the average total expenditure for treatment per hospitalization case.

Source: SECC, 2011.

Table 5: Average expenditure per hospitalizations as a ratio to per capita income

| State/ Region | Average expenditure for treatment per case (rural + urban) ^^ (in Rs) | Per capita income at 2004-15 prices ## | Ratio of average expenditure for treatment per case to per capita income |
|-------------------|---|--|--|
| Arunachal Pradesh | 9378.00 | 45719.58 | 20.51 |
| Assam | 30444.00 | 29654.73 | 102.66 |
| Manipur | 11434.00 | 30606.78 | 37.36 |
| Meghalaya | 12944.00 | 49126.47 | 26.35 |
| Mizoram | 14434.50 | 51399.8 | 28.08 |
| Nagaland | 13113.50 | 61292.74 | 21.39 |
| Sikkim | 14200.00 | 101241.22 | 14.03 |
| Tripura | 10586.50 | 51027.76 | 20.75 |
| NE Region | 14566.81 | 36035.07 | 40.42 |

Note: ^^ Data calculated by author based on Table 2.

Data for Mizoram, Sikkim and Tripura pertains to 2013-14 while for other States it is for 2014-15. Per capita income was calculated based on State's GDP and population as per Census 2011.

Source: RGI and Ministry of Statistics & Programme Implementation.

Here we are talking of only the treatment cost for patients admitted as 'in-patient'. If we account for post-hospitalization⁸ cost and loss of income due to illness, then the proportion of income spent on hospitalisation would be much higher. This aspect is crucial since majority of the household (about 72%) in the NE Region have members who work as cultivators or manual labourers as per SECC. A day lost because of ill health/ hospitalisation means

no income. Thus, the question of affordability of healthcare is very crucial – it is not only the cost per se but also the purchasing power of the individuals that need to be taken into account. Even though data on the penetration of health insurance in the eight States is not easily available, reference is made to a study by the Public Health Foundation of India (31st January 2011) "A critical assessment of the existing health insurance models in India" which showed that health insurance coverage⁹ in India is around 25% in 2010 while it was only 3% in Assam (which share 68% of the Region's population). Interestingly, the SECC showed that around 59% of the rural households in the NE Region do not possess land as an asset which would mean that borrowing for incurring medical costs is the only way out.

SUMMARY OF FINDINGS AND CONCLUSION

Since the government healthcare sector is dominant in the NE States, the expenditure on hospitalization and treatment is comparatively lower. However, as a proportion of total expenditure, non-medical expenses accounted for a substantial portion. It also showed that lesser healthcare expenditure does not necessarily mean affordable healthcare since a substantial portion of the household's income / per capita income is spent on treatment.

Whether there is a way out by putting in place an efficient/ reliable and at the same time a cost effective healthcare system? Since already, the public sector healthcare plays an important role and proved to be more cost effective, there is a need to expand and strengthen them in terms of quantity, quality, and reach especially in the rural areas (including improvement in road connectivity, ambulance facilities, accommodation, etc) through adequate and efficient manpower along with modern facilities. Also there is a need to control the expenditure on purchase of medicines by way of large scale government procurement. Easy loans scheme from banks at minimum cost/ interest rate especially to the landless households can be introduced.

"The views expressed in this paper are personal and they do not reflect the views or opinion of the organization that I am working for"

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Conflict of Interest: The question of conflict of interest does not arise.

Source of Support: No financial or other such support was received.

Ethical Clearance: Does not arise.

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 5. Public Health Foundation of India "A critical assessment of the existing health insurance models in India" A research study sponsored under the Planning Commission of India's Scheme of Socio-Economic Research (31st January 2011).
- (Footnotes)**
- 1 Data for some NE States are not available for some indicators.
 - 2 Exceptions are for male patients in Tripura and female patients in Meghalaya, Mizoram and Nagaland who have higher preference for private sector.
 - 3 As per SECC, 2011.
 - 4 It is more than 55% if we exclude Assam and Meghalaya.
 - 5 Price control of medicines has been in existence in India since 1962. Latest DPCO announced in 2013.
 - 6 As per SECC 2011.
 - 7 The study covers 3531 households in States of Maharashtra, Bihar and Tamil Nadu.
 - 8 Generally, it includes diagnostic test, medicines cost, checkup cost (which may also include cost of travelling to the hospital/ health centre), etc.
 - 9 Any form of insurance including the Central Government Health Scheme (CGHS), Employees' State Insurance Scheme (ESIS), Government Sponsored Schemes and Private Health Insurance).

Strategising the Educational Interventional Methods on Infant Feeding Practices: An Exploratory Study among Primary Care Workers in Rural Mysore

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ABSTRACT

Introduction: Breast feeding an infant is culturally accepted as well as the natural choice for mothers in India, is associated with lots of myths and misconceptions. At the community level, the primary health workers like ANMs, AWWs, ASHA are not only the primary source of information also first level of contact to the health system. With this background the current study was conducted as an attempt to assess their level of knowledge as well as best educational interventions related to infant feeding practices among primary care workers.

Material and Methods: A prospective interventional study was conducted among the primary care workers for a period of six months. The workers were then divided into three groups and the educational intervention was given and later reassessed after one month.

Results: Majority of the health workers 93.7% had an experience more than 3 years. All types of educational interventions given to the health care workers effectively improved the knowledge level, which was statistically significant ($p < 0.01$) demonstrated by using the Kruskal Walli's test.

Conclusion: The lecture cum demonstration method of intervention was found not only effective but also feasible way of improving the knowledge when compared to only leaflet and only lecture groups.

Keywords: *Infant feeding, Exclusive breastfeeding, leaflet, lecture, demonstration.*

INTRODUCTION

According to the Global Strategy for Infant and Young Child Feeding, malnutrition has been responsible directly or indirectly for 60% of the 10.9 million deaths annually among under five children and two-thirds of these deaths are associated with inappropriate feeding practices in the first year of life⁽¹⁾. Similarly, the WHO Global Database for developing countries on child growth and malnutrition states that "faltering of growth in

children starts by the age of 3 months and further declines during infancy"². The NFHS III survey shows that 29.5% of infants are underweight by the age of six months.³ To effectively reduce under-5 mortality and to achieve the MDG1, breast feeding should be initiated within hour of birth, exclusive breast fed for six months, introduce complementary feeds at six months with appropriate foods and continue breast feeding for at least two years.⁴

Breast feeding an infant though is culturally accepted as well as the natural choice for mothers in India, is associated with lots of myths and misconceptions. Therefore, low rate of exclusive breast feeding and late introduction of complementary foods are the major cause of infant malnutrition seen in our country.⁵ Reasons for this include: inadequate

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knowledge of caregivers regarding correct infant and young child feeding practices, cultural barriers, traditional restrictions on foods, low dietary diversity, frequent infections, high population pressure, low social / nutritional status of girls / women and suboptimal delivery of social services.⁶

Breast feeding initiative was started nearly two decades ago in 1992, not more than 23.4% of infants are breast fed within one hour of birth, only 60% are exclusively breastfed during the first four months of life and complementary feeding begins too early or too late according to NFHS-3(2005-06).⁷ Similarly, the DLHS 2007-08 survey also shows breast feeding within one hour of birth was 40% and EBF was only 31.5%.⁸ The health care workers have been promoting and advocating breastfeeding without the desired effect as they lack adequate knowledge and are unable to identify common breast feeding problems and impart health education in an effective manner.⁹

At the community level, the primary health workers like ANMs, AWWs, ASHA are the primary source of information for the rural and the urban poor population regarding health and its related programmes. They are directly associated with the implementation of mother and child initiatives. The mothers visits during antenatal and postnatal period is utilized to promote infant feeding practices has not really transformed the situation as the key indicators remain unchanged implying that the information provided is not effective in bringing about the desired behaviour change.

In a KAP study done in Mangalore revealed that 71.6% of the mothers knew that exclusive breastfeeding must be practised for 6 months but only 18% of mothers practiced exclusive breast feeding.¹⁰ The gap between knowledge and practice is very huge. For women to succeed in breastfeeding, need accurate information during pregnancy along with assistance and support at the time of birth for early initiation, counselling to maintain exclusive breastfeeding for the first 6 months, along with answers to her questions, solution to her problems.^{1,6}

Thus, effective community educational efforts require knowledgeable health care workers and thus the study intends to assess infant feeding knowledge among primary health care workers. Even though

there are many methods in providing awareness on infant feeding practices for the health care workers, there is always a need to work on the most effective strategy among all. The right type of message, given at right place, at right time and using the right method can bring about significant behavioural changes at community level. In this background the current study was conducted as an attempt to assess the most effective educational interventions related to infant feeding practices among primary care workers in the rural Mysore.

MATERIALS & METHOD

This prospective interventional study was conducted among the primary care workers - ASHA, AWW, Junior Health Assistant male and female and senior health assistant female in Suttur and Hadinaru PHCs (rural field practice area of Department of Community Medicine, JSS medical college, Mysore) for a period of six months.

A line listing of all the 90 primary care workers serving in these areas was done. They were randomly allocated into three equal intervention prongs by lottery method. A pre tested, structured questionnaire having 30 closed ended items related to key issues of infant feeding practices were included. After giving a pre-test the educational intervention was given to them and then reassessed using the same instrument after a period of one month to see the level of knowledge and which method was effective/ appropriate. Each group received the same information through three different educational methods i.e information leaflets, lecture and lecture with demonstration.

Emphasis was given on initiation of breastfeeding (within 1 hour), exclusive breastfeeding (for first 6 months), median duration of breastfeeding, introduction of timely and appropriate complementary food, feeding during illness of mother and child, positioning while breast feeding and assessment of adequacy of breast feeding.

RESULTS

Majority of the primary care workers were in the age group of 25-44years (83.3-89%), 62% of primary care workers were AWW, 35.4% are ASHA workers. 62-66% have received education up to high school, 93.7% have experience more than 3 years and 51.9%

belong to socio economic class III according to BG Prasad classification.

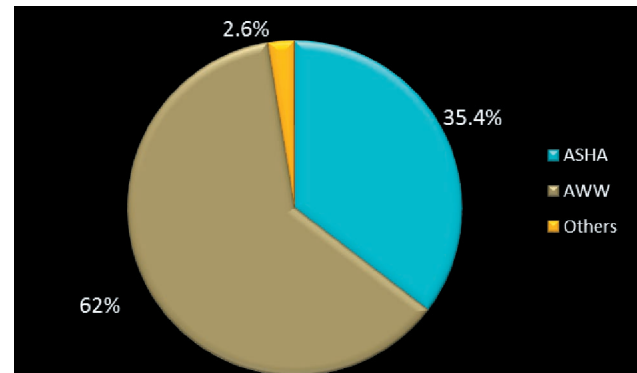
Table 1 results- There was a statistically significant improvement in knowledge regarding exclusive breast feeding (58.2% vs 82.3%), demand feeding (65.8% vs 83.5%), not giving teats and pacifiers (52% Vs 78.5%), continuing breast feeding during diarrhoea (79% vs 95%) and positioning of child during breast feeding (65.8% vs 77.2%) following educational intervention using any of the method of giving awareness regarding infant feeding practices.

Graph 2- There is significant improvement in knowledge regarding breast feeding during illness of mother that it should not be stopped from 22.1% to 61.6%.

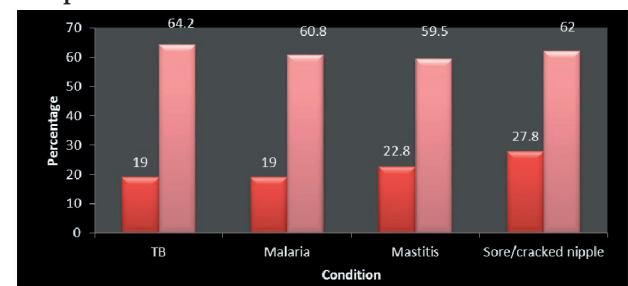
Table 2 results- All types of educational interventions given to the health care workers effectively improved the knowledge level, which was statistically significant ($p < 0.01$) demonstrated by using the Kruskal Walli's test.

Table 3 results- The post hoc comparison was carried out between the different intervention methods to know the best among three interventional methods. Effect size was the least when compared information leaflet and lecture method (1.5%). When demonstration was introduced as an educational intervention method with lecture the effect size

raised up to 66%. The overall effect size considering all the three types of intervention was 24.7%. Thus, implies that addition of demonstration as a method of intervention had a major impact on knowledge score. Therefore, lecture cum demonstration method was found to be the best method in improving awareness on infant feeding practices.



Graph 1. Distribution of study subjects based on their occupation



Graph 2. Comparison of level of knowledge regarding breast feeding during maternal illness before and after the educational intervention.

Table 1: Comparison of knowledge regarding infant feeding before and after educational intervention.

| Sl No | Knowledge | Pre test | Post test | p value |
|-------|--|-----------|-----------|---------|
| 1 | Exclusive Breast feeding should be given up to 6 months | 46 (58.2) | 65 (82.3) | 0.001 |
| 2 | Colostrum / yellow milk is available for 5-7 days | 3 (3.8) | 26 (33.0) | 0.001 |
| 3 | A child should be breast fed on demand | 52 (65.8) | 66 (83.5) | 0.01 |
| 4 | Pacifiers and bottle feeding is not recommended if breast milk is inadequate | 41 (52.0) | 62 (78.5) | 0.001 |
| 5 | HIV mother should feed | 26 (33.0) | 53 (67.1) | 0.001 |
| 6 | Do not stop breast feeding during diarrhoea | 63 (79.0) | 75 (95.0) | 0.001 |
| 7 | While breast feeding the head and body of the baby should be in a straight line and well supported | 52 (65.8) | 61 (77.2) | NS |

Note: Figures in parenthesis indicate percentages, Chi square test

Table 2: Post test comparison of different groups

| Sl no. | Type of Intervention | N | Mean Rank | χ^2 | p |
|--------|-------------------------|----|-----------|----------|-------|
| 1 | Information leaflet | 29 | 31.3 | 27.1 | 0.001 |
| 2 | Lecture | 26 | 31.3 | | |
| 3 | Lecture + Demonstration | 24 | 59.8 | | |

Table-3: Post hoc comparison between different groups

| Sl no. | Type of Intervention | Mean Rank | χ^2 | p | Effect size |
|--------|-------------------------|-----------|----------|-------|-------------|
| 1 | Information leaflet | 26.22 | 0.834 | .361 | 1.5% |
| | Lecture | 29.98 | | | |
| 2 | Lecture | 14.8 | 32.4 | 0.001 | 66.1% |
| | Lecture + Demonstration | 37.0 | | | |
| 3 | Lecture + Demonstration | 35.2 | 12.8 | 0.001 | 24.7% |
| | Information leaflet | 20.1 | | | |

DISCUSSION

Early initiation and exclusive breast feeding are the main strategies to improve the nutritional status of the children, effective educational methods are needed to prepare the young mothers for successful lactation. Though majority of the health workers had three years of experience, their knowledge regarding certain key issues was not satisfactory, which improved significantly after the educational intervention in our study.

A community-based, study in 2006 Bankura district, West Bengal noted that only 13.6% of the study children were breastfed within one hour of birth, 57.1% of the infants were exclusively breastfed for six months and 26.7% of the newborns received prelacteal feeds.¹¹ A study in Mumbai slums during 1992 showed exclusive breast feeding was 37% and timely complementary food were introduced in only 48% of infants which was similar to NFHS III survey(2005-06).^{5,7} Though a number of initiatives were taken in last twenty years, it lacked to show the desired impact in the community.

A study done in Bagalkote shows 15% had good scores, 61% had poor scores which changed to 73% after educational intervention.¹² Similarly our study also showed significant improvement in

scores after the educational intervention. The most effective educational intervention was demonstration with lecture having an effect size of 66.1%. A study done among Aganwadi supervisors also revealed improvement in knowledge level after the educational intervention with live demonstrations and role-plays followed by small group discussions after each session. The score improved significantly ($p < 0.001$) after the educational intervention.¹³

According to a study though 98% of ASHAs had complete and correct information about exclusive breast feeding only 18% of them were able to motivate mothers to practice the same. Insufficient mother's milk (55.4%), caesarean sections (20.2%) and advise from elders in the family to start top milk were reasons for not been able to exclusively breast feed the baby.¹⁴

Our study should that when effective methods are adopted the information can bring about an effective/ desired change. Thus, effective communication skills and scaling up of nutrition training for health workers, involvement of all the stakeholders in the household will be an potential entry point to improve nutrition status among children along with providing an enabling environment.

CONCLUSION

There was a significant improvement in knowledge about the infant feeding practices pertaining to key issues like exclusive breast feeding, colostrum feeding, the use of bottles or pacifiers, feeding during illness of mothers and child and feeding on demand following educational intervention. The lecture cum demonstration method of intervention was found not only effective but also feasible way of improving the knowledge when compared to only leaflet and only lecture groups.

With limited resources in a country like ours effective education for BCC would be a sustainable strategy in improving the nutritional status of young children. As the health workers are the main source of information in rural areas they should not only have adequate knowledge but also means to effectively communicate the information to the all the stakeholders involved in infant care.

RECOMMENDATIONS

Lecture and demonstration method can be used during induction and in-service training of primary care workers. The primary care workers can use Lecture + demonstration during the health educational sessions conducted for pregnant woman and postnatal mothers. The programme managers should make provision to provide necessary aids like dolls, syringe, breast pump, breast models cup and bowl, measuring jar, flip charts and videos for effective communication to the community at large.

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Assessment of Nutritional Status of School Going Children in Rural Mangalore, South India: A Cross Sectional Study

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ABSTRACT

Background: Health and nutrition in early stages of human life determine, to a great extent, the physical and mental well-being of a person. In a developing country like India, poverty undoubtedly constitutes a major factor for malnutrition in children. The present study was done to assess the nutritional status of a school going children in rural area of Mangalore in-order to take further steps in improving their health status. **Objective:** To assess the Nutritional status of School going children of Rural Mangalore. **Materials and Method:** A Descriptive, Cross sectional study was done in four Government schools in rural Mangalore. 478 children from Primary and Secondary level schools were enrolled during the School health program. Anthropometric measurements were recorded following standard procedures to assess the nutritional status. Descriptive statistics was used to analyse the data using SPSS software version 16. **Results:** Out of 478 children 21.3% were stunted, 54.6% were Under-Weight and 51.4% were suffering from Thinness. Stunting and Under-weight were more common in girls than boys. The mean height of girls was high till age of 10 years and then boys were found to be taller than girls. The mean weight of boys was more than that of girls almost all age groups.

Conclusion: Underweight was found to be higher in this population than compared to national statistics unlike the other parameters. Promoting appropriate dietary habits through effective nutrition education is an effective method to prevent PEM.

Keywords: School going children, Nutrition, Underweight, Stunting, Wasting

INTRODUCTION

Protein Energy Malnutrition is the most important nutritional problem in the world today.¹ The problem is more severe affecting children of all ages especially the under-fives in third world countries. Primary school children are extensively affected by Nutritional deprivation ranging in magnitude from 20-80%. Since insufficient physical growth is naturally reflected in their suboptimal

mental achievement², the nutritional status evaluation of this segment of population is essential for making advancement towards recuperating overall wellbeing of the school age children.

Primary school age is a dynamic period of physical growth and mental development of the child. Research indicates that nutritional deficiencies and poor health in primary school age children are among the causes of low school enrolment, high absenteeism, early dropout and poor classroom performance. The present position with regard to the health and nutritional status of the children in our country is very unsatisfactory³. Nutritional status of children in school age group has not been reported on recently conducted NFHS-3.

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Different classifications like IAP, Gomez, Waterlow's etc have been used in number of studies conducted to assess the nutritional status of children; the most commonly used being the IAP classification. Since different cut-off values for normality have been used in different systems consequently these cannot be applied universally. To surmount this problem World Health Organization has recently suggested the use of Z score system for classifying malnutrition in children.^(4,6) Z-score system has been used in the present study as an attempt to assess the nutritional status of school children.

Water low reported that, etiology of linear growth retardation is multi-factorial but has been explained by three major factors: Poor nutrition, high levels of infection and problematic mother-infant interaction, which is closely related to the socio-economic status of the family. The school age period is nutritionally significant because this is the prime time to build up body stores of nutrients in preparation for rapid growth of adolescence⁵.

Hence, the present study was conducted to assess the nutritional status of school children in the rural area of Mangalore. No reliable estimates of nutritional status are available from the mentioned area. The present work describes the findings of the survey being conducted as part of the School Health Program run by the department of Community Medicine, KS Hegde Medical Academy (KSHEMA), Mangalore.

MATERIALS & METHOD

The present study was conducted in 4 Government schools belonging to rural Mangalore, by the department of Community Medicine, KSHEMA. School health program is been regularly conducted in these schools by our department so the survey findings of this program have been included in this study. For the purpose of this study, 478 students from class 1 to 10 have been enrolled by convenient sampling method. After obtaining permission from block educational officer and principals of all participant schools, a team consisting of post-graduates, interns and medico social workers carried out data collection. The age (in completed years) of the children was obtained from the school records. Assessment of nutritional status of children was made using anthropometric parameters as follows:

Weight: Floor type weighing scale was used to measure with due respect to the standardization of the apparatus and method. The measurements were taken to the nearest 0.5Kg.

Height: Was taken using a measuring tape applied to the wall. The measurements were taken with children barefoot with their back of heels, buttocks and head touching the wall. Readings were taken to the nearest 0.5cm.

WHO Z- score system was used to classify the nutritional status of the children. Data was analysed using SPSS software version 16.

RESULTS

We have included 478 children from 4 government schools in the age group of 5-17 years. The mean height of girls was high up till age of 10 years and then boys were found to be taller than girls. The mean weight of boys was more than that of girls in almost all age groups. Overall prevalence of stunting, under-weight and thinness was 21.3%, 54.6% and 51.4% respectively. Males suffered from under-weight and stunting more than females whereas females were having thinness more than males.

Table 1: Depicts the Age -Gender distribution of study participants:

In our study the females outnumbered males in lower age groups whereas they were almost equal in higher classes

| Age (yrs) | Gender | | Total n (%) |
|--------------|--------------------|--------------------|--------------------|
| | Male n (%) | Female n (%) | |
| 5 | 0 (0.0) | 4 (1.5) | 4 (0.8) |
| 6 | 8 (3.6) | 12 (4.6) | 20 (4.1) |
| 7 | 26 (11.7) | 14 (5.4) | 40 (8.3) |
| 8 | 24 (10.8) | 44 (17.1) | 68 (14.2) |
| 9 | 28 (12.6) | 26 (10.1) | 54 (11.2) |
| 10 | 42 (18.9) | 50 (19.5) | 92 (19.2) |
| 11 | 12 (5.4) | 24 (9.3) | 36 (7.5) |
| 12 | 8 (3.6) | 16 (6.2) | 24 (5.0) |
| 13 | 40 (18.0) | 44 (17.1) | 84 (17.5) |
| 14 | 16 (7.2) | 10 (3.9) | 26 (5.4) |
| 15 | 10 (4.5) | 12 (4.6) | 22 (4.6) |
| 16 | 6 (2.7) | 0 (0.0) | 6 (1.2) |
| 17 | 2 (0.9) | 0 (0.0) | 2 (0.4) |
| Total | 222 (100.0) | 256 (100.0) | 478 (100.0) |

Table 2: Depicts mean and standard deviation of height and weight of study participants.

| Age (Years) | Gender | Number | Weight (Mean \pm SD) | Height (Mean \pm SD) |
|-------------|--------|--------|------------------------|------------------------|
| 5 | Male | 0 | - | - |
| | Female | 4 | 12.0 (2.3) | 101.5 (1.7) |
| 6 | Male | 8 | 15.3 (2.2) | 107.0 (5.2) |
| | Female | 12 | 14.7 (3.6) | 111.8 (3.4) |
| 7 | Male | 26 | 18.4 (3.5) | 115.2 (5.3) |
| | Female | 14 | 17.4 (0.9) | 117.0 (2.5) |
| 8 | Male | 24 | 17.6 (2.3) | 120.5 (6.9) |
| | Female | 44 | 18.5 (4.5) | 121.8 (4.8) |
| 9 | Male | 28 | 20.4 (2.7) | 123.8 (6.1) |
| | Female | 26 | 19.5 (3.5) | 123.4 (7.1) |
| 10 | Male | 42 | 24.2 (5.1) | 131.4 (6.9) |
| | Female | 50 | 24.0 (3.5) | 130.0 (6.6) |
| 11 | Male | 12 | 26.1 (2.6) | 135.1 (6.4) |
| | Female | 24 | 26.6 (3.9) | 135.2 (3.2) |
| 12 | Male | 8 | 29.2 (1.4) | 144.2 (1.9) |
| | Female | 16 | 28.1 (3.1) | 138.2 (7.9) |
| 13 | Male | 40 | 30.2 (6.5) | 142.6 (12.3) |
| | Female | 44 | 35.2 (5.9) | 149.4 (6.9) |
| 14 | Male | 16 | 39.3 (8.1) | 156.0 (6.1) |
| | Female | 10 | 35.4 (6.3) | 154.2 (8.4) |
| 15 | Male | 10 | 43.8 (9.1) | 161.8 (6.1) |
| | Female | 12 | 36.1 (6.8) | 153.1 (7.8) |
| 16 | Male | 6 | 49.6 (4.2) | 167.3 (5.9) |
| | Female | 0 | - | - |
| 17 | Male | 2 | 49 (0) | 160 (0) |
| | Female | 0 | | |
| | | 478 | 25.6 (9.1) | 132.9 (15.4) |

From Table 2, we have found that the mean Height of Girls was high till age of 10 years and then boys were found to be taller than girls above 10 years. The mean weight of Boys was more than that of Girls in almost all age groups.

Table 3. Depicts Gender distribution of Stunting (Height-for-age)

| STUNTING | Yes | No | Total | P value |
|----------|-------------|------------|------------|---------|
| Male | 56(11.7%) | 166(34.7%) | 222(46.4%) | 0.58 |
| Female | 46(9.6%) | 210(43.9%) | 256(53.5%) | |
| Total | 102 (21.3%) | 376(78.6%) | 478 | |

From Table 3, we have found that 102(21.3%) of study participants were found to be stunted.

Table 4. Depicts Gender distribution of Under-weight (Weight-for-age)

| UNDER-WEIGHT | Yes | No | Total | P value |
|--------------|-------------------|-------------------|------------|---------|
| Male | 78 (28%) | 50(17.9%) | 128(46%) | 0.55 |
| Female | 74(26.6%) | 76(27.3%) | 150(53.9%) | |
| Total | 152(54.6%) | 126(45.3%) | 278 | |

Table 5: Depicts Gender distribution of Thinness (BMI-for-Age)

| THINNESS | Yes | No | Total | P value |
|--------------|-------------------|-------------------|------------|---------|
| Male | 116(24.2%) | 106(22.1%) | 222(46.4%) | 0.783 |
| Female | 130(27.1%) | 126(26.3%) | 256(53.5%) | |
| Total | 246(51.4%) | 232(48.5%) | 478 | |

Table 6: Depicts Age distribution of Stunting, Underweight and Thinness:

| AGE (y) | STUNTING | | | UNDERWEIGHT | | | THINNESS | | |
|--------------|-----------|-----------|------------|-------------|-----------|------------|------------|------------|------------|
| | Male | Female | Total | Male | Female | Total | Male | Female | Total |
| 5 | 0 (0) | 2(50) | 2(50) | 0(0) | 4(100) | 4(100) | 0(0) | 2(50) | 2(50) |
| 6 | 4 (50) | 0(0) | 4(20) | 6(75) | 8(66) | 14(70) | 4(50) | 10(83) | 14(70) |
| 7 | 10 (38) | 0(0) | 10(25) | 10(38) | 2(14) | 12(30) | 12(46) | 8(57) | 20(50) |
| 8 | 10 (41) | 2(4) | 12(17) | 18(75) | 26(59) | 44(64) | 12(50) | 30(68) | 32(47) |
| 9 | 12(43) | 8(34) | 20(37) | 22(78) | 12(46) | 34(63) | 16(57) | 16(61) | 32(59) |
| 10 | 0(0) | 12(24) | 12(20) | 22(52) | 22(44) | 44(47) | 22(52) | 14(28) | 36(39) |
| 11 | 2(16) | 4(16) | 6(25) | - | - | - | 6(50) | 10(41) | 16(44) |
| 12 | 0(0) | 6(37) | 6(25) | - | - | - | 8(100) | 8(50) | 16(66) |
| 13 | 16(40) | 8(18) | 24(28) | - | - | - | 20(50) | 16(36) | 36(43) |
| 14 | 2(12) | 2(20) | 4(15) | - | - | - | 10(62) | 8(80) | 18(69) |
| 15 | 0(0) | 2(16) | 2(9) | - | - | - | 4(40) | 8(66) | 12(54) |
| 16 | - | - | - | - | - | - | 2(33) | 0(0) | 2(33) |
| 17 | - | - | - | - | - | - | - | - | - |
| TOTAL | 56 | 46 | 102 | 78 | 74 | 152 | 116 | 130 | 246 |

DISCUSSION

Among various problems encountered in school age children, Malnutrition accounts for the majority. Since it is wisely said that only a healthy body can harbour a healthy mind. It is imperative that these disorders in children are efficiently and timely assessed and corrective measures employed accordingly. Assessment of nutritional status in school children is one such endeavor. In the present survey we observed a comparatively lower prevalence of stunting (21.3%) than that reported by G K Mendhi

et al⁷ from Assam, a study conducted on 6-8 year old children where the prevalence of stunting was 47.4%, whereas underweight in our present study is 54.6%, and was found to be higher than this study 51.7%.

Bandopadyay et al⁸ from Navinagar Mumbai reported prevalence of wasting was 17.0%, stunting 16.8% and underweight 42.3%. Prevalence of underweight 90.0% and stunting 47.5% was reported by Mitra et al⁹ from Chatisgarh. Similarly Chowdhary et al¹⁰ from Puriliya West Bengal also reported figures of underweight 33.7%,wasting 29.4% and stunting

17.0% among school going children.

Also as per NFHS-3, while reporting findings on under nutrition in preschool children reported a prevalence of 29.4%, 27.6% and 15.4% for underweight, stunting and wasting respectively¹¹ thus reporting a reduction of 32.5%, 33.1% and 8.87% in these indicators over that reported by NFHS-2 and these improvements in nutritional status are likely to be reflected in older children.

As similar to what observed by Mendhi et al⁷, present study found that the prevalence of underweight and stunting did not show a definite trend across various age groups. We found a higher prevalence of underweight (Males-28%, Females-26.6%), stunting (Males-11.7%, Females-9.6%) in Males than compared to females whereas Thinness was more prevalent among girls (27.1%) than boys (24.2%). Similar trend has been reported by Mukherji et al¹² from Pune ($p > 0.05$)

We observed that in younger age group (10 & 11 year olds) a higher proportion of males was found to be thin while as in older group more females were thin. Only in 10 year and 13 year old children was the difference statistically significant. These observations seem to be due chance only, since similar results have not been reported from anywhere. This could be either due to a smaller number of children included or the age of the some of the children could not have been ascertained accurately in spite of the best efforts.

CONCLUSION

The selection of children, food quality, food quantity and continuous supply remains a major issue in the program. To improve the nutritional status on short term basis measures like proper selection of children, continuous nutrition education in schools for encouraging judicious use of locally available foods, supervision of mid-day meals to children at schools and uninterrupted supply of cooking material would be instrumental. For weaker sections, on long term basis implementing nutritional monitoring of school children as part of school health program, improvement in school environment, improving the purchasing power of people, making foods available at affordable prices can be instrumental in bringing a much needed improvement.

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Pharmaceutical Care in Hypertension Patients in a Peruvian Hospital

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ABSTRACT

Objective: To evaluate the impact of pharmaceutical care service in hypertensive patients in a Peruvian hospital, detecting and solving drug related problems (DRP) using Dáder method.

Method: This prospective, quasi experimental, quali-quantitative study was focused in detection and solving drug related problems (DRP) and measuring outcomes of pharmaceutical care interventions in 94 patients from July 2010 to June 2011.

Results: It was detected 139 DRP (1.47 DRP per patient). In the 139, 68 (48.9%) were of necessity, 50 (35.9%) were effective and 21 (15.2%) security. 92 (66.19%) of pharmacist interventions were accepted. Between interventions accepted, 72 (78.26%) contributed to solving DRP. Between interventions not accepted, 33 (70.21%) continued not solved. **Conclusion:** The results show the importance and usefulness of pharmaceutical care service for hypertensive patients attended ambulatory in a Peruvian Hospital.

Keywords: drug related problem (DRP), pharmaceutical care, hypertension patients

INTRODUCTION

Blood pressure (BP) is the force that blood exerts on the walls of the arteries as it flows through them, depends on the volume that the heart pumps and the resistance to blood flow in the arteries. In general, the greater the volume of blood expelled by the heart and smaller diameter arteries, the higher blood pressure (i.e., the heart must work harder to pump the same volume of blood). Blood pressure remains relatively constant levels despite postural changes and variations that occur in the demand for blood, so that increases with activity and decreases in the rest.

In Peru¹, prevalence of hypertension is 14.8% (18.5% men vs 11.6% women). Prevalence is major in Lima capital (18.2%), then Coast zone (without Lima capital) (15.5%), Jungle zone (11.7%) and Mountains zone (12.0%).

Drug related problem (DRP) is defined as *an undesired patient experience that involves drug therapy and that actually or potentially interferes with the desired patient outcome*².

Hypertension's patients as other kind of patients have a prevalence of drug related problems (DRP).

In this way, in a national hospital in Perú, Ayala³ found 29 DRP (2.07 DRP by hypertension's patient), 66% related to necessity, 24% to effectiveness and 10% to safety. It was solved 24 DRP (75%) that demonstrates the degree of acceptance of pharmacist recommendations to eliminate the causes of DRP.

Sanchez⁴ found 29 DRP (2.41 DRP by hypertension's patient), 30,4% was due to

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nonadherence. 25% related to necessity, 45% to effectiveness and 30% to safety. It was solved 12 DRP (78%) with significant impact of effect on the patient's perception of the profession of pharmacist ($p < 0.05$).

Sources of healthcare system are limited in Peru so in this way hypertension's patient with DRP not detected or solved will suffer some clinical impacts accord DRP types. For example, nonadherence will cause worse outcomes in blood pressure values and will increase risk of stroke and heart attack, which will decrease quality of healthcare system, increase limited budgets, get worse clinical outcomes and reduce health related quality of life of hypertension patients, concepts related each other. Kozma⁵ described this kind of outcomes so its important focus in them in order to work sustainably.

Pharmacists have an important role in improving medicine's use, especially in chronic patients due to their easy access by patients. For hypertension's patients, pharmacists have shown be effective for improving adherence and get better outcomes in its control⁶⁻¹¹.

The aim of the present study was to determinate of impact of pharmaceutical care to blood pressure, disease knowledge, adherence and detection/solving drug related problems in hospital hypertension patients in ambulatory setting.

METHOD

Study Setting & Population

A Peruvian hospital located in north of the country, which care different kind of population. For study, it was received hypertensive patients who accepted participate in study during study timeline. The inclusion criteria for this study consisted of patients more than 25 years old who had diagnostic of hypertension. In addition, the patients had to exhibit at least two of the following requisites described by Koecheler¹² blood pressure $\geq 140 \times 90$ mmHg; in use of at least three drugs, therapeutic regimen modified at least twice in the previous year, presence of comorbidities and a history of nonadherence either reported by the patient or observed by the researchers. A total of 22 patients who fulfilled these criteria were included, however, there were subsequently two losses, due to patient do not want to continue with

monitoring. Thus, 20 patients concluded the study.

STUDY DESIGN

It is a design of descriptive, prospective and longitudinal study. One monthly visit for each patient was scheduled. The visits were made by one pharmacist. For pharmacotherapy, follow up it was used the Dader method, which is a validated method by University of Granada¹³.

The Dader method consists of clinical reasoning on the part of pharmacists caring for a patient through the establishment of a therapeutic pharmacist/patient alliance. The Pharmaceutical Care in Dader method have four basic steps:

- 1) Obtaining the patient's condition about its pharmacotherapy;
- 2) Analyzing the patient's condition about pharmacotherapeutic request;
- 3) Accord patient's request develop a plan care for patient; and
- 4) Analyzing the outcomes of implementation of plan care. Hospital board provided ethical approval for develop the study. Patients selected signed consent format before the study.

The variables analyzed in the study included sociodemographic information, systolic and diastolic blood pressure and drug-related problems and pharmaceutical interventions. Questionnaires were applied to patients for collecting data. Blood pressure levels were determined at each visit. At each visit, two measurements were made, the first of which was disregarded. Each patient's medical receipt was evaluated checking type and number of antihypertensive drugs.

Drug-related problems (DRP) were identified by evaluating pharmacotherapy at each visit to patients. Then, DRP were classified accord in accordance with the definitions in Second Consensus of Granada on Drug Therapy Problems¹⁴.

Pharmaceutical Care process is described in Table 1

Table 1: Pharmaceutical Care process

| Pharmacist's role | Patient's role |
|---|--|
| Before Pharmaceutical care visit | |
| <ul style="list-style-type: none"> • Patient receipt review • Obtaining information from patient about their health status, pharmacotherapy outcomes. | <ul style="list-style-type: none"> • Prepare questions. • Transmission of any physician indication. |
| During visit monthly | |
| <ul style="list-style-type: none"> • Patient interview by pharmacist which is part of the study • Take notes about patient description of medicine use. • Blood pressure measurement. • Talking about patient adherence. • Identify drug related problems (DRP). • Develop a plan care for patient. • Start interventions that can be implemented. • Stablish change of behavior to reach with patient. | <ul style="list-style-type: none"> • Ask questions about medications as function, adverse effects, interactions, equivalences, indications. • Comment ideas to solve DRP. Example: if patient prefer to reduce number of doses a day due to feel better. • Remind and comment any potential mistakes in its medicine use. |

Different kinds of interventions were:

- Provide education about signs and symptoms of their disease to control it.
- Inform about correct use of medicines prescribed (i.e. correct dose, frequency, etc.)
- To refer the patient to physician detailing the DRP identified using a document written to explain about DRP.
- To refer the patient to physician with proposal of pharmacotherapy modification to solve a DRP identified using a document written.

Study Instruments and Variables

For DRP detection was used formats developed by Second Consensus of Granada on Drug Therapy Problems¹⁴.

Analytic methods: For data from the pharmaceutical care is evaluated with number and type of DRP, number of pharmacist interventions accepted/not accepted and DRP solved/not solved after pharmacist interventions.

RESULTS

In the 139 DRP found, 68 (48.9%) were of necessity, 50 (35.9%) were effective and 21 (15.2%) security. Between DRP of necessity, type 1 was important the

explanation for this situation is the characteristics of the population attending this hospital, because they are mostly low income people which hinder their access to medicines that patients can cope with the disease.

Of concern is the high percentage of issues related to effectiveness especially linked to the patient suffers a health consequence of a quantitative ineffectiveness of the medication (DRP 4), reaching 24.4% of DRP detected. The reason obtained from personal interviews conducted with patients is that they come in the first instance to the appointment with the physician who diagnosed hypertensive problem and in turn were prescribed the drug to take to overcome the disease, but then again no longer go to any service to make your control of how their values are also blood pressure often do not comply with taking their medications.

In the case of safety DRP, generally occurred in patients who had to have hypertension associated with other health problems as diabetes mellitus type 2. Accord to number of DRP (139), it was done 139 pharmacist interventions to solve them. Table 2 shows in detail outcomes of pharmacist interventions.

Table 2. Pharmacist Interventions to solve DRP

| DRP Type | Pharmacist intervention accepted | | Pharmacist intervention not accepted | | Total |
|--------------|----------------------------------|-------------------|--------------------------------------|-------------------|----------------|
| | DRP solved | DRP not solved | DRP solved | DRP not solved | |
| DRP 1 | 25 | 10 | 8 | 18 | 61 |
| DRP 2 | 4 | 1 | 1 | 1 | 7 |
| DRP 3 | 10 | 2 | 1 | 3 | 16 |
| DRP 4 | 21 | 3 | 2 | 8 | 34 |
| DRP 5 | 5 | 1 | 1 | 2 | 9 |
| DRP 6 | 8 | 2 | 1 | 1 | 12 |
| TOTAL | 73(52,52%) | 19(13,67%) | 14(10,07%) | 33(23,74%) | 139 DRP |

The age group that presented more DRP was the period of 55-75 years being 84 (60.4%) of the 139 DRP, which serves as an indicator for selecting patients who are those who should provide them priority in regard to pharmaceutical care.

DISCUSSION

The results of this study showed that drug-related problems were common in these hypertensive patients where this may be related to the considerable number of drugs that many participants were taking (polypharmacy) and do not receive information about medicines during dispensing.

Actual study shows 45 DRP by patient, in comparison to others as Abraham¹⁵ (4.9%), Vinks¹⁶ (3.9%), Lyra¹⁷ (3.0%), Ahmad¹⁸ (2.9%), Movva¹⁹ (2.2%), Paulino²⁰ (1.57%), Biset-Avalew²¹ (1.48%), Raimbult-Chupin²² (1.29%).

The most common drug-related problem concerned was necessary medicine (DRP N° 1 accord Second Consensus of Granada). Also, there is a comparison between actual research and previous studies about types of DRP which need interventions. Actual study has most of DRP as Necessary (48.9%), Lyra¹⁷ (Safety-64.0%), Ahmad¹⁸ (Necessary-16.1%), Movva¹⁹ (Effectiveness-30%), Biset-Avalew²¹ (Effectiveness-46.2%), Martins²³ (Effectiveness-33.8%).

The efforts of an integral healthcare team are basic in order to reach treatment goals in these patients. DRP not solved was due to intervention was not accepted by physician.

Tsuyuki²⁴ and Santschi²⁵ expressed the value of interventions performed by pharmacists to identify

and manage cardiovascular diseases. Improvement in adherence was similar to previous studies²⁶⁻³¹.

Pharmacist's interventions allowed detect and solve drug related problems. The achievements by pharmaceutical care service, involving the detection, prevention and resolution of PRM, conducted in patients who attended the service gives us an overview of how important it is for the health system pharmaceutical care service.

Conflict of Interest: Nil

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Ethical Clearance: Manuscript attached is an original text and is not being evaluated by another journal; it is not redundant publication and declaration of any conflict of interest or the existence of any kind of economic relationship. The authors are consistent with the criteria for authorship of all signatories and professional affiliation described.

For the present study, it complies with the ethical standards of the Research Committee of the institution where the study was conducted and with the Declaration of Helsinki current

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A Study to Evaluate the Role of Antepartum and Intrapartum Factors Affecting Early Onset Neonatal Sepsis in Rural Medical College

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ABSTRACT

The study was undertaken to study the maternal risk factors associated in the development of sepsis neonatorum (neonatal sepsis). The study was conducted in 70 neonates. Out of these 70 neonates, 27 were cases of neonatal sepsis and 43 served as controls. The maternal risk factors undertaken in the study were maternal age, parity, premature rupture of membranes (PROM), meconium stained amniotic fluid (MSAF), preeclampsia, foul smelling liquor, antepartum hemorrhage (APH), Intrapartum fever, maternal educational status. Out of these maternal factors, premature rupture of membranes (PROM), meconium stained amniotic fluid (MSAF), Intrapartum fever, Preeclampsia, foul smelling liquor showed statistically significant association with development of neonatal sepsis and maternal factors like maternal age, educational status, parity and antepartum hemorrhage (APH) were not associated with the development of neonatal sepsis.

Keywords – Neonatal sepsis, Premature rupture of membranes, Meconium stained amniotic fluid.

INTRODUCTION

Sepsis is the commonest cause of neonatal mortality and is responsible for 30-50% of total neonatal deaths each year in developing countries. It is estimated that up to 20% of neonates develop sepsis and approximately 1% die of sepsis related causes. The term neonatal sepsis refers to systemic infection of neonates including septicemia, pneumonia, meningitis, arthritis, osteomyelitis, and urinary tract infection. As per National Neonatal Perinatal Database (NNPD) 2002-2003, the incidence of systemic infection is 3% among intramural babies in tertiary care institutions in India, with septicemia being present in three fourth of the cases and pneumonia in one third of neonates. Infection is the primary cause of mortality in 18.6% of intramural neonates

in which *Klebsiella pneumoniae* is the most frequent bacterial isolate (32.5%), followed by *Staphylococcus aureus* (13.6%).¹⁻³ Neonatal sepsis is categorized as early or late onset. Eighty-five percent of newborns with early onset of infection present within 24 hours, 5% present at 24-48 hours and a smaller percentage of patients present between 48 hours and 6 days of life.⁴ The susceptibility of the newborn is related to immaturity of both the cellular and humoral immune systems at birth. This feature is particularly evident in preterm neonate. Early-onset sepsis syndrome is also associated with acquisition of microorganisms from the mother through blood-borne transplacental infection of the fetus, ascending infection and infection upon passage through an infected birth canal or exposure to infected blood at delivery.⁵ Late-onset sepsis syndrome occurs at 7-90 days of life and is acquired from the care-giving environment.⁶ The early signs of sepsis in the newborn are nonspecific. Therefore many newborns undergo diagnostic studies and the initiation of treatment before the diagnosis has been determined. The definitive diagnosis of septicemia is made by a positive blood culture.¹ The

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incidence of culture proven sepsis is approximately 2 in 1000 live births. Of the 7-13% of neonates who are evaluated for sepsis, only 3-8% have culture proven sepsis. The mortality rate of untreated sepsis can be as high as 50%.⁴ Thus, most clinicians believe that the hazard of untreated sepsis is too great to wait for confirmation by positive cultures. They initiate treatment while awaiting culture results.⁶ In recent years, various investigators have evaluated some highly sensitive and specific inflammatory markers (eg C-reactive protein, interleukin-6, interleukin-8, plasma elastase) to diagnose neonatal sepsis and shock. Although these markers are sensitive and specific, they require sophisticated and expensive kits and are therefore impractical for routine clinical work-up in a community health delivery systems, particularly in developing countries.¹ Hence it becomes important to identify neonates who are at a very high risk of developing neonatal sepsis by studying maternal factors which put the neonates at high risk of developing neonatal sepsis. The study was undertaken to study the maternal risk factors associated in the development of neonatal sepsis.

MATERIAL & METHOD

This study was done in Sri Siddhartha Medical

College, Tumkur. The total study group consisted of 70 neonates. Out of these 70 neonates, 27 neonates developed sepsis and 43 neonates were controls as they did not develop sepsis. This was across sectional study. The diagnosis of neonatal sepsis was made based on clinical findings of septicemia and culture positive cases. The maternal risk factors undertaken in the study were maternal age, parity, premature rupture of membranes (PROM), meconium stained amniotic fluid (MSAF), preeclampsia, foul smelling liquor, antepartum hemorrhage (APH), Intrapartum fever and maternal educational status. These maternal factors were studied in both cases and controls to find out if any of these maternal factors played a significant role in development of neonatal sepsis.

Statistical methods : P value was used to study if there was any significant maternal factor involved in development of neonatal sepsis. A p value of < 0.05 was considered as statistically significant.

RESULTS

The results of the study is illustrated in the Table No:1.

Of total 70 cases, 27 had sepsis 43 were controls. Various maternal factors in neonates with sepsis and neonates without sepsis are as follows:

Table No:1

| Parameters | Variables | Sepsis (n=27) | Normal babies (n=43) | P value |
|----------------------|------------|---------------|----------------------|----------|
| Maternal age | <20 | 07(25.9%) | 17(39.5%) | 0.243 |
| | >20 | 20(74.1%) | 26(60.5%) | |
| Education status | Illiterate | 08(29.6%) | 05(11.6%) | 0.059+ |
| | Literate | 19(70.3%) | 38(88.4%) | |
| Parity | Primi | 17(62.9%) | 27(62.8%) | 0.988 |
| | Multi | 10(37.1%) | 16(37.2%) | |
| PROM | Yes | 16(59.3%) | 10(23.2%) | 0.002** |
| | No | 11(40.7%) | 33(76.7%) | |
| MSAF | Yes | 10(37.1%) | 04(9.3%) | 0.012* |
| | No | 17(62.9%) | 39(90.7%) | |
| Intrapartum fever | Yes | 05(18.5%) | 00 | 0.007** |
| | No | 22(81.5%) | 43(100.0%) | |
| Preeclampsia | Yes | 07(25.9%) | 00 | <0.001** |
| | No | 20(74.1%) | 43(100.0%) | |
| Foul smelling liquor | Yes | 04(14.8%) | 00 | 0.019* |
| | No | 23(85.2%) | 43(100.0%) | |
| APH | Yes | 02(7.4%) | 00 | 0.145 |
| | No | 25(92.6%) | 43(100.0%) | |

PROM= premature rupture of membranes,
MSAF= meconium stained amniotic fluid,
APH=antepartum haemorrhage

The above table No:1 shows that p values for PROM, Intrapartum fever, MSAF, preeclampsia and foul smelling liquor were less than 0.05 thus indicating that these factors were significant in development of neonatal sepsis in this study where as other maternal parameters like maternal age, educational status, parity and APH were not found to be significant in development of neonatal sepsis.

DISCUSSION

A high index of suspicion is important in the diagnosis and treatment of neonatal infection because it is hampered by vague, nonspecific or nonexistent clinical manifestation. Thus, it is difficult to establish a diagnosis based on clinical picture alone. However, it is imperative that treatment is instituted early because of the high mortality associated with the neonatal infection.⁶ Infections occurring at less than 72 hours of age usually are caused by bacteria acquired in utero or during delivery, whereas infection after that time most likely have been acquired after birth.⁷ Thus, it is essential to know the maternal illnesses which can predispose to neonatal sepsis. These are prolonged rupture of membranes, foul smelling amniotic fluid, maternal fever or other symptoms suggestive of infection, unexplained fetal distress and previous septic infant. In this study, maternal factors like premature rupture of membranes, maternal pyrexia, Meconium stained amniotic fluid, preeclampsia and foul smelling liquor were associated with development of sepsis neonatorum as indicated by p value of less than 0.05. Other maternal factors which did not show any significant association with development of sepsis neonatorum were maternal age, educational status, parity and Antepartum haemorrhage. Throughout pregnancy and until the membranes rupture, the fetus is relatively protected from the microbial flora of the mother by the chorioamniotic membranes, the placenta, and poorly understood antibacterial factors in amniotic fluid. However, there are many ways that infectious agents can reach the fetus or newborn to cause infection. Procedures disturbing the integrity of the uterine contents, such as amniocentesis, cervical cerclage, transcervical chorionic villus sampling, or percutaneous blood

sampling can permit entry of skin or vaginal organisms, causing amnionitis and secondary fetal infection.⁸⁻¹² In our study, 16/27 neonates with sepsis had PROM whereas 11/27 neonates with sepsis did not have PROM. In normal control neonates, 10/43 had PROM and 33/43 did not have PROM. There was statistically significant difference between the neonates with sepsis and neonates without sepsis with respect to PROM and hence in our study PROM was one of the maternal factors that was attributed for development of sepsis neonatorum. Maternal pyrexia is another maternal risk factor associated with sepsis neonatorum. When chorioamnionitis is present, the risk of proven sepsis increases to 3% to 5%.¹³ The clinical diagnosis of chorioamnionitis is often difficult to confirm, but may be suspected in the presence of maternal intrapartum fever, especially in patients with preterm pregnancies. However, studies have documented that use of epidural analgesia for pain relief during labor is associated with increase in maternal temperatures in patients with term pregnancies.¹⁴⁻¹⁶ Two studies demonstrated that in term populations, over 95% of intrapartum fever occurred in women receiving epidural analgesia.^{17,18} Furthermore, two studies have shown an increase in sepsis evaluations in term neonates born to those women with epidural-related fever.^{17,19} This results in a dramatic decrease in specificity and positive predictive value of intrapartum fever as a risk factor for sepsis. One question is whether or not one can ignore the presence of intrapartum fever as a sepsis risk factor in term neonates. In our study, mothers of 5/27 neonates with sepsis had intrapartum fever and mothers of 22/27 neonates with sepsis did not have intrapartum fever. In normal neonates mothers of none of the 43 neonates had intrapartum fever. There was statistically significant difference between the neonates with sepsis and neonates without sepsis with respect to intrapartum pyrexia and hence in our study intrapartum pyrexia was one of the maternal factors that was attributed for the development of sepsis neonatorum. Studies have shown that meconium stained amniotic fluid is associated with development of neonatal sepsis. The mechanism through which intrauterine fetal infection may be associated with meconium passage is not well defined. The presence of meconium may predispose to bacterial overgrowth. In vitro studies have found that meconium enhances bacterial growth in amniotic

fluid and impairs the natural antibacterial properties of the amniotic fluid.²⁰ In our study, 10/27 neonates with sepsis had MSAF and 17/27 neonates with sepsis did not have MSAF. In the control group, 4/43 had MSAF and 39/43 neonates did not have MSAF. There was statistically significant difference between the neonates with sepsis and neonates without sepsis with respect to MSAF and hence in our study MSAF was one of the maternal factors that was attributed for the development of sepsis neonatorum. Preeclampsia is another risk factor for development of sepsis neonatorum. It has been suggested that the increased risk of neonatal sepsis is related to low Absolute neutrophil count (ANC) in the peripheral blood of preeclamptic mothers. The mechanism responsible for diminished neutrophil production is suggested to be due to an inhibitor elaborated by placenta of women with pre-eclampsia.²¹ In our study, 7/27 neonates with sepsis were born to preeclamptic mothers and 20/27 neonates with sepsis were born to non preeclamptic mothers. In the control group, all the neonates were born to nonpreeclamptic mothers. There was statistically significant difference between the neonates with sepsis and neonates without sepsis with respect to preeclampsia and hence in our study preeclampsia was one of the maternal factors that was attributed for the development of sepsis neonatorum. Presence of foul smelling liquor is associated with increased risk of neonatal sepsis. In our study 4/27 neonates with sepsis had foul smelling liquor and 23/27 did not have foul smelling liquor. In the control group, none of the 43 neonates had foul smelling liquor. There was statistically significant difference between the neonates with sepsis and neonates without sepsis with respect to foul smelling liquor and hence in our study foul smelling liquor was one of the maternal factors that was attributed for the development of sepsis neonatorum. In our study other maternal factors like maternal age, educational status, parity and APH were not found to be significant in development of neonatal sepsis.

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Conflict of Interest : There is no conflict of interest

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Correlation of Thyroid Hormones and CRP Level in Neonatal Sepsis

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ABSTRACT

Despite the absence of thyroid disease, patients with non-thyroidal illness (NTI) frequently have changes in serum levels of thyroid hormones that may suggest thyroid dysfunction. One of such non-thyroidal illness (NTI) is neonatal sepsis. C-reactive protein (CRP) is a marker of neonatal sepsis. Levels of free thyroid hormones are reduced in septic neonates. That's why we conducted this study, in which levels of FT₃ and FT₄ were measured along with CRP levels in 25 sick neonates and 25 controls of similar weight and gestational age. It was observed that FT₃ and FT₄ levels were lower in septic neonates having high CRP levels. It was also concluded that low thyroid levels and high CRP levels correlate with poor prognosis in neonatal sepsis.

Keywords: Non -thyroidal illness, neonatal sepsis, thyroid hormone levels, CRP levels.

INTRODUCTION

Neonatal morbidity and mortality are major global public health challenges with approximately 3.1 million babies worldwide dying each year in the first month of life.¹ Incidence of neonatal sepsis is 30 per 1000 live births². Recent analyses estimate that globally, 717,000 newborns die as a result of severe infections, accounting for nearly one-third of the total burden of newborn deaths.³ Though neonatal sepsis is a common problem, reports on neuro-endocrine changes in this condition are quite limited in literature. Thyroid hormones play an important role in the adaptation of metabolic function to stress and critical illness.⁴ The hormonal changes can be attributed to various lymphokines and monokines which are able to influence the hypothalamic-pituitary-thyroid axis modulating either the thyroid hormone levels or the hormone cytokine production by thyrocytes.⁵ Low triiodothyronine (T3) is commonly observed in case of critical illness, which can be attributed to increased

deiodination of thyroxine (T4) to reverse T3 (rT3), rather than T3, and increased catabolism of T3 to 3,3-diiodothyronine (T2).⁶ Any inflammatory condition causes release of interleukin-6 and other cytokines that trigger the synthesis of CRP by the liver. CRP is the most extensively studied acute phase reactant so far and despite the ongoing rise (and fall) of new infection markers it still remains the preferred index in many neonatal intensive care units. The production of CRP in the hepatocytes is mainly induced by IL-6 but can be further increased by synergy with IL-1.⁷ The signs and symptoms of neonatal sepsis can be clinically indistinguishable from various non-infectious conditions such as respiratory distress syndrome or maladaptation. Therefore rapid diagnosis is crucial for preventing the child from an adverse outcome. Therefore in this study we aimed at assessing the thyroid hormone and CRP levels in neonates with sepsis.

OBJECTIVE

To evaluate the role of thyroid hormones (FT3, FT4, TSH) in neonates with sepsis and to correlate their levels with C-Reactive Protein.

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MATERIAL & METHOD

This study was conducted in Department of Pediatrics at Pt. B. D. Sharma, Post Graduate Institute of Medical Sciences, Rohtak Haryana during July and August 2015. The study population comprised of 25 newborns with sepsis characterised by hypothermia or fever, lethargy, excessive cry, refusal to suck, diarrhoea, vomiting, abdominal distension, poor perfusion (prolonged capillary refill time), hypotonia, absent neonatal reflexes, brady/tachycardia, respiratory distress (grunting/apnea and/or gasping respiration), hypo/hyperglycemia, metabolic acidosis, bulging anterior fontanelle, vacant stare, high-pitched cry, excess irritability, seizures, neck retraction, stupor/coma, paralytic ileus, necrotizing enterocolitis, direct hyperbilirubinemia, acute kidney injury, bleeding, petechiae, purpura, multiple pustules, abscess, sclerema, mottling, umbilical redness and discharge who were admitted during this period. Neonates with gestational age <37 weeks, birth weight <2 kg, those with multiple congenital anomalies and babies of mothers with thyroid disorders were excluded from the study. 25 full term neonates without sepsis served as controls.

After an informed consent from parents, babies' venous blood samples were used to monitor the levels of FT3, FT4, TSH and CRP. Thyroid hormones were estimated after the third day of life using a radio-immunoassay.⁸ CRP reagent kit was based on the principle of the latex agglutination assay.⁹ Thyroid function tests were evaluated among septic neonates and control group and further the relationship between thyroid hormones and CRP was observed. Statistical analysis Statistical analysis was carried out using SPSS for windows 20.0 software. Data was expressed in mean ± standard deviation values. The data between the two groups was analyzed by using Students paired 't' test and Pearson correlation test was used to define correlation between thyroid hormones and CRP levels. A P-value of less than 0.05 was accepted as significant.

RESULTS

The mean serum CRP, FT3, FT4 and TSH levels in septic neonates and control group are presented in Table1. There was a significant decrease in FT3 (P < 0.001) and FT4 (P < 0.05) levels in neonates with sepsis as compared to controls. No significant difference was observed in TSH levels in the two groups.

Table 1. Mean Serum CRP, FT3, FT4, and TSH Levels in neonates with Sepsis and Controls

| Group | CRP | FT3 | FT4 | TSH |
|---------|------------|-----------|-----------|-----------|
| Septic | 39.50±21.7 | 2.60±1.25 | 2.05±0.95 | 4.50±1.2 |
| Control | 5.70±2.26 | 4.06±0.86 | 2.55±0.75 | 4.37±1.14 |
| P-Value | <0.001 | <0.001 | <0.05 | >0.05 |

All septic neonates were treated with antibiotics and parenteral fluids as per protocol. The mean CRP level was significantly higher in the sepsis group as compared to the control group (P < 0.05). There was a significant negative correlation between CRP and FT3 levels in the sepsis group (Fig. 1).

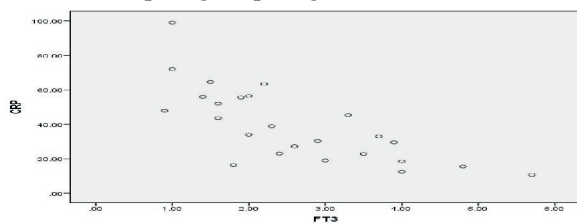


Figure 1. Graph showing correlation of CRP with FT3 level in septic group.

DISCUSSION

The present study showed significantly lower serum levels of FT3 and FT4 in neonates with sepsis compared to age matched non-septic controls. No statistically significant difference was observed in levels of serum TSH. There was a significant negative correlation between CRP and FT3 levels in neonates with sepsis.

Many other studies also got similar results. In a study by Das et al, the neonates with sepsis had significantly higher mean serum cortisol and lower mean serum total T4 and T3 level. The mean serum TSH levels were comparable in both groups.¹⁰ A

systematic review of nine studies on children, neonates and adults by Angelousi et al showed that lower baseline thyroid hormone values, either T3 or T4, are associated with worse outcome for patients with sepsis or septic shock.¹¹ In a study by Kurt A et al, serum TT3 and TT4 levels of septic newborns were significantly decreased at the onset while serum TT4 level increased after the antibiotic treatment.¹² Another study by Kishore et al found that Septic neonates with deranged thyroid function at admission have higher risk of mortality.¹³ Sharma et al showed that FT3 and FT4 hormones levels were significantly decreased in neonates with sepsis. No significant difference was observed in TSH levels.¹⁴

Alterations in the hypothalamic-pituitary thyroid axis suggest a prognostic role of thyroid hormones in neonates with sepsis. This activity may be attributed to the complex pathophysiological interplay between TSH and the immune system. TSH has been shown to affect the function of various types of hematopoietic and immune system cells that express the TSH receptor.^{15,16} Some of these cells can produce biologically active TSH that can have autocrine and paracrine actions. It can influence the early stages of the immune response to an antigen which may include the regulation of the synthesis and release of mediators of inflammation, such as IL6 and tumor necrosis factor- α (TNF- α) and T3 expression.¹⁷

CRP production is part of the nonspecific acute-phase response to most forms of inflammation, infection, and tissue damage. During the acute-phase-response the hepatic synthesis rate increases within hours and can reach levels 1000 fold.^{18,19} CRP levels remain high as long as the inflammation or tissue damage persists and then decrease rapidly.

CRP is thus used as a part of neonatal sepsis screen.

CONCLUSION

Our study supports the interplay between thyroid hormones and the immune system in neonates. There is a negative correlation between CRP and free thyroid hormone levels in neonatal sepsis. Further studies are required on a larger sample size to substantiate the findings and should aim to more clearly establish the strength of the above-mentioned association in neonates with sepsis.

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Statement of Informed consent: This study is based on the available record and standard treatment as per unit protocol. So there is no matter of consent.

Statement of Human and Animal Rights: No human right and animal right is violated in this case.

No ethical violation is done.

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Effect of Structured Teaching Programme on Guided Imagery Therapy among Elderly People at Kandulavaari Palli, Chandragiri Mandal, Chittoor District – A.P

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ABSTRACT

Aging is the normal process of the related change, which begins with birth and continues throughout the life. Many times, there are multiple stressors such as illness, and the loss of spouse. These multiple stressors may be too much for an elderly person to deal with this may lead to depression and the need to divert by guided imagery therapy.

Guided imagery is a programme of directed thoughts and suggestions that guide imagination toward a relaxed, focused state.

Highest percentage (95%) of elderly people was in the age group of 60-70 years, only 5% was in the age group of 71-80 years. Majority (82%) of elderly people were Males and the females were 17.5%. Widows were 20% and 10% were widowers. Majority (57.5%) of elderly people had no formal education, their occupation reveals that 70% of them were farmers. Majority of them (82.5%) were belongs to low socio economic status. All of them were Hindus (100%).

In the pre-test majority 38(97.5%) of the elders had inadequate knowledge 1(2.5%) had moderate knowledge and none of them had adequate knowledge. In the post test majority of the elders 24(60%) had moderate knowledge, and 8(20%) had adequate knowledge and only 8(20) had inadequate knowledge.

The overall mean pre test knowledge score was 7.9 and standard deviation is 3.2, in the post test the mean is 15.97 and standard deviation is 5.0306. Compared pre test and post test, post test level of knowledge in elderly people was high. Paired t-Test to assess the pre and post test knowledge scores of elderly people shows that highly significant (16.95).

For the association between post test knowledge of the elderly people on guided imagery therapy with their selected demographic variables showed that no significant relation ship between knowledge of Guided imagery therapy and gender, religion and there is highly significant relationship between age, marital status, education, occupation and income.

Keywords : *Effect, Structured Teaching Programme, Guided imagery therapy, Elderly people.*

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INTRODUCTION

• Imagination is more important than knowledge. Knowledge is limited, Imagination encircles the world.” — *Albert Einstein*
Ageing is a universal process. In the word of Seneca “Old Age is an Incurable Disease”. Ageing is a natural

process that begins at birth, a process that progresses throughout one's life and ends at death (Prakash, 2004).¹

Old age is the final phase of the life span. Ageing is an inevitable developmental phenomenon bringing along a number of changes in the physical, hormonal and the social condition. Ayurveda termed old age as "Vardhakya" which begins from the age sixty. In old age, the need for economic, health and emotional wellbeing assume special significance because of gradual reduction in abilities.¹ In the year 2014 old age population was 236/10,000 in the world. In 2016, almost 500 million people worldwide will be 65 and older. By 2030 it is estimated that total is projected to increase by one billion, accounting 13% of the total population.²

In India presently 10% of human population is 60 years or older, which shall become 20% by 2050. so the number of elder people above the age of 60 years is fast growing.³ At any age, stress is a part of life. Young and old alike have to face difficult situations and overcome obstacles. older people may face failing health or dwindling finances -- or simply the challenges of retaining their independence. Unfortunately, the body's natural defenses against stress gradually break down with age.⁴

The elderly not only face physical obstacles as their bodies age but they experience emotional challenge as well.⁵ Emotional stress is more subtle, but if it's chronic, the eventual consequences can be as harmful. At any age, stressed-out brains sound an alarm that releases potentially harmful hormones such as cortisol and adrenaline. Ideally, the brain turns down the alarm when stress hormones get too high⁴

As people age, the ability to achieve a relaxation response after a stressful event becomes more difficult. Aging may simply wear out the systems in the brain that respond to stress.⁶ People may not be able to control the stressors in their world, but they can alter their reaction to stressors by guided imagery technique.⁷

Guided imagery is the use of **relaxation** and mental visualization to improve mood and/or physical wellbeing.⁸ Guided imagery is a slightly different from other stress management techniques in

that it relies on the use of all of person senses.⁹

These techniques involve the systematic practice of creating a detailed mental image of an attractive and peaceful setting or environment, Guided imagery can be practiced in isolation, but it is frequently paired with physical relaxation techniques such as progressive muscle relaxation and massage.¹⁰

It can be self-directed, where the individual puts himself into a relaxed state and creates his own images, or directed by others.⁸ There are several other ways to relax. For example, person could create mental pictures of stress flowing out of his/her body, or their problems/ distractions and to start managing stress using imagery.⁹

One research was conducted in general hospital of Assam in 2012 showed that when individuals have access to positive mental images and to a state of body relaxation, they are able to reorient their thought away from unpleasant stimuli. Thus, positive thoughts contribute to an improvement in feeling about oneself and the world. Guided Imagery was effective in improving mood states in individuals with variety of illnesses. When persons have the experience of positive thoughts, their mind represent more than well-beings; it also represent well-thinking. The results of many studies showed the positive effects of Guided Imagery in mood regulation, although comfort was not measured.²

OBJECTIVES

- To assess the knowledge regarding guided imagery therapy among elderly people prior to the implementation of structured teaching programme.
- To assess the post test knowledge of elderly people after Structured Teaching Programme on Guided imagery therapy.
- To find out the association between post test knowledge scores on guided imagery therapy with their demographic variables.

OPERATIONAL DEFINITIONS

Effect: it refers to the significant increasing of knowledge on guided imagery therapy in elderly people as determining by the difference between pre test and post test scores.

Structured Teaching Programme: A Planned teaching programme on guided imagery therapy to elderly people at Kandulavaripalli, Chandragiri Mandal, Chittoor District.

Guided Imagery Technique: It refers to the use of relaxation and mental visualization to improve mood and physical well being in elderly people.

Elderly People: Age of the individual above 60 years who are staying at kandulavaripalli, Chandragiri Mandal, Chittoor District.

REVIEW OF LITERATURE

Suresh Babu (2015) conducted a study on Effectiveness of Guided Imagery on Depression among the Elderly, in a selected old age home. The depression level of the elderly was assessed before and after guided imagery using Geriatric depression Scale. The findings of the present study showed that 36 % of the elderly had mild depression and 74 % of them had moderate and severe depression before implementation of guided imagery. After analyzing these findings, it was found that Majority of the elderly had moderate and severe depression. The total mean percentage of the depression scores of the elderly in the pretest was 71.80 % with total mean 21.54 and standard deviation of 4.35. The mean pre test score was 21.54 and the mean posttest score was 16.08. In the pre-test 36 % of the elderly had mild depression and 64 % of the elderly had moderate and severe depression. In the post test, 12 % of the elderly had no depression, 62 % of them had mild depression and 26 % of them had moderate and severe depression. This shows that there is a significant reduction in the depression score of the elderly after implementing guided imagery.¹

Kaur Gurvinder et.al; (2013) conducted a study on Effectiveness of Guided Imagery Technique on Blood Pressure and Stress Level among Elderly People. A Quasi experimental study was conducted and the purposive sampling technique was used to gather data by using Glazer stress life style questionnaire and blood pressure record sheet for 60 elderly people (30 in experimental and 30 in comparison group). Pre test was conducted on day-1 in both groups and guided imagery technique was administered with CD in experimental group for one hour daily for a week and elderly people were motivated for self practicing after

that. Post test -1 was taken on 10th day and post test-2 on 24th day of pre test. Findings of study revealed that there were significant differences in pre test, post test-1 and post test-2 f value of systolic and diastolic blood pressure was 34.39 and 19.53(as evident from the computed repeated measure one way anova) was found to be statistically significant at 0.05 level of significance in experimental group whereas 0.89 and 0.60 not significant in a comparison group and pre test, post test-1 and post test-2 f value of stress score was 217.14 found to be statistically significant at 0.05 level of significance in an experimental group whereas 1.055 not significant in a comparison group. The study concluded that guided imagery technique had significant effect on blood pressure and stress level among elderly people.²

Elizabeth Carter (2006) conducted a study on Pre-packaged guided imagery for stress reduction A study into the use of pre-packaged compact discs (CDs) which incorporate Guided Imagery (GI) with suggestions and affirmations, indicates that the use of these CDs results in quick reduction of stress-related issues for all participants. Notable improvements were identified in general feelings of well-being (91% of participants), positive thoughts (82%) and ability to cope in stressful situations (73%). Decreases in incidence ratings were greatest for insomnia, anger and negative thoughts.¹¹

Antall GF et.al; (2004) conducted a study on the use of guided imagery to manage pain in an elderly orthopedic population A sample of 13 patients, age 55 years and older, were recruited. The control group received usual care and a music audio tape. The experimental group received usual care and a guided imagery audio tape intervention. Trends in this study demonstrated positive outcomes for pain relief, decreased anxiety, and decreased length of stay. Complementary therapy holds the promise of increasing positive outcomes. There is a critical need to incorporate the use of guided imagery and other complementary therapies into all nursing curricula.¹²

METHODOLOGY

Research approach : Quantitative approach

Research design: one group pre test post test design. A quasi experimental design was selected to evaluate the effect of Structured Teaching Programme

on Guided imagery therapy among the elderly people at Kandulavaripalli, Chandragiri Mandal, Chittoor District.

Population: The population includes age above 60 years.

Sample size: The sample size consists of 40 subjects who are staying at Kandulavaripalli, Chandragiri Mandal, Chittoor.

Sampling technique: purposive sampling technique was used for selection of the sample.

Sampling criteria : inclusive criteria

- i) Who are residing at Kandulavari palli
- ii) Age group of above 60 years
- iii) Who are willing to participate in study
- iv) Able to understand Telugu

Data collection: The investigator obtained permission from the respective authorities to collect data at Kandulavaripalli, Chandragiri Mandal, Chittoor.

Development and description of the tool : The tool was divided into three parts

Part-A, deals with demographic variables.

Part – B deals with questions on knowledge related to stress.

Part-C deals with questions on knowledge related to guided imagery therapy.

Score Interpretation :

- 1-10 : Inadequate Knowledge
- 11-20 : Moderate Knowledge
- 21-30 : Adequate Knowledge

Plan for data analysis: A master data sheet was prepared with response given by the respondent and was analyzed using descriptive and inferential statistics.

Descriptive statistics: Frequency and Percentage distribution of demographic variables, mean and standard deviation of the elderly age people were assessed.

Inferential statistics: Chi- Square test and P value to analyze the association between knowledge of elderly people and demographic variables.

FINDINGS

Highest percentage of elderly people was in the age group of 60-70 years(95 %) only (5%) per cent was in the age group of 71-80 years. Majority of elderly people were Males 33(82.5%) and the females were 7 (17.5%).

Majority of elderly people 57.5% had no formal education, their occupation reveals (70%) of were farmers. Majority of them (82.5%) were belongs to low socio economic status. All of them were Hindus (100%)

TABLE –I: Distribution of level of knowledge on guided imagery therapy among elderly people in pre and post test

| S.NO | LEVELS OF KNOWLEDGE | PRE-TEST | | POST - TEST | |
|------|---------------------|-----------|------------|-------------|------------|
| | | Frequency | Percentage | Frequency | Percentage |
| 1 | Inadequate | 39 | 97.5 | 8 | 20 |
| 2 | Moderate | 1 | 2.5 | 24 | 60 |
| 3 | Adequate | - | - | 8 | 20 |

In the pre-test majority 38(97.5%) of the elders had inadequate knowledge 1(2.5%) had moderate knowledge and none of them had adequate knowledge.

In the post test majority of the elders 24(60%) had moderate knowledge, and 8(20%) had adequate knowledge and only 8(20%) had inadequate knowledge.

TABLE –II: Effectiveness of structured teaching programme between pre and post test knowledge scores of elderly people

| Know-ledge | Pre - test | | Post test | | Paired 't' value |
|------------|------------|--------|-----------|--------|------------------|
| | Mean | S.D | Mean | S.D | |
| | 7.925 | 3.2690 | 15.97 | 5.0306 | |

The overall mean pre test knowledge score was 7.9 and standard deviation is 3.2, in the post test the mean is 15.97 and standard deviation is 5.0306. Compared pre test and post test, post test level of knowledge in elderly people was high. Paired t-Test to assess the pre and post test knowledge scores of elderly people shows that highly significant(16.95).

TABLE –III: Association of selected demographic variables with level of knowledge regarding guided imagery therapy among the elderly people in post-test

| S. No. | Demographic variables | Inadequate | | Moderate | | Adequate | | Chi-square |
|--------|--------------------------------|------------|----------------|-----------|----------------|-----------|----------------|--------------|
| | | frequency | Percentage (%) | frequency | Percentage (%) | frequency | Percentage (%) | |
| 1 | Age of the respondent | | | | | | | 8.9669 (s) |
| | a)>60 years | 6 | 15 | 11 | 27.5 | 3 | 7.5 | |
| | b) 61-70 years | 1 | 2.5 | 4 | 10 | 2 | 5 | |
| | c) 71-80 years | 1 | 2.5 | 6 | 15 | 2 | 5 | |
| | d) >80 years | - | - | 3 | 7.5 | 1 | 2.5 | |
| 2 | Gender | | | | | | | 0.5706 (N.S) |
| | a) Male | 7 | 17.5 | 22 | 55 | 4 | 10 | |
| | b) Female | 1 | 2.5 | 2 | 5 | 4 | 10 | |
| 3 | Marital status | | | | | | | 7.07143(s) |
| | a)Married | 6 | 15 | 23 | 57.4 | 4 | 10 | |
| | b)Divorced | - | - | - | - | - | - | |
| | c)Widower / widow | 2 | 5 | 1 | 2.5 | 4 | 10 | |
| 4 | Religion | | | | | | | 0.00 (N.S) |
| | a)Hindu | 8 | 20 | 24 | 60 | 8 | 20 | |
| | b)Muslim | - | - | - | - | - | - | |
| 5 | Educational status | | | | | | | 9.2855 (S) |
| | a) No formal education | 7 | 17.5 | 16 | 40 | 0 | 0 | |
| | b) Primary school | 1 | 2.5 | 6 | 50 | 1 | 2.5 | |
| | c) High school | - | - | 1 | 2.5 | 4 | 10 | |
| | d) Collegiate | - | - | 1 | 2.5 | 3 | 7.5 | |
| 6 | Occupation | | | | | | | 7.7094 (S) |
| | a)Cultivation | 5 | 12.5 | 15 | 37.5 | 6 | 15 | |
| | b)Business | 3 | 7.5 | 7 | 17.5 | 0 | 0 | |
| | c)House wife | - | - | 2 | 5 | 1 | 2.5 | |
| | d) Daily wage worker | - | - | 0 | 0 | 1 | 2.5 | |
| 7 | Income | | | | | | | 7.0952 (s) |
| | a) No income | 2 | 5 | 2 | 5 | 1 | 2.5 | |
| | b) 2400/year (old age pension) | 6 | 15 | 16 | 40 | 6 | 15 | |
| | c) any other | - | - | 6 | 15 | 1 | 2.5 | |

For the association between post test knowledge of the elderly people on guided imagery therapy with their selected demographic variables shows no significant relationship between knowledge of Guided imagery therapy and gender, religion and there is highly significant relationship between age, marital status, education, occupation and income.

CONCLUSION

One group pre and post test without control group evaluative approach was used to collect forty elderly people. Data was collected by using purposive sampling technique to assess the effect of structured teaching program on the guided imagery therapy on elderly people. The collected data was analyzed and the finding showed that there was a significant improvement between pre and post test knowledge scores revealing that the STP was effective for the elderly people to gain knowledge on guided imagery therapy to reduce their stress.

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Conflict of Interest: Author did not had any conflict of interest during this study.

Source of Funding: Self

Ethical Clearence: Informed consent has been obtained before data collection. Confidentiality maintained throughout the study.

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Prevalence of Diabetes and Impaired Fasting Glucose and its Association with Indian Diabetes Risk Score and Obesity in Rural Population of Meerut

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ABSTRACT

The prevalence of diabetes is rising globally. The International Diabetes Federation estimates around 40.9 million diabetics in India. Indian Diabetes Risk Score has a sensitivity and specificity of over 60 per cent and can be used to selectively screen Indians. Present study was a cross-sectional study conducted in rural Meerut. 150 participants were selected by systematic random sampling. Data was collected using a structured questionnaire, testing fasting blood glucose and physical examination of participants. The prevalence of diabetes and impaired fasting glucose (IFG) came out to be 11.3% and 12% respectively. 26.3% participants had very high IDRS. Significant association was seen between diabetic status with IDRS and BMI. More studies are needed in rural areas to get a full picture of diabetes.

Keywords: Diabetes, Impaired fasting glucose, Indian diabetes risk score.

INTRODUCTION

The prevalence of diabetes is rising all over the globe.⁽¹⁾ Although there is an increase in the prevalence of type 1 diabetes also, the major driver of the epidemic is type 2 diabetes, which accounts for >90 % of all diabetes cases.⁽²⁾

Currently there are around 347 million diabetics worldwide; of these more than 90% are type 2 diabetics. The International Diabetes Federation estimates 40.9 million diabetic subjects in India and this is further set to rise to 69.9 million by the year 2025.⁽³⁾ High fat diets and decreased physical activity have accompanied the process of modernization which has resulted in the doubling of obesity and type 2 diabetes in less than a generation.⁽⁴⁾

Earlier epidemiological studies in semi urban⁽⁵⁻⁷⁾ and rural India⁽⁸⁻¹⁰⁾ showed that in earlier years there was a very low prevalence of diabetes in rural populations however two recent studies, from Maharashtra⁽¹¹⁾ and Andhra Pradesh⁽¹²⁾ reported very high prevalence rates. It has been hypothesized that although there is a significant increase in diabetes as populations move from rural to urban habitats, a reverse migration of culture may be taking place in Indian rural populations.⁽¹³⁾

The Indian Diabetes Risk Score (IDRS) using four simple variables namely, age, family history, regular exercise and waist circumference has been developed.⁽¹⁴⁾ The individuals are classified as having high risk (score ≥ 60), moderate risk (score 30-59) and low risk (score < 30) out of a total score of 100. IDRS has a sensitivity and specificity of over 60% for a cut-off > 60 and can be used to do selective screening for Indians. IDRS could serve as a tool for a primary care physician or a health worker to identify individuals at risk of developing diabetes.⁽¹⁵⁾

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MATERIALS & METHOD

This study was conducted at village Khajuri in Kila Parikshitgarh block, Meerut having a population of 9279. The period of study was from July 2014 to June 2015. It was a Community based cross sectional study. Sample size calculated was 150 and subjects were selected using systematic random sampling technique. Sampling unit was a house hold and all the people '18 years of age from selected household were eligible for the study. If no adult aged ≥ 18 years was found in a family or the selected house was found locked at the time of interview then adjacent family was visited. For the collection of data, door-to-door visit was made to each household. During home visit all the available, eligible and willing adults aged 18 years and above were interviewed and examined. Those individuals who were not available during first visit were not included in the study. All the interviewed participants were advised for 8 hour over night fasting so as to get fasting blood sugar (FBG) the following morning. All the interviewed participants were also advised for not consuming alcohol on the night prior to blood sample collection. 8 hour fasting blood sample (capillary blood) was collected for estimating fasting blood glucose through glucometer (Accu-Chek). If any participant who was interviewed, did not fast overnight or consumed alcohol night before sample collection another visit was arranged according to his/her convenience but if there was breach of instructions twice then such participants were excluded from the study. Those participants who were unavailable for sample collection were also

excluded from the study after two attempts.

All the members from selected households who had completed 18 years of age at the time of data collection, those who were available at home on the day of data collection and those who gave consent were included in the study. Subjects <18 years of age, who didn't give the consent, who were not found well oriented, residing in the area for <6 months, pregnant females, severely ill and bed ridden persons and those who did not follow the instructions properly were excluded from the study.

DEFINITIONS

Type 2 diabetes and Impaired fasting glucose (IFG) were diagnosed according to the diagnostic criteria of the American Diabetic Association.⁽¹⁶⁾ That is, if fasting blood glucose is ≥ 126 mg/dl and 110-125 mg/dl considered as diabetic and impaired fasting glucose respectively. Those participants who had any document proving that they had been diagnosed as diabetic by a doctor or they had been taking anti-diabetic drugs regularly were also considered to be diabetic. Overweight and Obesity was defined as BMI ≥ 23 kg/m² and BMI ≥ 27.5 kg/m² respectively.⁽¹⁷⁾ WHR of >0.95 for males and >0.85 for females was considered to indicate abdominal obesity.⁽¹⁸⁾ Waist circumference of '100 cm for males and ' 90 cm for females was considered as truncal obesity.⁽¹⁸⁾ IDRS value of <30 were categorized as low risk, those between 30 and 50 as medium risk and those with ≥ 60 as high risk for diabetes.⁽¹⁹⁾

OBSERVATIONS

Table 1: Distribution of diabetic status, FBG outcome and IDRS among participants.

| | | Frequency | Percentage |
|-----------------------------------|------------------|------------|---------------|
| Diabetic status | Non diabetic | 133 | 88.7% |
| | Diabetic | 17 | 11.3% |
| Fasting Blood Glucose | Normal | 119 | 79.3% |
| | IFG | 18 | 12.0% |
| | ≥ 126 mg/dl | 13 | 8.7% |
| IDRS (Indian diabetes risk score) | Low risk | 9 | 6.0% |
| | Moderate risk | 101 | 67.3% |
| | Very high risk | 40 | 26.7% |
| Total | | 150 | 100.0% |

According to Table 1, the prevalence of diabetes in this study came out to be 11.3%. 12.0% participants had IFG while 8.7% participants came out to be diabetic according to FBG outcome. 26.7% participants were having very high IDRS and only

6.0% were having low IDRS. According to Table 2, 7.4% male participants were diabetic while 14.6% female participants were diabetic. Also, 13.2% male and 11.0% female participants were having IFG. 16.2% males and 35.4% females were having very high IDRS.

Table 2: Gender wise distribution of diabetic status, FBG outcome and IDRS.

| | | Gender | | | | | |
|-----------------------|----------------|-----------|---------------|-----------|---------------|------------|---------------|
| | | Male | | Female | | Total | |
| | | No. | % | No. | % | No. | % |
| Diabetic status | Non diabetic | 63 | 92.6% | 70 | 85.4% | 133 | 88.7% |
| | Diabetic | 5 | 7.4% | 12 | 14.6% | 17 | 11.3% |
| Fasting Blood Glucose | Normal | 54 | 79.4% | 65 | 79.3% | 119 | 79.3% |
| | IFG | 9 | 13.2% | 9 | 11.0% | 18 | 12.0% |
| | ≥ 126 mg/dl | 5 | 7.4% | 8 | 9.8% | 13 | 8.7% |
| IDRS | Low risk | 9 | 13.2% | 0 | 0.0% | 9 | 6.0% |
| | Moderate risk | 48 | 70.6% | 53 | 64.6% | 101 | 67.3% |
| | Very high risk | 11 | 16.2% | 29 | 35.4% | 40 | 26.7% |
| Total | | 68 | 100.0% | 82 | 100.0% | 150 | 100.0% |

Table 3: Association of diabetic status with socio-demographic characteristics of the participants.

| Age | Diabetic status | | | | | | p value |
|----------------------------|-----------------|--------------|-----------|--------------|------------|---------------|---------|
| | Non diabetic | | Diabetic | | Total | | |
| | No. | % | No. | % | No. | % | |
| ' 40 years | 79 | 95.2% | 4 | 4.8% | 83 | 100.0% | 0.005 |
| 41-50 years | 12 | 75.0% | 4 | 25.0% | 16 | 100.0% | |
| 51-60 years | 27 | 90.0% | 3 | 10.0% | 30 | 100.0% | |
| > 60 years | 15 | 71.4% | 6 | 28.6% | 21 | 100.0% | |
| Gender | | | | | | | |
| Male | 63 | 92.6% | 5 | 7.4% | 68 | 100.0% | 0.161 |
| Female | 70 | 85.4% | 12 | 14.6% | 82 | 100.0% | |
| Education | | | | | | | |
| Illiterate / Just literate | 48 | 82.8% | 10 | 17.2% | 58 | 100.0% | 0.170 |
| Primary / Middle School | 27 | 90.0% | 3 | 10.0% | 30 | 100.0% | |
| High school or above | 58 | 93.5% | 4 | 6.5% | 62 | 100.0% | |
| Occupation | | | | | | | |
| Unemployed | 11 | 78.6% | 3 | 21.4% | 14 | 100.0% | 0.331 |
| Agriculture / Farmer | 40 | 95.2% | 2 | 4.8% | 42 | 100.0% | |
| Service / Business | 13 | 86.7% | 2 | 13.3% | 15 | 100.0% | |
| House wife / Student | 69 | 87.3% | 10 | 12.7% | 79 | 100.0% | |
| Type of family | | | | | | | |
| Nuclear family | 26 | 86.7% | 4 | 13.3% | 30 | 100.0% | 0.699 |
| Joint family | 107 | 89.2% | 13 | 10.8% | 120 | 100.0% | |
| SES | | | | | | | |
| SES Class I / II | 52 | 88.1% | 7 | 11.9% | 59 | 100.0% | 0.932 |
| SES Class III | 37 | 90.2% | 4 | 9.8% | 41 | 100.0% | |
| SES Class IV / V | 44 | 88.0% | 6 | 12.0% | 50 | 100.0% | |
| Total | 133 | 88.7% | 17 | 11.3% | 150 | 100.0% | |

According to Table 3, the association of diabetic status was found to be statistically significant with age. There was no significant association found between diabetic status and gender, education, occupation, type of family and SES of the participants.

Table 4: Association of diabetic status and FBG outcome with Indian diabetes risk score.

| Indian diabetes risk score | | Low risk / Moderate risk | | Very high risk | | Total | | p value |
|----------------------------|--------------|--------------------------|--------|----------------|--------|-------|--------|---------|
| Diabetic status | Non diabetic | 103 | 93.6% | 30 | 75.0% | 133 | 88.7% | 0.001 |
| | Diabetic | 7 | 6.4% | 10 | 25.0% | 17 | 11.3% | |
| Fasting Blood Glucose | Normal | 93 | 84.5% | 26 | 65.0% | 119 | 79.3% | 0.021 |
| | IFG | 11 | 10.0% | 7 | 17.5% | 18 | 12.0% | |
| | ≥ 126mg/dl | 6 | 5.5% | 7 | 17.5% | 13 | 8.7% | |
| Total | | 110 | 100.0% | 40 | 100.0% | 150 | 100.0% | |

According to Table 4, participants with low/moderate IDRS had less diabetes when compared with participants with high IDRS. There was a significant association seen between diabetic status and IDRS. Similarly participants having low/moderate risk in IDRS had better fasting blood glucose outcome when compared with participants having very high

risk in IDRS. There was a significant association seen between fasting blood glucose outcome and IDRS. According to Table 5, participants with normal BMI had less diabetes when compared with participants with high BMI and low BMI. Although there was a significant association seen between diabetic status and BMI but neither truncal obesity nor WHR showed significant association with diabetic status.

Table 5: Association of BMI, WHR and truncal obesity with Indian diabetes risk score.

| BMI Category | Diabetic status | | | | | | p value |
|-----------------|-----------------|---------------|-----------|---------------|------------|---------------|---------|
| | Non diabetic | | Diabetic | | Total | | |
| | No. | % | No. | % | No. | % | |
| Under Weight | 21 | 87.5% | 3 | 12.5% | 24 | 100.0% | 0.032 |
| Normal | 55 | 98.2% | 1 | 1.8% | 56 | 100.0% | |
| Over Weight | 30 | 81.1% | 7 | 18.9% | 37 | 100.0% | |
| Obese | 27 | 81.8% | 6 | 18.2% | 33 | 100.0% | |
| WHR category | | | | | | | |
| Normal | 80 | 93.0% | 6 | 7.0% | 86 | 100.0% | 0.051 |
| Abnormal | 53 | 82.8% | 11 | 17.2% | 64 | 100.0% | |
| Truncal Obesity | | | | | | | |
| Normal | 100 | 91.7% | 9 | 8.3% | 109 | 100.0% | 0.053 |
| Obese | 33 | 80.5% | 8 | 19.5% | 41 | 100.0% | |
| Total | 133 | 100.0% | 17 | 100.0% | 150 | 100.0% | |

DISCUSSION

In the present study the prevalence of diabetes came out to be 11.3%. According to National Urban Diabetes Survey (NUDS),⁽²⁰⁾ Kolkata showed a similar diabetes prevalence (11.7%), Chennai (13.5%), Bangalore (12.4%) and Hyderabad (16.6%)

had more diabetes while Mumbai (9.3%) had less diabetes.⁽²⁰⁾ This comparison was in line with the fact that in India more diabetes is present in southern states when compared with northern states. Studies in Thiruvethrapuram⁽²¹⁾ (16.3% diabetes) and Ernakulum⁽²²⁾ (19.5% diabetes) also showed higher diabetes prevalence. Chennai Urban Rural

Epidemiology Study (CURES) showed diabetes prevalence of 15.5% in Chennai.⁽¹⁵⁾

Similarly studies in Chandigarh⁽²³⁾ (13.6%) and Jabalpur⁽²⁴⁾ (18%) showed higher prevalence of diabetes, although studies in rural Goa⁽²⁵⁾ (10.3%), Guwahati⁽²⁶⁾ (8.2%), Kashmir⁽¹⁰⁾ (1.9%), Maharashtra⁽¹¹⁾ (8.4%) and Jharkhand⁽²³⁾ (5.3%) showed lesser prevalence of diabetes.

In our study prevalence of IFG came out to be 12.0%, while according to Annual health survey of 2014⁽²⁷⁾, prevalence of IFG came out to be 8.4% in rural UP.

According to NUDS, IFG in north India came out to be 8.6% which was lesser than that found in our study (12%). IFG prevalence in Kolkata was 10%, in Chennai was 16.8%, in Bangalore it was 14.9%, in Hyderabad it was 29.8% and in Mumbai it was 10.8%. More recently Indian Council of Medical Research-INDIA DIABETES (ICMR-INDIAB) study⁽²³⁾ showed prevalence of IFG to be 8.3% in Tamil Nadu, 12.8% in Maharashtra, 8.1% in Jharkhand and 14.6% Chandigarh.⁽²³⁾

In the present study association between diabetes and BMI was significant but association between BMI and IFG was not significant. Prevalence of diabetes was 18.9% in overweight participants and 18.2% in obese participants while prevalence of diabetes was 1.8% in participants with normal BMI but interestingly the prevalence of diabetes came out to be 12.5% in participants who were under weight.

CONCLUSION

In the present study prevalence of diabetes and IFG came out to be 11.3% and 12.0% respectively. Association of diabetes and fasting blood glucose outcome came out to be highly significant with IDRS and association between BMI and IDRS was also found to be statistically significant. IDRS should be used as an important screening tool for people with high risk of diabetes.

RECOMMENDATIONS

In the view of the present study, health education regarding diabetes should not be neglected in rural areas and IDRS should be used as a primary screening tool so as to find out candidates for blood

sugar screening.

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Seroprevalence and Evaluation of Rapid Immunochromatographic Test and ELISA for the Detection of NS1 Antigen, IgM and IgG Antibodies for Early Diagnosis of Dengue Infection in a Tertiary Care Hospital, South India

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ABSTRACT

Dengue is one of the rapidly emerging global threats. In situations of epidemics and routine cases, early diagnosis is the key to successful management of dengue cases. There are many diagnostic kits available commercially, but their validity is unknown. The standard test is ELISA. In the present study, the test results of rapid immunochromatographic test is compared with ELISA.

Materials & Method: The study was conducted from December 2012 to August 2014 at Shri B M Patil Medical College & Research centre, Bijapur, Karnataka.

Probable dengue cases were diagnosed as per the WHO criteria and rapid immunochromatographic test and ELISA were performed on the serum samples for the detection of NS1 antigen, IgM & IgG antibodies. Results were analyzed.

Results: A total of 90 cases were enrolled. 36 (40%) cases were found to be positive by rapid immunochromatographic test, whereas 39 (43%) cases were found to be positive by ELISA. The sensitivity of rapid test was 92.31% & specificity was 100% along with positive predictive value of 100% and negative predictive value of 94.44% and was compared with other studies.

Conclusion: The study showed that the rapid test can be used as a screening test. Highly suspicious cases should be subjected to investigations with higher sensitivity & specificity (ELISA), though the results take more time.

Keywords: Dengue, Immunochromatography, Antibody, NS1 antigen, dengue Virus.

INTRODUCTION

Dengue is an important arthropod borne viral disease of public health significance. In recent decades the global prevalence has grown dramatically with estimated 2.5 billion people at risk of acquiring dengue

infection and more than 50 million new infections projected annually.¹ According to World Health Organisation estimates, the incidence of dengue has increased by a factor of 30 over the past 50 years.² From being a sporadic illness, epidemics of dengue have become a common occurrence worldwide. Dengue is a major cause of hospitalization and death, especially among children. India is endemic for DF and DHF. All the four serotypes are found in the country. Case fatality rates in endemic countries are 2.5%.³ Despite its significant health and economic impacts, as of yet

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there is no specific therapy for dengue infection and the outcome depends on medical care provided by the doctor .⁴

In view of high mortality and to reduce the disease burden, it is imperative to have a rapid and sensitive laboratory assay for early diagnosis of dengue fever. Virus isolation by cell culture though the gold standard,⁵ cannot be used as routine diagnostic procedure due to its low sensitivity, laborious procedure and time consumption. On the other hand, RT-PCR and MAC-ELISA are expensive, and usually take at least half a day for running the assay. Moreover, these facilities are not available in the clinics and hospital settings.⁶ When used in combination with ELISA on a single sample it significantly improves the diagnostic algorithm without the requirement of paired sera.⁵

A rapid test would be useful to provide early diagnosis of dengue infection. The advantage of this kit is that it is designed to detect both NS1 antigen and IgM/IgG antibodies.⁶ It can prove to be a useful tool to hasten the initiation of the first line of management and thereby a great help to the health care providers in rural area.⁷

Hence the present study was conducted to detect the seroprevalence of dengue infection in clinically suspected cases, and to evaluate the performance of a rapid immunochromatographic test in comparison with ELISA for NS1, IgM and IgG detection for the diagnosis of dengue infection.

MATERIALS & METHOD

Study was conducted at Shri B M Patil Medical College Hospital and Research Centre, Bijapur after getting ethical approval from the institution. It was a cross-sectional study from December 2012 to August 2014. For selection of cases, WHO criteria was used. Cases of other febrile illnesses like malaria, enteric fever, urinary tract infection etc, were excluded. 90 cases were enrolled in the study.

Blood samples were collected by venipuncture with all aseptic precautions. Samples were tested by rapid kit test (Dengue Day 1 test kit, J mitra) and ELISA(NS1, IgM, IgG microlisa , J.mitra, 48 tests kit). Data were entered and analysed using the Statistical Package for Social Sciences(SPSS) ,Version 17. P <0.05

was considered significant.

RESULTS

Among 90 cases enrolled, 39 (43.3%) were positive and 51 (56.7%) were negative for dengue infection. Majority of the cases i.e. 21 (23.3%) cases belonged to age group of 11-20yrs & 21-30yrs. Among males 15 (25.42%) cases belonged to 21-30yrs of age. Among females 9 (29.03%) cases belonged to 11-20yrs .

Among 59 males, 23 (59%) were positive & 36 (71%) were negative and out of 31 females,16 (41%) were positive & 15(29%) were negative for dengue infection. Clinical manifestation observed in all the cases had fever (100%), myalgia (71.7%) headache (58.9%) & joint pain (20.5%) .

Laboratory investigation of platelet count showed thrombocytopenia in 58% of the dengue positive cases tested by rapid & ELISA test, rest of the 42% had normal platelet count. Statistically p-value (0.570) was insignificant (Table 1).

Table 1: Association of platelet count with dengue positive cases

| | Rapid | | Elisa | | |
|---------------|-----------------|------------|-----------------|------------|---------|
| | Dengue positive | % | Dengue positive | % | p-value |
| <1 lakh/cu mm | 21 | 58.3 | 23 | 58.9 | 0.570 |
| >1lakh/cumm | 15 | 41.7 | 16 | 41.1 | |
| Total | 36 | 100 | 39 | 100 | |

In the present study 25 cases(27.8%) were positive and 65 (72.2%) were negative for NS1 antigen by rapid test as well as ELISA (Table 2).

For IgM detection, 9(10%) were positive and 81 (90%) were negative by rapid test and 12(13.3%) were positive and 78 (86.7%) were negative by ELISA (Table 3).

For IgG detection, 7(7.8%) were positive and 83 (92.2%) were negative by rapid test and 9(10%) were positive and 81 (90%) were negative by ELISA(Table 3).

Table 2: Distribution of Dengue cases w.r.t NS1 Antigen

| NS1 antigen | Rapid test | ELISA |
|--------------|------------|------------|
| Positive | 25 (27.8%) | 25 (27.8%) |
| Negative | 65 (72.2%) | 65 (72.2%) |
| Total | 90 | 90 |

Table 3: Distribution of dengue cases w.r.t IgM and IgG antibodies

| IgM Antibody | Rapid test | ELISA | IgG Antibody | Rapid test | ELISA |
|--------------|------------|------------|--------------|------------|-----------|
| Positive | 9 (10%) | 12 (13.3%) | Positive | 7 (7.8%) | 9 (10%) |
| Negative | 81 (90%) | 78 (86.7%) | Negative | 83 (92.2%) | 81 (90%) |
| Total | 90 | 90 | Total | 90 | 90 |

The present study showed that rapid test has sensitivity of 92.31% and specificity of 100% (Table 4).

Table 4: Sensitivity, Specificity, PPV, NPV, Positive Likelihood Ratio, Negative Likelihood Ratio of Rapid test

| | Value | 95% CI |
|---------------------------|--------|------------------|
| Sensitivity | 92.31% | 79.11% to 98.30% |
| Specificity | 100% | 92.95% to 98.30% |
| Positive predictive value | 100% | 90.17% to 100% |
| Negative predictive value | 94.44% | 84.59% to 98.78% |
| Positive Likelihood Ratio | 0 | ----- |
| Negative Likelihood Ratio | 0.08 | 0.03 to 0.23 |

Table 5: Proportions of positive cases in Rapid test & Elisa test

| | Proportion | S.E of Prop | p-value | Result |
|-------|------------|-------------|---------|--------|
| Rapid | 0.40 | 0.051 | 0.6818 | NS |
| ELISA | 0.43 | 0.052 | | |

NS- not significant

There was no significant difference between proportions of positive cases in rapid test & ELISA.

DISCUSSION

The incidence of Dengue in this study was 43.3% which was comparable to the study conducted by Baruah J⁸. Low incidence(8.69%) was recorded by Banerjee⁹ et al from Lucknow & high incidence(62.2%-70%) was recorded by Huber K¹⁰ et al from South Vietnam. This increase in incidence might be explained by the possible impact of ecological characteristics of the areas on the natural cycles of the arthropod-borne viruses under consideration.¹¹ Majority of the cases i.e 21 (23.3%) of the dengue suspected cases belonged to age group of 11-20yrs & 21-30yrs. This was comparable to other studies of Gore MM¹², Baruah J⁸, Basavaraju J Raju¹³, Neerja M¹⁴ and Dash PK et al¹⁵. The disease was predominantly seen in males (59%) than females (41%) i.e 1.4: 1. This was corresponding to the other studies done by Basavaraju J Raju¹³, Dash PK¹⁵, Neeraja M¹⁴. But according to Kamal S¹⁶ and colleagues, females were more commonly affected. Male preponderance and the age group of 15-30 years indicate more transmission of dengue infections at work sites¹⁷. The reason for male preponderance is also due to the greater male exposures to dengue-carrying mosquitoes during daytime hours either at the workplace or while travelling to and from work¹⁸. All the cases in our study presented with fever (100%), myalgia (71.7%) headache (58.9%) & joint pain (20.5%). Even Dash P K¹⁵ et al and Neerja M¹⁴ et al showed similar results. But in the study conducted by Aggarwal¹⁹ et al, 93% had fever and 72% had hepatomegaly. Khan et al²⁰ also concluded in their study that 98.3% had fever, followed by rashes & myalgia. Thrombocytopenia was present in 58% of dengue positive patients which is comparable to

Singh NP²¹ et al(61.4%).

In our study 36 (40%) were positive & 54(60%) were negative by Rapid test . But according to Vu Ty Hang²² 91 (66%) were positive and 47(34%) were negative, Naz A et al ²³, 103 (56%) were positive and 81(44%)were negative. But Maso Sugimoto²⁴ et al study showed low positivity of 8.3%. Our results of ELISA was comparable with the study done by Navu M²⁵ et al whereas Wang SM⁶ showed positive cases of 57% and 43% were negative and M Rajesh Kumar Rao²⁶ et al study showed 38% were positive and 62% were negative with ELISA test .Caution should be applied in interpreting tests that are positive to dengue virus IgM & IgG only in areas where dengue virus co circulates with other viruses.²⁷ This might be the probable reason for the increased ELISA positivity in comparison with rapid test.

NS1 antigen detection showed 25(27.8%) positive and 65 (72.2%) negative by rapid test as well as ELISA which is similar to Selvaraj Stephen²⁸ but study by Dussart P² et al has shown high positivity with rapid test as compared to ELISA. A factor that may influence the performance of NS1 assays would be the composition of Primary and Secondary dengue infections and health seeking behavior of patients. Hence studies from various populations are needed for a comprehensive understanding of the performance of NS1 assays.²⁹ IgM antibodies detection showed 9cases (10%) were positive and 81 (90%) were negative by rapid test & 12(13.3%) were positive and 78 (86.7%) were negative by ELISA but other studies by Carol Palmer et al³⁰, Satish N et al³¹ showed high positive rates by rapid test.The different commercial kits available have variable sensitivity and specificity . A further challenge in the diagnosis of dengue is the fact that anti-dengue IgM antibodies also cross-react to some extent with other flaviviruses, such as Japanese encephalitis, St Louis encephalitis and yellow fever.³² IgG antibodies detection showed high positivity with ELISA 9(10%) as compared to rapid test 7(7.8%) which is comparable with Chakraverti TK³³. From our parallel evaluation, rapid test assay has shown to have excellent specificity(100%) and sensitivity(92%), PPV 100%, NPV 94.4% which is comparable with Hang VT²². The variations in sensitivity & specificity are comparable with previously published data & this might be caused by different principles of assays, different antigens &

conjugates³⁴.

Conclusion: The rapid test assay is faster, simpler and provides acceptable sensitivity and specificity compared to the standard ELISA. This test could be useful as screening test for dengue infection in health facilities or laboratories without expensive microplate readers. As compared to any antibody-based diagnostic assay for dengue, this rapid assay will detect NS1 antigen, IgM and IgG antibody, thus providing improved diagnostic coverage towards the end of acute illness. Hence rapid test can be used in combination with ELISA in suspected cases, thus improving the diagnostic algorithm contributing significantly to treatment and control of dengue infections.

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A Study of Magnetic Resonance Imaging (MRI) Evaluation of Low Backache at Tertiary Care Hospital

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ABSTRACT

Background: Low backache, or pain that occurs in the lumbar and sacral area, is one of the most common presenting features in patients presenting to the outpatient department.

Objectives: to evaluate and narrow down the differential diagnosis of various spinal causes of low backache.

Method: Two hundred (200) patients who presented with low backache with or without radiculopathy to orthopedic, neurology and neurosurgery departments were evaluated with MRI in the present study.

Results: majority of patients with spinal complaints found to have degenerative disease of spine, followed by spinal trauma, spinal neoplasm, infective spondylodiscitis, and spinal congenital anomalies. Transitional vertebrae are the most common congenital anomalies in patients presenting with low backache. Majority of spinal neoplastic lesions are extradural in location, followed by intradural extramedullary and intramedullary.

Conclusion: A wide spectrum of various spinal lesions were found to be present in patients presenting with low backache, majority being degeneration disease of spine. MR imaging with its superb contrast sensitivity helped in getting clearer and more detailed images of spine by multiplanar and multiecho technique, aided in early diagnosis and evaluation of various lumbosacral spinal lesions

Keywords : MRI, low back ache , degenerative disease, spinal tumors

INTRODUCTION

Low backache, or pain that occurs in the lumbar and sacral area, is one of the most common presenting features in patients presenting to the outpatient department. Up to 80% of people experience at least one episode of backache in their lifetime, with about one-quarter experiencing an episode of backache in any given year ^{1,2}. Patients presenting with low

backache or pain radiating into the lower extremities challenge a physician who desires a precise diagnosis for the etiology of the pain.

Low backache can be as a result of spectrum of causes including orthopedic, surgical, gynecological and neurological diseases. Although most of the low backache cases are attributed for postural abnormalities, in many it can be the result of lumbosacral spinal abnormalities. Backache and neural dysfunction are a frequent symptom complex for a myriad of processes afflicting the lumbar spine and paraspinal tissues, therefore a clinician must carefully consider a large number of spinal disorders in the work-up of a patient with low backache or radicular pain ^{3,4}. Hence, this study is intended to focus

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on / deal with the spinal causes of low backache.

Evaluation of the lumbar spine has changed dramatically since the availability of MRI. It produces superb delineation of soft tissue structures, excellent characterization of medullary bone, direct multiplanar imaging, and no radiation exposure. The need for early and accurate identification of life-threatening / major neurologic problems such as tumor, infection, or major compression of spinal cord or cauda equina is evident and this is met very well with MR imaging.

Limitations of its use include high expense, regional variations for availability (rapidly becoming less of a problem), length of scan time, claustrophobia of patients (less problematic with new open-air MRI machines), and contraindications because of ferrous-containing substances. High sensitivity for detecting asymptomatic pathology, although not a true limitation, is an important consideration in patient management.

Although there are limitations to its usefulness, some relative and absolute contraindications, and some pitfalls in the applications of results, MRI gives more specific and complete information about the anatomy and pathology of the lumbar spine than any other available diagnostic tool.

Considering MRI as the single best available investigative modality for diagnosing spinal lesions, this study attempts to evaluate the various spinal causes of low backache and their characteristic features on MRI. So the aim of this study was to evaluate and narrow down the differential diagnosis of various spinal causes of low backache.

METHOD

The present study was a descriptive study conducted on 200 patients presenting with low backache to the Department of Radiodiagnosis, Alluri Sitarama Raju Academy of Medical Sciences, Eluru from May 2008 to December 2010.

Inclusion criteria

-All patients presenting with low backache with or without radiculopathy to orthopedic, neurology and neurosurgery departments.

-Patients of all age groups and both sexes.

Exclusion criteria

-Patients presenting with low back ache due to postural, intra-abdominal and pelvic (visceral) causes (i.e, other than spinal causes).

-Patients with cardiac pacemakers, ferromagnetic aneurysm clips, other ferromagnetic implants (e.g.: cochlear implants), intraocular metallic foreign bodies and patients with claustrophobia. The equipment used was **HITACHI APERTO** -- 0.4 TESLA open magnet MRI Scanner.

RESULTS

Table 1 : DISTRIBUTION OF SPINAL LESIONS

| | | |
|--------------------|------------|-------------|
| Degenerative | 99 | 49.5% |
| Traumatic | 40 | 20% |
| Infective lesions | 22 | 11% |
| Neoplastic lesions | 25 | 12.5% |
| Congenital lesions | 14 | 07% |
| Total cases | 200 | 100% |

The table 1 showed that the present study comprised largely of patients with degenerative disc disease followed by spinal trauma. Congenital lesions were the least common type of spinal lesions in the present study. The figure 1 showed that there is no much difference in sex incidence for degenerative changes involving the spine in the present study. The degenerative changes occur predominately in older age group (>50 years) and there is an increasing incidence of its occurrence in younger individuals (<40 years) (figure 2). The above chart shows that in present study, majority of lumbar disc herniations occur at L4-L5, L5-S1 levels, followed by L3-L4, L2-L3, L1-L2 levels (TABLE 2)

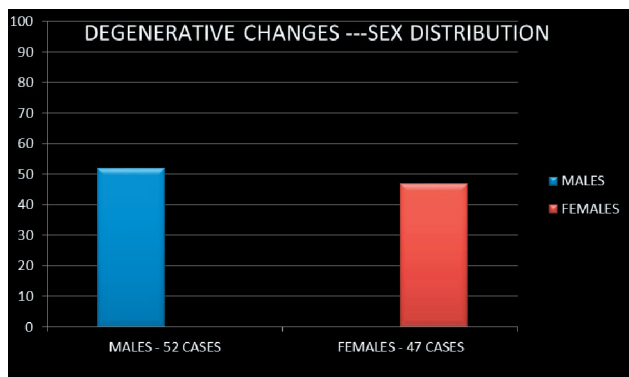


Figure1 : Disc Degenerative Changes in male and females

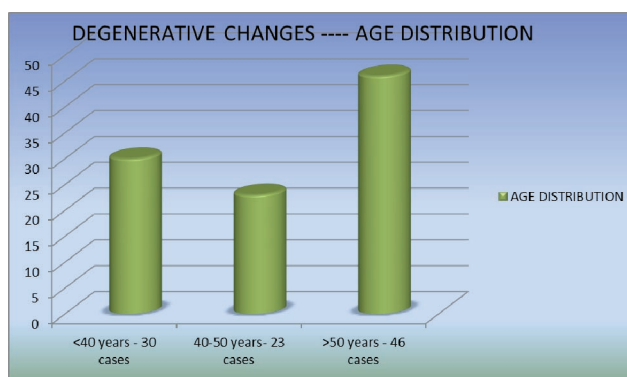


Figure 2 Degenerative changes with reference to age

Table 2: Distribution of various types of disc herniations in lumbar spine.

| Type of disc herniations | L1-L2 | L2-L3 | L3-L4 | L4-L5 | L5-S1 |
|--------------------------|-------|-------|-------|-------|-------|
| Disc bulge | 26 | 31 | 20 | 12 | 23 |
| Disc protrusion | 06 | 22 | 45 | 70 | 45 |
| Disc Extrusion | 0 | 0 | 4 | 10 | 5 |
| Disc sequestration | 0 | 0 | 0 | 02 | 0 |

Table 3 shows that in present study, vertebral metastases (7 of 14 extradural spinal lesion cases-50%) are the most common extradural neoplastic lesions, followed by haemangiomas (3 cases – 22%) , multiple myeloma(3 cases – 22%) and chordoma (1 case – 7%). Also in the present study, lumbar bony spinal canal stenosis is most common in age group above 50 years accounting for 23 cases(61%) , followed by 30-50 years age group, accounting for 11 cases (30%). Only 4cases (9%) were seen in age group < 30 years indicating that Lumbar bony spinal canal stenosis is rare in age group below 30 groups.

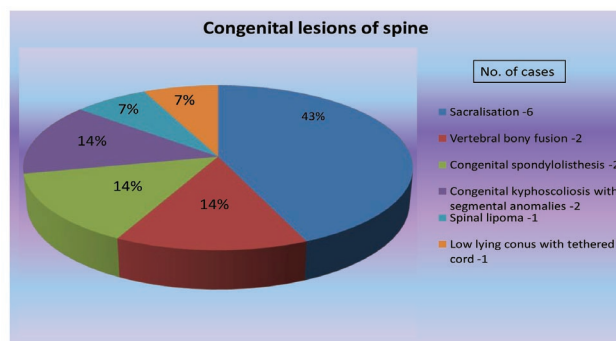
The above chart shows that in present study, spondylolisthesis is most common at L4-L5 (7 cases), L5-S1 levels (6 cases), followed by L3-L4 level (1 case).

Table 3 : Spinal Neoplastic Lesions

| Location | No. of cases (n=25) | percentage |
|---------------------------|---------------------|-------------|
| Extradural | 14 | 56% |
| Intradural extramedullary | 08 | 32% |
| Intramedullary | 03 | 12% |
| Total cases | 25 | 100% |

The table 4 showed that sacralisation is the most common congenital spinal anomaly in present study, accounting for 6 out of 14 congenital anomalies (43%), followed by segmentational anomalies and vertebral bony fusion, accounting for 2 cases (14%) each. 1 case of Spinal lipoma and 1 case of low lying cord with tethered cord were noted in the present study.

Table 4 : Congenital Lesions of Spine



DISCUSSION

MR has revolutionized the approach in diagnosing the spinal causes of low backache. It has become an investigation of choice in disease of spine.

Two hundred (200) patients who presented with low backache with or without radiculopathy to orthopedic, neurology and neurosurgery departments were evaluated with MRI in the present study.

In the present study, out of 200 patients, 99 patients (49.5%) had degenerative disc disease at various levels of lumbosacral spine. Out of these 52 were males and 47 were females. This shows that there is no much difference in sex incidence. In the present study, the occupation of majority of patients (60%) is agriculture in rural locations. The above factors may have attributed in degenerative disc disease for majority of cases.

In the present study, degenerative disease of spine was the most common abnormality detected. The above findings correlate with that of Moreland LW et al⁴³ who stated that acquired spinal stenosis due to degenerative joint and disc disease accounts for vast majority of cases presenting with low backache⁵.

In the present study, degenerative changes occurred predominately in older age group (>50 years) and there is an increasing incidence of its occurrence in younger individuals (<40 years) than was previously thought.

40 cases (20%) showed traumatic lesions. Out of 40 cases, 35 cases were males and only 05 cases were females, indicating that males are most affected by trauma in this region (road traffic accidents on highway) in the present study.

22 cases (11%) showed changes of infective spondylolisthesis at various levels of lumbosacral spine. Out of these 14 cases were males and 08 cases were females. These findings correlate with the following findings. Sharif HS et al⁶ and Brant-Zawadzki M et al⁷ studies show that there is slight male predominance of spinal infections.

25 cases (12.5%) showed neoplastic lesions of spine. Out of these 14 cases are extradural lesions, 08 are intradural and extramedullary and only 03 cases are intramedullary.

14 cases (07%) showed congenital lesions of lumbosacral spine. Out of these, 9 were females and 5 patients were males. In this study, there is slight female predominance. Shapiro R et al⁸ mentioned in their study, that majority of disc herniations occur at the lower three disc levels. Approximately 43% occur at L5-S1 level, 47% at L4-L5, and the remaining 10% at higher levels, predominantly at L3-L4. Discs at L1-L2, L2-L3 levels account for less than 3% of all

herniations.

Crock HV et al⁹ also mentioned that disc herniations occur most often at the lower lumbar levels. 90% at L4-L5, L5-S1, 7% at L3-L4 and the remaining 3% at the upper two levels.

Similar findings of lumbar disc herniations noted in present study as well. Out of 99 patients of degenerative disease of spine 95 patients (96%) show disc herniations at L4-L5 while 73 patients (74%) show disc herniations at L5-S1 level, 69 patients at L3-L4, 53 patients at L2-L3 and 32 patients at L1-L2 level. So the most common locations for disc herniations is at lower lumbar levels i.e. at L4-L5 and L5-S1 levels.

In this present study, the sagittal views are excellent for evaluating disc migration and degree of stenosis produced by herniations, and axial views are more accurate in evaluating nerve root compression. Foraminal and lateral disc herniations are easily appreciated on axial images and disc protrusions into neural foramina are better appreciated on parasagittal images.

Out of 200 patients studied in present, 22 cases showed inflammatory lesions, out of which 12 cases (55%) are of tubercular etiology and 10 cases (45%) are pyogenic etiology. Butler JS et al¹⁰ in their study mentioned that diabetic patients and 60-70 year old are most frequently affected by pyogenic spondylodiscitis. Men are affected more frequently than women. Out of total 200 cases studied, 25 patients (12.5%) are reported as neoplasms of spine and spinal cord. Out of these 14 cases (56%) are extradural lesions, 08 cases (32%) are intradural and extramedullary and only 03 cases (12%) are intramedullary. Because of its noninvasive nature, multiplanar capability, and high inherent tissue contrast, MR imaging has proved to be sensitive and useful in evaluation of variety of spinal lesions in patients presenting with low backache in the present study. In present study, we have 01 case of isolated spinal lipoma in an adolescent male presenting with low backache. On sagittal MR images, it appeared as a well defined thin, linear lesion in the conus medullaris hyperintense to cord on both T1WI and T2WI. The lesion was better appreciated on T1W axial images.

Caruso R et al¹⁰ have mentioned in their studies that lipomas of the filum may remain clinically silent

during childhood and become apparent during a period of rapid growth associated with adolescence. Characteristically this is first manifest as progressive low-backache.

CONCLUSION

In present study, majority of patients with spinal complaints found to have degenerative disease of spine, followed by spinal trauma, spinal neoplasm, infective spondylodiscitis, and spinal congenital anomalies. Disc herniations are well demonstrated on MR imaging which are major components in contribution of spinal canal stenosis in present study. The correlation of MR images with clinical, pathological, laboratory and surgical data has greatly improved the quality of interpretation and understanding of MR images.

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Conflict of Interest : Nil

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Ethical Clearance : Institutional ethics clearance was obtained before the start of study

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Epidemiological Profile of Malaria: Analysis in District Amritsar

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ABSTRACT

Introduction: Malaria is a mosquito-borne illness. In 2014, 97 countries and territories had ongoing malaria transmission. An estimated 3.3 billion people are at risk of malaria. It is a leading cause of death for children. The *Anopheles* mosquito transmits malaria parasites to humans, thrives in warm, tropical and subtropical climates. Malaria Situation in India during the years 1996-2013 has shown a declining trend and in years 2011 to 2014 number of malaria cases has decreased in Punjab.

Material and Methods: The confirmed cases of malaria were detected by microscopic examination of blood smears in the designated laboratories under National Vector Borne Disease Control Programme (NVBDCP) in district Amritsar and the epidemiological study of malaria cases recorded in the years 2011 to 2014 was done. **Findings:** Maximum 140 (61.1%) confirmed cases of malaria were reported in the year 2011. Gradual rise in the trend of cases was observed in years 2013 and 2014. During all these years API remained much below 2. Maximum number of cases 163 (71.2%) was found in the age above 14 years. In all years higher number and percentage of males was found. Higher number of rural cases was found. During the transmission season of malaria (June to September) 181(79.0%) confirmed cases had been reported. **Conclusion:** Majority of positive cases were male, found in transmission season and aged > 14 years, which is consistent with previous studies. Majority of cases had been observed during the period of monsoon had been observed in past studies.

Keywords: malaria, *Anopheles mosquito*

INTRODUCTION

Malaria is an entirely preventable and treatable mosquito-borne illness. In 2014, 97 countries and territories had ongoing malaria transmission. An estimated 3.3 billion people are at risk of malaria, of which 1.2 billion are at high risk. In high-risk areas, more than one malaria case occurs per 1000 population. The malaria-specific Millennium Development Goal has already been met.¹ There are 10 countries with ongoing malaria transmission in

South-East Asia which accounts for 32 million (15% of estimated cases worldwide). India, Indonesia, and Myanmar comprise most of the region's reported cases (94%).^{2,3} Malaria is a leading cause of death for children due to lack of developed immune systems to protect against the disease.^{2,4} The *Anopheles* mosquito, which transmits malaria parasites to humans, thrives in warm, tropical, and subtropical climates.⁵ Tens of millions of pregnant women living in endemic regions become pregnant each year.⁶ Scale-up of malaria control programs has helped to greatly reduce malaria cases and deaths. While access to both prevention and treatment services has grown over time, gaps remain.^{2,7,8}

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Malaria situation in India during the years 1996-2013 has shown a declining trend. Its annual parasite incidence (API) in year 2005 was 1.68 and has come

down to 0.72 in year 2013.⁹ There were 1310656 cases of malaria in India, including 665004 Pf cases and 754 deaths in the year 2011. This was followed in year 2012 by 1067824 cases of malaria including 533695 Pf cases and 519 deaths, in year 2013 by 881730 malaria cases including 463846 Pf cases and 440 deaths and in 2014 by 1102205 malaria cases including Pf 722546 cases and 562 deaths. There were 2693 cases of malaria in Punjab, including 64 Pf cases and 3 deaths in year 2011. This was followed in year 2012 by 1689 malaria cases including 43 Pf cases and no death, in year 2013 by 1760 malaria cases including 31 Pf cases and no death; and in year 2014 by 1036 malaria cases including 14 Pf cases and no death.¹⁰

Malaria continues to be a major public health problem in South India with majority of cases observed during the period of monsoon and immediately following the end of monsoon (June to October). In 2011, majority of cases were reported in September (28%) while in 2010, majority of cases (23.5%) were reported in June. A study was conducted from January – September in years 2010 and 2011. A total of 3614 slides were collected from January – September 2010, out of which 136 were positive (22.8% P.f.; 77.2% P.v.). In 2011, a total of 6917 slides were collected, out of which 186 were positive (16.1% P.f.; 83.9% P.v.). Positive cases were more frequent in rainy seasons (June-Sept) with a steady increase in the number of cases starting in April.¹¹

In both 2010 and 2011, majority of positive cases were male (83.8% and 81.7%, respectively). Majority of positive cases were in the age group of 21-30 years (40.44% and 36.56%, respectively), followed by 11-20 years (34.56% and 27.42%, respectively) in both years.¹¹

MATERIAL & METHOD

The confirmed cases of malaria are detected by microscopic examination of blood smears in the designated laboratories under National Vector Borne Disease Control Programme (NVBDCP). The laboratories under this programme in district Amritsar are working at the District and Tehsil level hospitals, Community Health Centres (CHC), Primary Health Centres (PHC) and the malaria clinics. NVBDCP has included the Medical Colleges of Punjab in the year 2013 for the surveillance of diseases

under this programme. There are two Medical Colleges in district Amritsar namely Government Medical College and Sri Guru Ram Das Institute of Medical Sciences and Research. The confirmation of cases of malaria for both the medical colleges is done at Government Medical College, Amritsar by examination of blood smears.

FINDINGS

There were 229 (225 Pv and 4Pf) confirmed cases of malaria and no death due to malaria in years 2011 to 2014. Three Pf cases were reported in the year 2013, out of which 2 belonged to Amritsar city and one to Kandowali village of Ramdas block. There was one Pf case reported in the year 2014 from Pheruman village of block Baba Bakala. All these cases were given the treatment as per national drug policy on malaria of NVBDCP. One Pv case detected in the year 2011 that belonged to district Tarn Taran was notified to that district.

Table 1. Annual parasite incidence

| Year | Confirmed cases of malaria | | Population | Annual parasite incidence |
|------|----------------------------|------|-------------|---------------------------|
| | No. | % | | |
| 2011 | 140 | 61.1 | 2, 490, 110 | 0.056 |
| 2012 | 17 | 7.4 | 2,515, 215 | 0.007 |
| 2013 | 23 | 10.0 | 2, 628, 080 | 0.009 |
| 2014 | 49 | 21.4 | 2, 669, 102 | 0.018 |

Table 1 shows that the maximum 140 (61.1%) and the minimum 17 (7.4%) confirmed cases of malaria were reported in years 2011 and 2012 respectively. Gradual rise in trend of these cases has been observed during the years 2013 and 2014. API of these cases was 0.056, the maximum in year 2011 and 0.007, the minimum in year 2012. During all these years API remained much below 2.

Table 2. Age wise distribution

| | | | Year | | | | Total |
|-------|---------------|---------------|--------|--------|--------|--------|--------|
| | | | 2011 | 2012 | 2013 | 2014 | |
| Age | < 1year | Count | 1 | 0 | 0 | 0 | 1 |
| | | % within Age | 100.0% | 0.0% | 0.0% | 0.0% | 100.0% |
| | | % within Year | 0.7% | 0.0% | 0.0% | 0.0% | 0.4% |
| | 1-5 years | Count | 9 | 0 | 0 | 0 | 9 |
| | | % within Age | 100.0% | 0.0% | 0.0% | 0.0% | 100.0% |
| | | % within Year | 6.4% | 0.0% | 0.0% | 0.0% | 3.9% |
| | 6 -14 years | Count | 47 | 2 | 3 | 4 | 56 |
| | | % within Age | 83.9% | 3.6% | 5.4% | 7.1% | 100.0% |
| | | % within Year | 33.6% | 11.8% | 13.0% | 8.2% | 24.5% |
| | > 14 years | Count | 83 | 15 | 20 | 45 | 163 |
| | | % within Age | 50.9% | 9.2% | 12.3% | 27.6% | 100.0% |
| | | % within Year | 59.3% | 88.2% | 87.0% | 91.8% | 71.2% |
| Total | Count | 140 | 17 | 23 | 49 | 229 | |
| | % within Age | 61.1% | 7.4% | 10.0% | 21.4% | 100.0% | |
| | % within Year | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | |

$X^2 = 25.431$

df = 9

P = 0.003

Table 2 shows that from years 2011 to 2014 the maximum number of cases 163 (71.2%) was found in age above 14 years, followed by 56 (24.5%) in 6-14 years, 9 (3.9%) in 1-5 years and the minimum 1(0.4) below 1 year. The difference in number of malaria cases in various age groups was highly significant statistically.

Table 3. Sex wise distribution

| | | | Year | | | | Total |
|-------|---------------|---------------|--------|--------|--------|--------|--------|
| | | | 2011 | 2012 | 2013 | 2014 | |
| Sex | Male | Count | 75 | 11 | 15 | 37 | 138 |
| | | % within Sex | 54.3% | 8.0% | 10.9% | 26.8% | 100.0% |
| | | % within Year | 53.6% | 64.7% | 65.2% | 75.5% | 60.3% |
| | Ffemale | Count | 65 | 6 | 8 | 12 | 91 |
| | | % within Sex | 71.4% | 6.6% | 8.8% | 13.2% | 100.0% |
| | | % within Year | 46.4% | 35.3% | 34.8% | 24.5% | 39.7% |
| Total | Count | 140 | 17 | 23 | 49 | 229 | |
| | % within Sex | 61.1% | 7.4% | 10.0% | 21.4% | 100.0% | |
| | % within Year | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | |

$X^2 = 7.751$

df = 3

P = 0.051

Table 3 shows that there were 138 (60.3%) male and 91 (39.7%) female cases of confirmed malaria. In all the years higher number and percentage of males was found. The difference in number and percentage of cases in both sexes was significant statistically.

Table 4. Area wise distribution

| | | | Area | | Total |
|-------|---------------|---------------|--------|--------|--------|
| | | | Urban | Rural | |
| Year | 2011 | Count | 10 | 130 | 140 |
| | | % within Year | 7.1% | 92.9% | 100.0% |
| | | % within area | 27.8% | 67.4% | 61.1% |
| | 2012 | Count | 2 | 15 | 17 |
| | | % within Year | 11.8% | 88.2% | 100.0% |
| | | % within area | 5.6% | 7.8% | 7.4% |
| | 2013 | Count | 7 | 16 | 23 |
| | | % within Year | 30.4% | 69.6% | 100.0% |
| | | % within area | 19.4% | 8.3% | 10.0% |
| | 2014 | Count | 17 | 32 | 49 |
| | | % within Year | 34.7% | 65.3% | 100.0% |
| | | % within area | 47.2% | 16.6% | 21.4% |
| Total | Count | 36 | 193 | 229 | |
| | % within Year | 15.7% | 84.3% | 100.0% | |
| | % within area | 100.0% | 100.0% | 100.0% | |

$X^2 = 25.047$

df = 3

P = 0.000

Table 3 shows that higher number of confirmed cases of malaria i.e. 193 belonged to rural and 36 to urban area. In all years from 2011 to 2014 higher number of rural cases was found. The difference in number and percentage of cases in both areas was highly significant statistically.

Table 5. Block wise distribution

| | | | Year | | | | Total |
|-------|----------------|----------------|--------|--------|--------|--------|--------|
| | | | 2011 | 2012 | 2013 | 2014 | |
| Block | Amritsar | Count | 9 | 2 | 9 | 16 | 36 |
| | | % within Block | 25.0% | 5.6% | 25.0% | 44.4% | 100.0% |
| | | % within Year | 6.4% | 11.8% | 39.1% | 32.7% | 15.7% |
| | Baba Bakala | Count | 45 | 3 | 2 | 3 | 53 |
| | | % within Block | 84.9% | 5.7% | 3.8% | 5.7% | 100.0% |
| | | % within Year | 32.1% | 17.6% | 8.7% | 6.1% | 23.1% |
| | Lopoke | Count | 15 | 2 | 0 | 8 | 25 |
| | | % within Block | 60.0% | 8.0% | .0% | 32.0% | 100.0% |
| | | % within Year | 10.7% | 11.8% | .0% | 16.3% | 10.9% |
| | Manawala | Count | 24 | 1 | 3 | 4 | 32 |
| | | % within Block | 75.0% | 3.1% | 9.4% | 12.5% | 100.0% |
| | | % within Year | 17.1% | 5.9% | 13.0% | 8.2% | 14.0% |
| | Ramdas | Count | 10 | 3 | 2 | 10 | 25 |
| | | % within Block | 40.0% | 12.0% | 8.0% | 40.0% | 100.0% |
| | | % within Year | 7.1% | 17.6% | 8.7% | 20.4% | 10.9% |
| | Tarsika | Count | 25 | 2 | 1 | 4 | 32 |
| | | % within Block | 78.1% | 6.2% | 3.1% | 12.5% | 100.0% |
| | | % within Year | 17.9% | 11.8% | 4.3% | 8.2% | 14.0% |
| | Threawal | Count | 4 | 4 | 3 | 3 | 14 |
| | | % within Block | 28.6% | 28.6% | 21.4% | 21.4% | 100.0% |
| | | % within Year | 2.9% | 23.5% | 13.0% | 6.1% | 6.1% |
| | Verka | Count | 8 | 0 | 3 | 1 | 12 |
| | | % within Block | 66.7% | .0% | 25.0% | 8.3% | 100.0% |
| | | % within Year | 5.7% | .0% | 13.0% | 2.0% | 5.2% |
| Total | Count | 140 | 17 | 23 | 49 | 229 | |
| | % within Block | 61.1% | 7.4% | 10.0% | 21.4% | 100.0% | |
| | % within Year | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | |

$X^2 = 73.192$

df = 21

P = 0.000.

Table 5 shows that there were 36 (15.7%), 53 (23.1%), 25 (10.9%), 32 (14%), 25 (10.9%), 32 (14%),14 (6.1%),12 (5.2%) confirmed cases of malaria found in Amritsar, Baba Bakala, Lopoke, Manawala, Ramdas, Tarsika, Threawal and Verka blocks respectively in

years 2011 to 2014. The highest number of cases 53 (23.1%) had been found in block Manawala and the lowest 12 (5.2%) in Verka. The block wise difference in number of these cases reported was highly significant statistically.

Table 6. Month wise distribution

| | | | Year | | | | Total |
|-------|----------------|----------------|--------|--------|--------|--------|--------|
| | | | 2011 | 2012 | 2013 | 2014 | |
| Month | January | Count | 0 | 1 | 0 | 0 | 1 |
| | | % within Month | 0.0% | 100.0% | 0.0% | 0.0% | 100.0% |
| | | % within Year | 0.0% | 5.9% | 0.0% | 0.0% | 0.4% |
| | February | Count | 0 | 0 | 0 | 1 | 1 |
| | | % within Month | 0.0% | 0.0% | 0.0% | 100.0% | 100.0% |
| | | % within Year | 0.0% | 0.0% | 0.0% | 2.0% | 0.4% |
| | March | Count | 3 | 2 | 0 | 3 | 8 |
| | | % within Month | 37.5% | 25.0% | 0.0% | 37.5% | 100.0% |
| | | % within Year | 2.1% | 11.8% | 0.0% | 6.1% | 3.5% |
| | April | Count | 3 | 2 | 3 | 2 | 10 |
| | | % within Month | 30.0% | 20.0% | 30.0% | 20.0% | 100.0% |
| | | % within Year | 2.1% | 11.8% | 13.0% | 4.1% | 4.4% |
| | May | Count | 3 | 0 | 2 | 9 | 14 |
| | | % within Month | 21.4% | 0.0% | 14.3% | 64.3% | 100.0% |
| | | % within Year | 2.1% | 0.0% | 8.7% | 18.4% | 6.1% |
| | June | Count | 23 | 6 | 0 | 6 | 35 |
| | | % within Month | 65.7% | 17.1% | 0.0% | 17.1% | 100.0% |
| | | % within Year | 16.4% | 35.3% | 0.0% | 12.2% | 15.3% |
| | July | Count | 49 | 6 | 0 | 2 | 57 |
| | | % within Month | 86.0% | 10.5% | 0.0% | 3.5% | 100.0% |
| | | % within Year | 35.0% | 35.3% | 0.0% | 4.1% | 24.9% |
| | August | Count | 41 | 0 | 3 | 6 | 50 |
| | | % within Month | 82.0% | 0.0% | 6.0% | 12.0% | 100.0% |
| | | % within Year | 29.3% | 0.0% | 13.0% | 12.2% | 21.8% |
| | September | Count | 15 | 0 | 9 | 15 | 39 |
| | | % within Month | 38.5% | 0.0% | 23.1% | 38.5% | 100.0% |
| | | % within Year | 10.7% | 0.0% | 39.1% | 30.6% | 17.0% |
| | October | Count | 1 | 0 | 6 | 3 | 10 |
| | | % within Month | 10.0% | 0.0% | 60.0% | 30.0% | 100.0% |
| | | % within Year | .7% | 0.0% | 26.1% | 6.1% | 4.4% |
| | November | Count | 0 | 0 | 0 | 2 | 2 |
| | | % within Month | 0.0% | 0.0% | 0.0% | 100.0% | 100.0% |
| | | % within Year | 0.0% | 0.0% | 0.0% | 4.1% | .9% |
| | December | Count | 2 | 0 | 0 | 0 | 2 |
| | | % within Month | 100.0% | 0.0% | 0.0% | 0.0% | 100.0% |
| | | % within Year | 1.4% | 0.0% | 0.0% | 0.0% | 0.9% |
| Total | Count | 140 | 17 | 23 | 49 | 229 | |
| | % within Month | 61.1% | 7.4% | 10.0% | 21.4% | 100.0% | |
| | % within Year | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | |

X² = 1.428

df = 33

P = .000

Table 6 shows that in years 2011 to 2014, confirmed cases of malaria were reported during all months of the years. However in some years as shown in table there was no reporting of the cases in some months. During the transmission season of malaria (June to September), 181(79.0%) cases were reported while during other 8 months 48 (21.0%) cases were reported. The month wise difference in the number of confirmed malaria cases reported was highly significant statistically.

CONCLUSION

During the years 2011-2014 API of malaria remained below 2. Study results show that the majority of positive cases were male, in age group of > 14 years which is consistent with previous studies.^{12, 13, 14} Majority of cases had been observed during the period of monsoon (79%) (June to September). Similar results had been observed in past studies.¹¹ All prevention and control measures for malaria should be taken the epidemiological situation in view.

Limitation

There is under-reporting of cases as the cases reported were mainly from the designated laboratories and due to non involvement of many of the private health care institutions.

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Conflict of Interest: Nil

Source of Funding: Self

Ethical Clearance: Not needed as the study is based on the NVBDCP records.

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Assessment of Awareness Regarding Medical Educational Training

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ABSTRACT

Objective: Creating awareness of educational research and receiving opinions on the existing trends .

Method: A cross-sectional study was conducted on 70 faculty members working in GSL Medical College and Hospital, Rajahmundry. In this study the participants were given a preformed questionnaire regarding views on teaching methodology & educational research which was filled by them and the data collected was analyzed by Microsoft excel.

Results: Majority of the participants in our study (92.1%) agreed that teaching learning methodology is a part of educational research. The next major reason being lack of knowledge of educational research (53.9%).60.3% of the participants thought that including technology can make medical teaching more interesting.

Conclusion: From this study we can conclude that opportunities along with institutional support is necessary to motivate the medical faculty in pursuing educational research.

Keywords: Educational research, teaching learning methodology, medical curriculum.

INTRODUCTION

Medical schools have traditionally rested on the three legged stool of research, education and service. Hence medical teachers are sometimes referred to as triple threat academicians.^{1,2} By this definition, medical teachers are original and productive investigators not only being committed teachers and compassionate practicing physicians. In recent years, there has been an increasing call for medical schools to embrace a fourth obligation: "social responsiveness".^{3,4} In recent years medical schools worldwide have been increasingly confronted with the challenge of making their curriculum relevant to the needs of times. One response to this is an increased interest in research in medical education.⁵

Medical education research is research conducted to investigate behavioral patterns in students, teachers and other participants in medical educational institutions. It is a growing field and its importance in south East Asia countries is yet to be fully established. Its requirements, obligations, advantages on teaching learning methods are yet to be fully exploited & acknowledged.⁶

Research in medical education usually deals with the scholarly analysis of content, input, processes and outcomes of educational programmes in order to improve their functioning by providing new evidence either for decision making or to advocate a change in the system.⁴ Over the years it has contributed substantially to the understanding of learning process by exploring and examining educational theories and curricular and pedagogic policies and processes, recognizing and examining trends in education, identifying difficult and problematic areas and providing descriptions of these with appropriate solutions.⁵ Most importantly research provides legitimate evidence to stakeholders on which

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educational decisions are made.

Research has a wider “social impact” – the ability to bring about changes – in teaching practice and subsequent clinical practice.⁷ Areas of major development in medical education research include basic research on the nature of medical expertise, problem – based learning (PBL), performance assessment, continuing education and assessment of practicing physicians.⁸

The purpose of this study was to discover interest of the faculty members in GSL Medical College, Rajahmundry in medical education research and to learn about their existing assets to develop educational research further.

METHODOLOGY

A cross sectional study was done on 70 faculty members working in GSL Medical College and Hospital, Rajahmundry. Not all the participants have undergone the MET training. An informed written consent was taken before the commencement of the study.

A preformed questionnaire was prepared and given to all the participants. Single best response questions and multiple response questions were chosen to minimize non-response. Analyzed using Microsoft excel.

Limitations: Those who did not completely answer (i.e. all the questions) were eliminated.

RESULTS AND DISCUSSION

70 persons were given the questionnaire out of which 63 persons completed it while 7 persons did not complete the questionnaire.

The percentages may not sum up to exactly 100% because of rounding off.

88.8% participants agreed that medical curriculum is a part of medical education training, while 11.2% did not agree. 79.4% participants agreed that student assessment is a part of educational research, while 20.6% did not agree. 92.1% agreed that teaching learning methodology is a part of educational research. 82.5% participants agreed that attitudes and skills of students fall under the scope of educational research, while 17.5% did not agree as

shown in table 1.

It was found that lack of knowledge of medical education research among the medical faculty was the reason for them not taking up research activities, followed by lack of proper funding. If people working for a research project are given pay hike, may be many would be encouraged to do a research project and the situation might change. The next in line is lack of interest from faculty (12.7 %) followed by lack of time and lack of administrative support and encouragement as shown in table 2.. If the faculty members are told the importance of educational research, proper funding is given along with encouragement to young faculty members, then the situation might change. In the present scenario youngsters need to be given opportunities.

It was seen in table 3 that, maximum i.e. 60.3% participants thought that technology should be used and they agreed strongly. 26.9% supported the idea but 3.2% did not agree to it. 9.5% chose to remain neutral.

Maximum of the faculty thought that recognition / award by the principal as the most encouraging factors.

This was followed by funding to attend educational conferences followed by special workshop on educational research and then by establishing research teams that would assist new faculty.

Medical education research has gained importance in medical schools in developed countries. However, it has not received the same level of attention in Asian countries. The reasons behind this may be many and profound.

The scope of medical education research (curriculum, student assessment, teaching – learning methods) has to be defined. When the educators themselves do not know what is included in educational research how can they pass the knowledge to their student.

The most important cause for lack of research is absence of appropriate funding i.e. the low socio-economic conditions found in most Asian countries. According to World Bank, about 66% of countries are “low – income economies” or “lower – middle income

economies”⁹

If the medical educators are rewarded in the form of an award or hike in payment, promotion, funding to present the findings at a national or international conference may be then they will be encouraged to carry out the research. If medical education is made more interesting by using simulators, videos etc, students along with their teachers will be more interested. If educational research is established in the home institute, then it will be the best encouraging factor.

Table 1 showing the scope of medical education research

| Scope | Yes | No |
|----------------------------------|------------|------------|
| Medical curriculum | 56(88.8%) | 7(11.2 %) |
| Student assessment | 50(79.4%) | 13(20.6 %) |
| Teaching learning methodology | 58(92.1%) | 5(7.9 %) |
| Attitudes and skills of students | 52(82.5%) | 11(17.5 %) |

Table – 2: Reason lesser research in medical education in India

| Reason | Number (%) |
|--|------------|
| Lack of knowledge of educational research | 34(53.9%) |
| Lack of funding | 10(58.9%) |
| Lack of time | 8(12.7%) |
| Lack of interest from faculty | 8(12.7%) |
| Lack of administration support and encouragement | 3(4.8%) |

Table – 3: Whether technology makes medical teaching more interesting.

| View | Number (%) |
|---------------------|------------|
| Strongly support | 38(60.3%) |
| Support | 17(26.9 %) |
| Neutral /don't know | 6(9.5%) |
| Do not agree | 2(3.2%) |
| Strongly disagree | Nil |

Table – 4: Factors that would encourage educational research in an institution

| Factors | Number (%) |
|---|------------|
| Recognition or an award by principal | 30(47.6%) |
| Funding to attend and present findings at an educational conference | 15(23.8%) |
| Establishing research teams that could assist new faculty to get involved in educational research | 12(19.04%) |
| Research conducted by educational research experts | 6(9.5%) |

CONCLUSION

From this study we can conclude that motivation of the medical faculty is necessary for pursuing educational research. Apart from this proper appreciation of the researcher is also very necessary. It may be in the form of promotion, award, providing pay hike. Encouragement is the key to success.

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Ethical clearance – Ethical clearance was obtained from the Institutional Ethical Committee before the study.

Source of Funding - Self.

Conflict of Interest - Nil

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Correlates of Geriatric Health Problems in the Urban Elderly- A Community Based Study in Bangalore, Karnataka

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ABSTRACT

Background: There is growing evidence that older people are at risk for manifold co morbidities. A thorough examination of the geriatric morbidity and related risk factors are required to improve of health of the elderly.

Materials and methods: Community based cross sectional study conducted for one year using a interview schedule by census methodology in elderly ≥ 60 years of age. Data analyzed using SPSS 17. Chi-square test, unadjusted odds ratio with 95%CI were estimated, multiple logistic regression analysis was employed. **Results:** Total 416 elderly studied, females 268(64.4%) and males 148(35.6%). On univariate analysis, risk of diabetes mellitus was significantly higher among elderly with non-BPL 59(21.5%), sedentary lifestyle 61(21.4%), literates 28(24.6%). Hypertension risk was significantly higher among females 90(33.5%), sedentary lifestyle 97(34.0%), alcohol users 111(30.5%), tobacco addicts 99(31.6%), non exercising group 105(26.7%). The risk of visual impairment was significantly higher in ≥ 80 years of age group 19(82.6%), below poverty line 71(50.4%), tobacco users 54(52.4%). Arthritis was significantly higher in ≥ 80 years 19(82.6%), females 156(58.2%), sedentary lifestyle 165(57.9%). On multiple logistic regression analysis, illiteracy, sedentary lifestyle, inadequate sleep and lack of Exercise were significantly associated with diabetes mellitus. Female gender, BPL family and sedentary lifestyle were significantly associated with hypertension. Inadequate sleep, illiteracy were significantly associated with visual impairment. For arthritis, increasing age, sedentary lifestyle, were significant. **Conclusion:** the study highlights the importance of lifestyle factors in contributing the majority of the chronic non-communicable diseases.

Keywords: Elderly, Community, Health Problem, Correlates.

INTRODUCTION

Worldwide, the number of persons over 60 years is growing faster than any other age group. With a comparatively young population, India is still poised to become home to the second largest number of older persons in the world for the first time in human history.¹ In 2005, older persons (60 years and above) were 8% of the population in the developing countries, and the proportion is expected to increase to 20% by 2050 (United Nations, 2004). 'Senior citizen' or 'elderly' is defined as a person who is of age 60 years or above (Government of India, 1999). There

is growing evidence that older people are at risk for manifold co morbidities.² Major areas of health concern among the elderly are multiple medical and psychological problems, such as hypertension, cataract, osteoarthritis, chronic obstructive airway disease, ischemic heart diseases, diabetes, constipation and depression.³ There is a need to highlight the medical and socioeconomic problems of elderly people in India and strategies for bringing about an improvement in their quality of life.⁴ A thorough examination of the geriatric morbidity and related risk factors are required to improve the delivery of health care to the elderly.⁵ Presently,

limited studies have been carried out, also due to the absence of a nationwide registry of older people comprehensive community based data on morbidity and disability is unavailable (Dhar,2005). Hence this study was undertaken in order to assess the health problems of the elderly people and its relationship with sociodemographic and other variables.

MATERIALS & METHOD

Approval from institutional Human Ethics Committee obtained to conduct the study. Community based cross sectional study was carried out from June 2010 to May 2011 at the urban field practice area of M.S.Ramaiah medical college Bangalore, which covers a population of 7000. The study population comprised of all geriatric people aged 60 years and above, who had resided in that area for at least one year. The survey was done by house to house visit by census methodology after excluding the non-respondents,416 respondents were identified and included all of them in the study with informed oral consent.

Study instruments: The study participants were subjected to personal interview using a pre-tested and semi-structured interview schedule. Clinical examinations and checking of individual medical records were also used as study tools in order to collect data on demographic, socio-economic and morbidity conditions. General physical examination, systemic examination was carried out. **Diagnostic criteria:** WHO guidelines for diagnosis of diabetes, hypertension, and visual acuity was followed. Clinical examination including all anthropometric measurements according to the standards used in MONICA project.⁶ Visual disability and Hearing disability was followed according to UNFPA.⁷ For

diagnosis of osteoarthritis of knee, criteria of knee pain plus patient age of 40 years or older, morning stiffness lasting less than 30 minutes and crepitus on motion was taken into consideration.⁸ **Nervous system:** disorders were diagnosed if they were having cerebral infarction, epilepsy, hemiplegia, Parkinsonism, neuritis, tremors, dementia, neuropathy.⁹ **Statistical analysis:** Data was analyzed using SPSS 17 for descriptive and analytical statistics for sociodemographic data. The prevalence rates for the diseases were presented as percentages. Chi-square/Fisher exact test was employed to find the association between two variables. To know the strength of association unadjusted odds ratio with 95% confidence intervals (CI) were estimated for each categorical and continuous variables. To find out independent determinants associated with diabetes mellitus, hypertension, visual impairment and arthritis, multiple logistic regression analysis was employed. Statistical significance level was set at $p \leq 0.05$.

RESULTS

Among the 416 participants, 268(64.4%) were females and 148(35.6%) males. Majority of the elderly were in the age group of 60–69 years 298(71.6%) with mean age of 67 ± 6 years and belonged to non-nuclear families 369(88.7%). About 141(33.8%) of the study subjects belonged to the below poverty line,114(27.4%) were literates and 302(72.6%) illiterates; A larger part of them were leading a sedentary life 285(68.5%). [Table1A] 370(89.0%) of the elderly were economically dependent. About 209(50.3%) were living/ having partners (spouse). 51(12.3%) of them had alcohol addiction and 103 (24.7%) were tobacco addicted. 91(22.0%) of them were either overweight or obese. [Table1B]

Table 1A: Correlates of geriatric health problems in the univariate analysis:

| Correlates | Study participants | Diabetes mellitus | Hypertension | Visual impairment | Arthritis |
|--------------------|--------------------|-------------------|--------------|-------------------|-----------|
| Age (years) | n(%) | n(%) | n(%) | n(%) | n(%) |
| 60-69 | 298(71.6) | 49(16.4) | 82(27.5) | 107(35.9) | 133(44.6) |
| 70-79 | 95(22.8) | 19(20.0) | 23(24.2) | 52(54.7) | 65(68.4) |
| >=80 | 23(5.6) | 4(17.3) | 11(47.8) | 19(82.6) | 19(82.6) |
| Total | 416 | 72(17.3) | 116(27.8) | 178(42.7) | 219(52.6) |
| P value | | 0.72 | 0.07 | 0.001* | 0.001 |

Cont... Table 1A: Correlates of geriatric health problems in the univariate analysis:

| | | | | | |
|------------------------|-----------|--------------|-------------|-------------|------------|
| Sex | | | | | |
| Male | 148(35.6) | 22(14.8) | 26(17.5) | 57(38.5) | 63(42.5) |
| Female | 268(64.4) | 50(18.6) | 90(33.5) | 121(45.1) | 156(58.2) |
| OR(P value) | | 1.3(0.32) | 2.3(0.01) * | 1.3(0.10) | 1.8(0.002) |
| Type of family | | | | | |
| Nuclear | 47(11.3) | 7(14.9) | 8(17.0) | 13(27.7) | 19(40.4) |
| Non-nuclear | 369(88.7) | 65(17.6) | 108(29.3) | 165(44.7) | 200(54.2) |
| OR(P value) | | 0.8(0.64) | 0.4(0.07) | 0.4(0.02) * | 0.5(0.07) |
| Economic status | | | | | |
| Normal(non BPL) | 275(66.2) | 59(21.5) | 90(32.7) | 107(38.9) | 136(49.5) |
| BPL | 141(33.8) | 13(9.2) | 26(18.4) | 71(50.4) | 83(58.9) |
| OR(P value) | | 0.37(0.02)* | 0.4(0.02) * | 1.5(0.02) * | 1.4(0.06) |
| Education | | | | | |
| Illiterate | 302(72.6) | 44(14.6) | 83(27.5) | 149(49.3) | 180(59.6) |
| Literate | 114(27.4) | 28(24.6) | 33(28.3) | 29(25.4) | 39(34.2) |
| OR(P value) | | 1.9(0.01) * | 1.0(0.76) | 0.3(0.01) * | 0.3(0.001) |
| Occupation | | | | | |
| Non-sedentary | 131(31.5) | 11(8.4) | 19(14.5) | 48(36.6) | 54(41.2) |
| Sedentary | 285(68.5) | 61(21.4) | 97(34.0) | 130(45.6) | 165(57.9) |
| OR(P value) | | 0.3(0.001) * | 0.3(0.01) * | 0.6(0.08) | 0.5(0.002) |

OR: odds ratio, (P value significant at <= 0.05)

Table 1B: Correlates of geriatric health problems in the univariate analysis

| Correlates | Study participants | Diabetes mellitus | Hypertension | Visual impairment | Arthritis |
|---------------------------------------|--------------------|-------------------|--------------|-------------------|------------|
| Economic dependence | | | | | |
| Dependent | 370(89.0) | 61(16.5) | 110(29.7) | 163(44.1) | 199(53.8) |
| Independent | 46(11.0) | 11(23.9) | 6(13.0) | 15(32.6) | 20(43.5) |
| OR(P value) | | 1.5(0.20) | 0.3(0.01) * | 0.6(0.13) | 0.6(0.18) |
| Sleep pattern | | | | | |
| < 6 hours/a day | 177(42.5) | 39(22.0) | 56(31.6) | 104(58.8) | 130(73.4) |
| 6 – 8 hours/ a day | 239(57.5) | 33(13.8) | 60(25.1) | 74(31.0) | 89(37.2) |
| OR(P value) | | 0.5(0.02) * | 0.7(0.14) | 0.3(0.01) * | 0.2(0.001) |
| Alcohol addiction | | | | | |
| Absent | 365(87.7) | 70(19.2) | 111(30.5) | 154(42.4) | 195(53.4) |
| Present | 51(12.3) | 2(3.9) | 5(9.8) | 24(47.1) | 24(47.1) |
| OR(P value) | | 0.1(0.007) | 0.2(0.02) * | 1.2(0.51) | 0.7(0.39) |
| Tobacco addiction | | | | | |
| Absent | 313(75.3) | 59(18.8) | 99(31.6) | 124(39.6) | 164(52.4) |
| Present | 103(24.7) | 13(12.6) | 13(16.5) | 54(52.4) | 55(53.4) |
| OR(P value) | | 0.6(0.14) | 0.4(0.03) * | 1.6(0.02) * | 1.0(0.86) |
| BMI category | | | | | |
| Underweight | 27(6.4) | 6 (22.2) | 6(22.2) | 16(59.3) | 19(70.4) |
| Normal | 298(71.6) | 45(15.1) | 77(25.8) | 124(41.6) | 150(50.3) |
| Obese | 91(22.0) | 21(23.1) | 33(36.3) | 38(41.8) | 50(54.9) |
| OR(P value) | | (0.16) | (0.12) | (0.20) | (0.12) |
| Exercise/ do physical activity | | | | | |
| No | 393(94.5) | 68(17.3) | 105(26.7) | 173(44.0) | 211(53.7) |
| Yes | 23(5.5) | 4(17.3) | 11(17.3) | 5(21.7) | 8(34.8) |
| OR(P value) | | 2.1(0.07) | 2.2(0.02) * | 0.3(0.03) * | 0.4(0.07) |

OR: odds ratio, (P value significant at ≤ 0.05)

The prevalence ratios of diabetes mellitus 72(17.3%),hypertension116(27.8%),visual impairment 178(42.7%) and arthritis 219(52.6%) was observed. On univariate analysis, the risk of diabetes mellitus was significantly higher among elderly with non-below poverty line (non-BPL) with 59(21.5%),sedentary lifestyle 61(21.4%)and literates were 28(24.6%). Hypertension risk was significantly higher among females 90(33.5%), in those with a sedentary lifestyle 97(34.0%), Non- BPL family 90(32.7%), among economically dependent elderly 110(29.7%), among alcohol users with 111(30.5%),tobacco addicts 99(31.6%) and in those with non exercising group105(26.7%). The risk of visual impairment was significantly higher in ≥ 80 years of age group with 19(82.6%), those living in joint/non-nuclear families 165(44.7%), in those from below poverty line 71(50.4%), in illiterate elderly 149(49.3%), those who had inadequate sleep 104(58.8%) and in tobacco users

54(52.4%).Arthritis was significantly higher in the higher age groups >80 years with 19(82.6%)($p \leq 0.01$),in females 156(58.2%), among illiterates 180(59.6%), those who had sedentary lifestyle165(57.9%)and in elderly with inadequate sleep130(73.4)(Table 1A and 1B).Higher prevalence of diabetes mellitus, hypertension, visual impairment and arthritis were observed with increasing age ($P \leq 0.05$). (Table 1A and 1B).

On multiple logistic regression analysis,illiteracy,sedentary lifestyle, inadequate sleep and lack of exercise were significantly associated with diabetes mellitus. Female sex, BPL family and sedentary lifestyle were significantly associated with hypertension. Whereas, inadequate sleep, non-nuclear family and illiteracy were significantly associated with visual impairment. For arthritis, increasing age, sedentary working pattern, female gender were found to be significant (Table 2).

Table 2: Correlates of health problems in the final model: Multivariate logistic regression by the backward LR method.

| Sl no. | Health problem | Parameters | P Value | Odds ratio | 95% CI |
|--------|----------------------|--------------------|---------|------------|-----------|
| 1 | Diabetes mellitus | Illiterates | 0.01 | 2.13 | 1.17-3.86 |
| | | Sedentary worker | 0.008 | 0.38 | 0.19-0.78 |
| | | Inadequate Sleep | 0.009 | 0.48 | 0.27-0.83 |
| | | Lack of Exercise | 0.02 | 3.00 | 1.18-7.64 |
| 2 | Hypertension | Female | 0.01 | 2.01 | 1.18-3.43 |
| | | Non-BPL category | 0.02 | 0.53 | 1.18-3.43 |
| | | Sedentary | 0.02 | 0.50 | 0.28-0.92 |
| 3 | Visual impairment | Non-nuclear family | 0.01 | 0.42 | 0.20-0.86 |
| | | Illiterates | 0.01 | 0.51 | 0.30-0.87 |
| | | Inadequate Sleep | 0.001 | 0.36 | 0.24-0.56 |
| 4 | Joint pain/arthritis | Age | 0.001 | 3.4 | 2.16-5.59 |
| | | Sedentary worker | 0.01 | 0.54 | 0.33-0.90 |
| | | Females | 0.02 | 0.34 | 0.32-0.62 |

$P \leq 0.05$ statistically significant

The other medical illnesses reported were gastrointestinal problems (gastritis, constipation, indigestion) in 168(40.3%). The prevalence of cataract observed was 165(39.6%). The highest prevalence of cataract was observed in >80 years of age group with 18(78.3) (P ≤0.05). About 148(35.5%) presented with upper and lower respiratory infections. Increase in the rate of respiratory diseases 15(65.2%) was observed with increasing age ie >80 years age group (P ≤0.05). About 101(24.2%) elderly had sustained

injuries in the past six months. **Dermatological diseases (dry skin, eczema, allergic rash) contributed 50(12.0%).** About 28(6.7%) of cardiovascular diseases were observed. Genitourinary diseases (increased frequency of urine, urinary incontinence, urinary tract infection reported in 16(3.8%). **Neurological diseases attributed to 15(3.6%).** In general statistically there was no difference in morbidities among males and females. (Table 3)

Table 3. Prevalence of medical illnesses among the elderly

| Particulars | Age in years | | | Gender | | Total (%) |
|---------------------------|--------------------|-------------------|-----------------|--------------------|----------------------|-----------|
| | 60-69(%) N =298 | 70-79(%) N =95 | ≥80(%) N =23 | Male (%) N =148 | Female (%) N =268 | N =416 |
| Gastrointestinal problems | 99(33.2) | 60(63.1)* | 9(39.1) | 64(43.2) | 104(38.8) | 168(40.3) |
| Cataract | 97(32.5) | 50(52.6) | 18(78.2)* | 55(37.1) | 110(41.0) | 165(39.6) |
| Respiratory diseases | 96(32.2) | 37(38.9) | 15(65.2)* | 52(35.1) | 96(23.0) | 148(35.5) |
| Injuries | 63(21.1) | 31(33.6) | 7(30.7) | 31(20.9) | 70(26.1) | 101(24.2) |
| Musculoskeletal | 60(20.1) | 47(49.4) | 13(56.5) | 52(35.1) | 68(25.3) | 120(28.8) |
| Dermatological diseases | 26(8.7) | 16(16.8) | 8(34.7)* | 24(16.2) | 36(13.4) | 50(12.0) |
| Cardiovascular diseases | 24(8.0) | 3(3.1) | 1(4.3) | 9(6.0) | 19(7.0) | 28(6.7) |
| Hearing problems | 9(3.0) | 5(5.2) | 6(26.0)* | 8(5.4) | 12(4.4) | 20(4.8) |
| Genitourinary problem | 6(2.0) | 7(7.3) | 3(13.0) | 7(4.7) | 9(3.3) | 16(3.8) |
| Neurological diseases | 11(3.6) | 2(2.1) | 2(8.6) | 6(4.0) | 9(3.3) | 15(3.6) |

*P ≤0.05 statistically significant

DISCUSSION

The present study reflects the common health problems in the ageing population and their correlates. Most of the demographic variables in terms of mean age 67±6 years, literacy rate 11% and economical dependency were similar to other studies done across India.^{5,10,11,12} It was noticed that the addiction rate of alcohol 12.3% and smoking 12.3% was much lesser as compared to Anil JP study.¹³

Hypertension was seen in more than quarter of the elderly (27.8%), which is similar to reports of other studies.^{14,15,16} This high prevalence could be

related to the sedentary lifestyle and stress in urban areas, as signified in our study where hypertension was associated with non-exercising group, females, sedentary lifestyle, alcohol and tobacco consumption and economically dependent individuals.¹⁶ The prevalence of 17.3% of diabetes mellitus is in consensus with other studies in northern India.^{17,18} The National Urban survey conducted across the metropolitan cities in India showed prevalence ranging from 6.1% to 16.6%. The high prevalence of DM is significantly related to sedentary lifestyle, older age group, as noticed in other studies.^{17,19}

The overall prevalence of arthritis was 52.6%, and it was significantly higher in older age group, females

and those with sedentary lifestyle which was also reported in other similar studies.^{9,11,15,16,17,18,20} Females have reported a greater musculoskeletal problems and that is consistent with other studies.^{11,17,18}

Treatable blindness is one of the major problems in the elderly, caused due to cataract. It was noticed that 39.6% of the study people had cataract, as also observed in other studies.^{9,11, 17,20,21}

It was noted that, the health problems have significant relationship with age and as the age increased number of health problems also increased, and this finding is consistent with several other studies.^{14,16,22} Higher morbidities among non-working group in the present study can be correlated with the higher BMI, obesity and non-BPL family.²²

As per UNFPA⁷ working paper by Moneer et al, among the 10 most common health conditions that affect the elderly population are CVD eg: 'hypertension', 'disorders of joints and joint pain', 'Respiratory infections and asthma'[4%], 'febrile illness', 'diabetes', 'eye and ear ailment' and 'gastro-intestinal' ailments reported by approximately 10 per cent. The pattern of these conditions and diseases are not very different for males and females except for CVS disorder.⁷

In general, the socioeconomic determinants of health in the elderly indicate that the elderly who have better living conditions and economically independent have better health outcomes while those belonging to lower income/consumption groups and those who are economically dependent, having sedentary lifestyle report poor health status. Education plays a marginally positive role. A negative impact on health is also noted in elderly women and with increasing age.^{7,17}

CONCLUSION

The present study highlights the importance of lifestyle issues such as lack of exercise, addictions, sedentary habits and economic dependency in prevention of majority of the chronic non-communicable diseases. Since all these aspects must be inculcated much earlier in life, emphasis must be laid on early intervention measures adult age and healthy ageing.

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Service Quality Redefined: Public vs Private Hospitals from the Patients' Perspectives

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ABSTRACT

The service quality leads to customer satisfaction, therefore both are the inevitable strategic tools for a service firm in order to remain competitive and to sustain in the market. The healthcare firms compete primarily on service quality offered. The given study attempts to examine the various factors which lead to the satisfaction of customers towards the service quality offered by the healthcare firm. The study applies the SERVQUAL model (Parasuraman, 1985)¹⁷ for measuring the service quality being offered in private and public-hospitals of Jalandhar (Punjab) India.

The data has been collected from patients hospitalized in various hospitals in Jalandhar city. Factor analysis is used for data analysis. The findings revealed that customer satisfaction towards service quality of private-hospitals depends on assurance of services, responsiveness, trust and confidence, whereas for the public-hospitals the factors were tangibility and regularity of services followed by reliability of services and effectiveness of treatment.

Keywords: Services, Quality, Public, Private, Hospitals, Patient, Satisfaction.

INTRODUCTION

The healthy population is one of the important determinants of economic growth and poverty alleviation for a country. Due to low public expenditure on healthcare in India, the quality of healthcare services differs in public and private-hospitals (Economic Survey, 2012)⁵. Only 25 percent of health infrastructure, medical manpower and other healthcare resources are limited to rural areas (National Library of Health, 2002)¹⁶. Public-hospitals in India provide basic health facilities only and often lack adequate infrastructure. The services in these hospitals are provided at nominal fee or free of cost but these hospitals are often under-staffed, standard of the services is inferior as compared to private-hospitals. People therefore prefer private-hospitals (The Global Expat Network India, 2011)².

Ensuring the safety of patients and improving the quality of services in hospitals has become one of the significant objectives (World Health Organization, 2010)²⁵. Quality in healthcare is defined as the combined and unceasing efforts of healthcare professionals, and researchers to make changes that

will lead to better patient outcomes (health) and better system performance (care) (Health Insurance Report, FICCI, 2010)⁹.

Defining and measuring services quality has been a major challenge in healthcare industry, because it includes intangibility, heterogeneity and inseparability. The service quality in hospitals includes medical services and hospitality both. The service quality can be divided into technical quality and functional quality (Baltussen, Haddad & Sauerborn, 2002)³.

Service quality has a direct relationship with customer satisfaction and retention (Yeilada and Direktör 2010²⁶; Imrie et al.2000¹⁰; Cronin and Taylor 1992)⁴. This compels the businesses to understand what service quality means to the customer and how it will be best measured (Parasuraman et al., 1985)¹⁵. Therefore, majority of the service providers considers satisfaction of their customers as one of the prime goal of their growth strategies (Zeithaml & Bitner, 2000²⁷; Collier and Bienstock, 2006¹³; Gilbert et al. 1992)⁷.

There are various models to understand the components of service quality for improving

organizational offerings. The "SERVQUAL" model measures the service quality in five dimensions namely reliability, assurance, tangibility, responsiveness, and empathy (Parasuraman et al., 1985)¹⁷. The study is an attempt to realize the most important dimensions of service quality that affects the customer satisfaction in hospitals.

REVIEW OF LITERATURE

Sower et al. (2001)²¹ found that services like information, billing, food services and staff affect the quality of healthcare system in hospitals. Sahn et al. (2002)¹⁸ examined that consumers were highly responsive to the price of healthcare services in hospitals and it was greater for the individuals with the low income. Sohail (2003)²⁰ analyzed non-clinical aspects of service quality in hospitals in Malaysia.

World Health Organization (2003)²⁴ suggested measures to improve the service quality in healthcare. The measures include increasing financing, equipment facilities used in hospitals, strengthening management, formulating standards and providing training to healthcaretakers. Jager and Plooy (2007)¹¹ measured the satisfaction of patients related to services of tangibility and assurance in the public-hospitals of South Africa. It was found that the cleanliness of facilities and the general condition of equipment were the most important variables of tangibility variables. Figen and Ebru (2010)⁶ assessed the service quality provided in public and private-hospitals in Northern Cyprus and also identified the service quality dimensions that play important role in patient satisfaction.

Ramez (2012)²² measured the service quality of healthcare providers of Bahrain. He found that empathy, tangible and responsiveness dimensions had the largest influence on the overall service quality in hospitals. Zamil et al. (2012)¹ measured the impact of service quality on patient's satisfaction in the public and private-hospitals of Jordan. For the measurement of satisfaction of service quality in public and private-hospitals "SERVPERF" tool was used. Jin et al. (2013)¹² suggested for improvement of patient's satisfaction in hospitals, required more investment on training the professional competence, communication skills and problem-solving abilities of the medical staff.

Johnson (2013)²³ examined the service quality dimensions in Thailand hospitals and observed that responsiveness has most influence followed by empathy, assurance and reliability. Rahman and Kutubi (2013)¹⁵ suggested that Dhaka hospitals need to work on communication, responsiveness and empathy to retain their customers. Mashhadiabdol et al. (2014)¹⁶ evaluated the Iranian hospitals found a significant gap in the perspectives of patients and staff. Sharmila and Krishnan (2014)¹⁸ found tangibility has higher impact than affordability in Chennai hospitals.

Therefore, majorities of the studies on service quality were from the other countries and focused on urban patients. To fill the gap in literature, present study examines the patient's satisfaction towards service quality of public and private-hospitals in India.

RESEARCH METHODOLOGY

i. Questionnaire Design and Data Collection:

The study is based on primary data collected from public and private-hospitals of Jalandhar district. A structured questionnaire with 25 variables has been prepared on the basis of SERVQUAL model (Appendix-I). Two public and two private-hospitals were randomly chosen from Jalandhar. From each hospital 50 patients (if the patient is not able to respond then the accompanying person interviewed), who were hospitalized (intensive care) during survey, were the respondents of study. The responses on various dimensions have been collected on five point Likert-scale.

ii. Statistical Methods:

To analyze the data the factor analysis has been applied. Prior to it, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and the Bartlett's test of sphericity were performed. An Eigen value greater than 1 was employed for determining the number of factors. Hair et al. (2010)⁷ suggested minimum loading necessary to include an item in its respective constructs as significant (loading greater than 0.30), more important (loading greater than 0.40), and very significant (loading 0.50 or greater). For this study, the factor loading of 0.30 or greater was considered. To obtain more interpretable results, Varimax rotation was used.

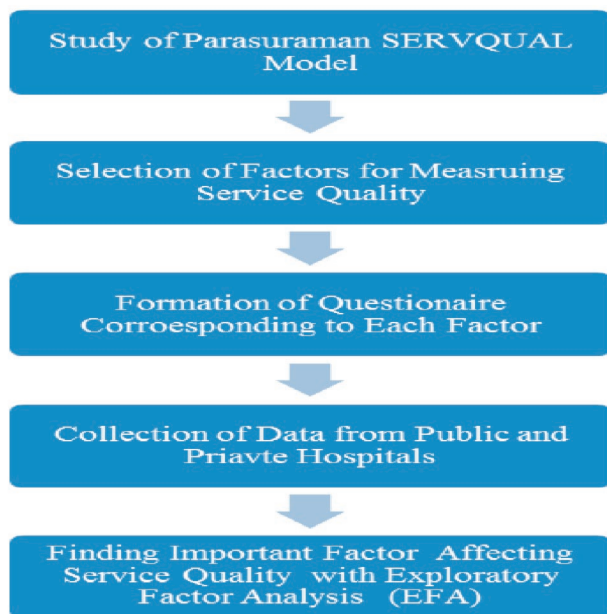


Figure: 1: Research Methodology

Source: Author's Construction

III. Results and Discussion:

i. Demographic Profile of Respondents:

Only 35 percent respondent were male, thirty one percent were between 20-30 years, and forty percent family income was between 30000 and 40000 while 41 percent were self-employed.

Table: 1: Respondents' Demographic Profile

| Characteristics | | Percentage |
|---------------------------|-------------------|------------|
| Types-of-hospital-visited | Public-Hospitals | 50 |
| | Private-Hospitals | 50 |
| Gender | Male | 34.5 |
| | Female | 65.5 |
| Age | <20 | 5 |
| | 20-30 | 31 |
| | 30-40 | 30.5 |
| | 40-50 | 24.5 |
| | >50 | 9 |
| Monthly-family-income | <10000 | 2.5 |
| | 10000-20000 | 11 |
| | 20000-30000 | 15 |
| | 30000-40000 | 39.5 |
| | >40000 | 32 |
| Occupation | Self-employed | 41 |
| | Student | 15 |
| | Service | 21 |
| | Housewives | 45 |

Preference of Public and Private Hospitals:

Table 2 shows the reasons for visiting both hospitals. The main reason for visiting private hospital was quality followed by high-end-technology. Whereas, the main reason for public hospital was nominal cost followed by experienced doctors.

Table: 2

| Reasons-for-Visiting-Private-Hospitals | | | Reasons-for-Visiting-Public-Hospitals | | |
|--|----|----|---------------------------------------|----|----|
| Ease-of-Accessibility | 7 | 7 | Nominal-cost | 56 | 56 |
| Good-quality | 76 | 76 | Ease-of-Accessibility | 17 | 17 |
| High-end-Technology | 10 | 10 | Experienced-Doctors | 20 | 20 |
| Cleanliness | 7 | 7 | Free-Medicines | 7 | 7 |

Factor Affecting Patients Satisfaction towards Private Hospitals:

To examine the factors responsible the value of cronbach's alpha was 0.863, Kaiser-Meyer-Olin (KMO) value is 0.737 and the Bartlett test (Chi-square = 836.673 and significant at 0.000) at 300 degree of freedom. Table 3 provides eight factors affecting the satisfaction of the patient's towards private-hospitals.

Table: 3: Total variance of factors

| Component | Initial-Eigenvalues | | | Extraction-Sums-of-Squared-Loadings | | | Rotation-Sums-of-Squared-Loadings | | |
|-----------|---------------------|------------|--------------|-------------------------------------|------------|--------------|-----------------------------------|------------|--------------|
| | Total | Variance % | cumulative % | Total | Variance % | cumulative % | Total | Variance % | cumulative % |
| 1 | 6.21 | 24.822 | 24.822 | 6.21 | 24.822 | 24.822 | 2.68 | 10.735 | 10.735 |
| 2 | 2.13 | 8.52 | 33.343 | 2.13 | 8.52 | 33.343 | 2.31 | 9.222 | 19.957 |
| 3 | 1.83 | 7.306 | 40.649 | 1.83 | 7.306 | 40.649 | 2.27 | 9.07 | 29.027 |
| 4 | 1.56 | 6.254 | 46.903 | 1.56 | 6.254 | 46.903 | 1.97 | 7.868 | 36.895 |
| 5 | 1.33 | 5.303 | 52.206 | 1.33 | 5.303 | 52.206 | 1.95 | 7.789 | 44.684 |
| 6 | 1.1 | 4.413 | 56.619 | 1.1 | 4.413 | 56.619 | 1.95 | 7.786 | 52.47 |
| 7 | 1.07 | 4.277 | 60.896 | 1.07 | 4.277 | 60.896 | 1.6 | 6.383 | 58.853 |
| 8 | 1.02 | 4.084 | 64.98 | 1.02 | 4.084 | 64.98 | 1.53 | 6.127 | 64.98 |

Table 3 indicates that 8 factors (Out of 25) have Eigen value more than 1 and total variance explained by these were 64.98 percent.

Table: 4 : Factors Extracted, Percentage of Variance and Loadings of Private Hospitals

| Factor | Variance percentage | Factor Interpretation | Variables-included in the factors | Loading |
|--------|---------------------|------------------------|--|--------------|
| F1 | 10.735 | Assurance of Services | Regularity of services | 0.783 |
| | | | Doctor's explanation of treatment | 0.677 |
| | | | Comfortable nursing services | 0.643 |
| | | | Fulfillment of promised services | 0.518 |
| | | | Doctors professional-experience | 0.502 |
| F2 | 9.222 | Responsiveness | Nominal Charges | 0.804 |
| | | | First correct treatment | 0.587 |
| | | | Individual attention | 0.545 |
| | | | Willingness to help | 0.543 |
| F3 | 9.07 | Trust and Confidence | Feeling safe | 0.768 |
| | | | Capability to handle patients problems | 0.752 |
| | | | Accuracy of patients records | 0.546 |
| F4 | 7.868 | Empathy | Nurse's explanation of prescription | 0.809 |
| | | | Understanding of problem | 0.807 |
| F5 | 7.789 | Regularity of Services | Maintenance of error free records | 0.711 |
| | | | Recovering before discharge | 0.586 |
| | | | Regular water and electricity | 0.577 |
| | | | Modern equipment | 0.493 |
| F6 | 7.786 | Reliability | Knowledgeable doctors | 0.816 |
| | | | Immediately resolving problems | 0.463 |
| F7 | 6.383 | Convenience | Convenient consulting hours | 0.767 |
| | | | Caring | 0.514 |
| F8 | 6.127 | Tangibility | Visual appeal | 0.713 |
| | | | Cleanliness | 0.593 |
| | | | Nurses response on call | 0.486 |

In private-hospitals the customers voted for assurance of services, responsiveness, trust and confidence, empathy, regularity of services, reliability, convenience and tangibility.

iii. Factor Affecting Patient Satisfaction in Public-Hospitals:

The value of cronbach's alpha was 0.943, KMO as 0.857 and the Bartlett Test (approx. Chi-square = 1698.646 and significant at 0.000) at 300 degree of freedom. Table 5 provides six factors affecting the satisfaction of the patient's towards public-hospitals.

Table 5: Total variance of factors

| Component | Initial-Eigenvalues | | | Extraction-Sums-of-Squared-Loadings | | | Rotation-Sums-of-Squared-Loadings | |
|-----------|---------------------|------------|--------------|-------------------------------------|------------|--------------|-----------------------------------|--------------|
| | Total | Variance % | Cumulative % | Total | Variance % | Cumulative % | Total | cumulative % |
| 1 | 10.83 | 43.316 | 43.316 | 10.83 | 43.316 | 43.316 | 5.63 | 22.501 |
| 2 | 2.017 | 8.069 | 51.386 | 2.017 | 8.069 | 51.386 | 3.18 | 35.211 |
| 3 | 1.536 | 6.146 | 57.532 | 1.536 | 6.146 | 57.532 | 2.92 | 46.884 |
| 4 | 1.361 | 5.445 | 62.977 | 1.361 | 5.445 | 62.977 | 2.57 | 57.143 |
| 5 | 1.096 | 4.383 | 67.36 | 1.096 | 4.383 | 67.36 | 2.02 | 65.216 |
| 6 | 1.016 | 4.065 | 71.425 | 1.016 | 4.065 | 71.425 | 1.55 | 71.425 |

It was observed from the Table 6 that total variance explained by 6 factors (Out of 25) was 71.42 percent.

Table 6: Factors Extracted, Percentage of Variance and Loadings of Public-Hospitals

| Factor | Variance Percentage | Factor Interpretation | Variables-included in the factors | Loading |
|--------|---------------------|--|-----------------------------------|---------|
| F1 | 22.501 | Tangibility and Regularity of Services | Cleanliness | 0.784 |
| | | | Modern Equipment | 0.761 |
| | | | Immediately resolving problems | 0.740 |
| | | | Nurses response on call | 0.714 |
| | | | Visual Appeal | 0.619 |
| | | | Willingness to help | 0.712 |
| | | | Error-free-Records | 0.703 |
| | | | Doctors professional-experience | 0.548 |
| | | | Fulfillment of Promised services | 0.513 |
| | | | Comfortable nurses' services | 0.492 |
| F2 | 12.71 | Reliability of Services | Accuracy of Patients Records | 0.763 |
| | | | Feeling safe | 0.668 |
| | | | Capability to handle patients | 0.566 |
| | | | Regularity of services | 0.452 |
| | | | Regular water and electricity | 0.444 |

Cont... Table: 6: Factors Extracted, Percentage of Variance and Loadings of Public-Hospitals

| | | | | |
|----|--------|----------------------------|------------------------------------|-------|
| F3 | 11.673 | Effectiveness of Treatment | Doctors' knowledge | 0.843 |
| | | | Recovering before discharge | 0.683 |
| | | | Doctors' Explanation of treatment | 0.486 |
| F4 | 10.259 | Ease to Access | Doctor's care | 0.848 |
| | | | Individual Attention | 0.767 |
| F5 | 8.073 | Nominal Charges | Nominal Charges | 0.786 |
| | | | First correct treatment | 0.677 |
| F6 | 6.208 | Empathy | Understanding of problem | 0.831 |
| | | | Nurse' explanation of prescription | 0.475 |

In public-hospitals the tangibility and regularity of services followed by reliability of services, effectiveness of treatment, ease to access, nominal charges and empathy are major factors.

V. Conclusion and Policy Implications:

CONCLUSION

In this study respondents preferred public-hospitals mainly due to nominal cost and experienced doctors. Although some public-hospitals provides quality services too, but still people perceived their services of low-quality. Private-hospitals are always preferred because of providing good quality-of-treatment and for using high-end-technology.

There is a significant gap between the private and public-hospitals, they have to concentrate on suggested factors achieving customer satisfaction. Public-hospitals have more experienced-doctors but lack in use of technology and quality of treatment. So government has to take initiative to bring high-end-technology to raise their quality of treatment. Private-hospitals are providing all the facilities but study indicates that still there is a lack of experienced-doctors.

Policy Implications: These findings will contribute towards a constructive paradigm shift and an improved perception of service quality in hospitals.

- Identification of factor affecting service quality to know the need of the customers and then design the services accordingly.

- The hospital administration should prepare a checklist of required factors to train and manage

hospital-operations.

- A well-established healthcare infrastructure delivering high-quality-care is not only beneficial to the public and quality of life but is also one of the main prerequisites for the economic development of the country.

- The hospital managers and policymakers can develop strategies to meet patient's expectations of service-quality, restore patient's trust in public-hospitals and increase their competitiveness.

- To increase the patient satisfaction towards the service quality, hospital should invest more in professional communication skills and problem-solving abilities of the medical-staff.

- The continuous training and evaluation of physicians and nurses, adequate availability of drugs, tangibility/amenities of care, adequate treatment and delivering promised services are critical issues to increase reliability in healthcare organizations.

LIMITATIONS OF THE STUDY

Due to geographical, socio-economic or cultural disparities, our results are mere an indication and might not be applicable to all hospitals in India. A bigger sample size covering more geographical areas and more hospitals in the country could make the findings more robust. As in the present study, only five dimensions have been considered, in future more of the dimensions and variables can be included for better results. A sustainable growth of the healthcare sector can be maintained by regular evaluation of the service quality.

Appendix I: Variables

| TANGIBILITY | RELIABILITY | RESPONSIVENESS | ASSURANCE | EMPATHY |
|--|---|--|--|--|
| Modern-equipment-Availability | Fulfillment-of-Promised-services | Willingness-to-help-patients | Charges-of-Hospitals-are-nominal | Individual-Attention-towards-Patients |
| Visually-Appealing-Facilities | Maintenance-of-Error-free-Records | Nurses-are-responding-to-patients-call-immediately | Delivering-Correct-treatment-for-first-time | Caring-towards-Patients-from-Doctors |
| Doctors-Professional-Appearance | Knowledge-of-Doctors | Nurses-are-providing comfortable-services | Feeling-safe-in-the-hands-of-doctor | Convenient-hours for-consulting-doctors |
| Hospitals-Providing Regular-water-supply-and-electricity | Problems-of-patients-were-resolved-immediately | Regularity-of-Services-provided-by-hospitals | Accuracy-of-Patients-Records | Understanding-of-problem-by-Doctors-and-Nurses |
| Cleanliness-of-wards-Bedding-and-Floor | Doctors-making-you-to-well-recovered-before-discharging | Explanation-of-Treatment-properly-by-Doctors | Hospital-capable to-handle-patients-problems | Explanation-of-prescription-by-Nurses |

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Fire Safety Measures: Awareness and Perception of Health Care Professionals in Coastal Karnataka

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ABSTRACT

Introduction: Globally more than three hundred thousand people die from burn related injuries. It is also one of leading cause for disability and deformities. Lack of safety consciousness, stringent laws and substandard household cooking equipments has led to the increase in incidences. **Objectives:** To assess the awareness of fire safety measures, among health care personnel in tertiary care teaching hospitals in Mangalore. **Materials and Methods:** This cross sectional study was conducted at two tertiary care teaching hospitals of Mangalore among 105 health care professionals. Data was collected by using the semi structured questionnaire. Collected data was entered and analyzed using statistical software SPSS version 11.5. **Results:** The study comprised of doctors (n=72, 64.8%) and paramedical personnel (n=39, 35.2%). Majority of the participants were in the age group of 20-30 years (n=64, 57.7%) followed by those were in the age group of 31-40 years (n=26, 23.4%). Most of the participants were aware regarding the activation of fire alarm (n=96, 86.5%) and contacting fire department (n=105, 94.6%) in case of fire emergencies. Less than half of the health care personnel (n=54, 48.6%) were aware that pressurized water has to be used in case of Class A fires. Usage of Carbon dioxide for Class B fires was known only to one fifth of study participants (n=24, 21.6%). **Conclusion:** The general perception regarding fire safety measures was found to be adequate, but the particulars regarding the type of fire extinguisher to be used in different fire mishaps was minimal among the health staff working in the hospital.

Keywords: Fire, Mangalore, Health Care Professionals

INTRODUCTION

Globally more than three hundred thousand people die from burn related injuries. It is also one of leading cause for disability and deformities. It also has effects on mental, social and economic aspects of the victims. It most commonly affects the deprived

population and more than 90% of the reported cases are from low and middle income countries.¹ Nearly 60-70 lakh people are affected in India every year from burn related injuries which is the second largest cause after road accidents. More than 90% of burn related injuries are preventable. Lack of safety consciousness, stringent laws and substandard household cooking equipments has led to the increase in incidences.²

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The National Accreditation Board for Hospitals & Healthcare Providers (NABH) has set benchmarks for progress of health industry of which Fire Safety Standards has been given prime importance.³ However, hospitals may be well equipped with all the gear required to combat a fire emergency, but lack of knowledge among the staff regarding its

usage will prove it futile. In December 2011 there was an ill-fated incident which took place in Kolkata which resulted in loss of around 90 lives.⁴ In January, 2013, two cases of fire have been reported by reputed tertiary care teaching hospitals in Mangalore.⁵ Thus, awareness among hospital personnel about the safety measures and guidelines to be followed is of utmost importance.

These incidents have provoked the need for a study which aims to assess the awareness of fire safety measures, among health care personnel in tertiary care teaching hospitals in Mangalore.

MATERIALS & METHOD

Ethical committee approval was sought before the commencement of study from Institutional Ethics Committee of Kasturba Medical College, Mangalore. A cross sectional study was conducted at two tertiary care teaching hospitals of coastal Karnataka attached to Kasturba Medical College. The sample size of 105 was calculated by assuming 50% of health care professionals were aware of fire safety measures to be adopted in a fire accident with 10% absolute precision, 95% confidence level and taking a non-response rate of 10%. The present study was conducted among the health care professionals of the above mentioned hospitals comprising of doctors, staff nurses, lab technicians with minimum work experience of one year in the hospital. Non probability sampling technique was used to select the study population. Permission from the Medical Superintendents of the above hospitals was obtained at the beginning of the study. Health care professionals were approached individually and were told about the purpose of the study and a written informed consent was taken from all those willing to participate. Data was collected by using the semi structured questionnaire which was prepared after extensive literature review and by asking experts. The questionnaire had information related to socio-demographic details of study participants, knowledge regarding fire safety measures to be adopted in a case of fire accident. The questionnaire was distributed to the participants of the study. Collected data was entered and analyzed using statistical software 'Statistical Package for Social Sciences' (SPSS) version 11.5. Descriptive statistics like mean, proportions and standard deviation were used for expressing the results.

FINDINGS

Baseline characteristics of the study participants were shown in Table 1. This study included 111 health care personnel comprising of doctors (n=72, 64.8%) and paramedical personnel (n=39, 35.2%). Majority of the participants were in the age group of 20-30 years (n=64, 57.7%) followed by those were in the age group of 31-40 years (n=26, 23.4%). The study included 52.3% males (n=58) and 47.7% were females (n=53). Most of the study subjects who participated in the present study had a work experience of ≤ 5 years (n=86, 77.5%) and remaining had an experience of more than five years (n=25, 22.5%).

Table 1: Baseline characteristics of study participants (n=111)

| Baseline characteristics | Number | Percentage |
|----------------------------------|--------|------------|
| Age (Years) | | |
| 20 – 30 | 64 | 57.7 |
| 31 – 40 | 26 | 23.4 |
| 41 – 50 | 16 | 14.4 |
| > 50 | 05 | 04.5 |
| Gender | | |
| Male | 58 | 52.3 |
| Female | 53 | 47.7 |
| Health care professionals | | |
| Doctors | 72 | 64.8 |
| Paramedical Personnel | 39 | 35.2 |
| Experience (Years) | | |
| ≤5 | 86 | 77.5 |
| > 5 | 25 | 22.5 |

It was observed from the present study that most of the participants were aware regarding the activation of fire alarm (n=96, 86.5%) and contacting fire department (n=105, 94.6%) in case of fire emergencies; whereas only 72 health care personnel (64.9%) were aware of the fact that one has to use stair case farthest away from the fire has to be used in case of fire mishaps as shown in Table 2.

Table 2: Awareness of guidelines to be followed in case of fire emergencies (n=111)

| Fire safety guidelines | Number* | Percentage |
|---------------------------------------|---------|------------|
| Activate fire alarm | 096 | 86.5 |
| Call fire department | 105 | 94.6 |
| Use staircase farthest away from fire | 072 | 64.9 |

*Multiple Responses

Table 3: Distribution of study participants according to correct usage of fire extinguishers (n = 111)

| Type of fire | Type of fire extinguisher to be used | Frequency of correct response | Percentage |
|--------------------------------------|--------------------------------------|-------------------------------|------------|
| Class A Fires: Wood, paper, textiles | Pressurized Water | 54 | 48.6 |
| Class B Fires: Oil, paint, grease | Carbon Dioxide | 24 | 21.6 |
| Outdoor Fires | Dry Chemical Powder | 08 | 07.2 |

When the perception regarding fire safety was assessed; 87% of the study participants opined that electrical defects were one of the major causes of fire mishaps. It was also observed the 55% of the health care personnel perceived that human negligence is also one of the important cause of fire tragedies in the hospital. More than half of the study participants (61%) rightly disagreed to the fact that water should be used to douse an electric fire. Details were shown in Table 4.

Table 4: Perception regarding fire safety among study participants (n = 111)

| PERCEPTION | Agree (%) | Disagree (%) | Not sure (%) |
|--|-----------|--------------|--------------|
| Electrical defects are one the major causes of fire in hospitals | 87 | 05 | 08 |
| Water should be used to put out an electrical fire | 15 | 61 | 24 |
| Human negligence such as inattentiveness and smoking in the hospital is a major cause of fire in hospitals | 55 | 25 | 20 |
| In order to help a person on fire, one should cover him with a blanket to diffuse the flames | 84 | 08 | 08 |
| Garbage or Waste paper is a source of ignition in hospitals | 55 | 24 | 21 |

DISCUSSION

There has been an upraise in the fire related accidents in the public gatherings in the recent years especially in the developing countries. These untoward incidents can be very fatal if it occurs in health care settings. This is because of the victims involved in such tragedies are more vulnerable. The safety of health establishments has been a priority for World Health Organization which is reflected in the World Health Day 2009 theme "Save Lives. Make Hospitals Safe in Emergencies" where in the

It was noted as shown in Table 3 less than half of the health care personnel (n=54, 48.6%) were aware that pressurized water has to be used in case of Class A fires. Usage of Carbon dioxide for Class B fires was known only to one fifth of study participants (n=24, 21.6%) and the knowledge regarding the usage of dry chemical powder during outdoor fire accidents was found to be minimal (n=08, 7.2%).

WHO has urged member countries to implement guidelines for responding in emergency situations such as fire mishaps for withstanding the disaster so as to provide uninterrupted patient care. Despite all these efforts there has been negligence on the part of hospital authority in implementing these guidelines. This has lead to many such fire tragedies across the country which resulted in loss of much human life.⁶

According to National Accreditation Board for Hospitals and Healthcare Providers which is a constituent board of quality control council in

India established mainly for accreditation of health care facilities, quality promotion in health facilities and education & training for quality and patient safety; each health care establishment should have a fire safety manual, mock drills for the hospital personnel, well defined fire exits and fire signage at appropriate places, establishment of fire alarming systems and proper training programme for handling fire emergencies. NABH has reemphasized the importance of fire safety training for the entire staff of health establishments on a regular basis. It has been recommended that all the health care staffs must be aware of firefighting system at the health establishments, measures to be followed during fire mishaps, exit route and techniques, correct usage of fire extinguisher.^{3,7} However, almost one third of the health care professionals in the present study were unaware of the fact that staircase farthest away from the fire must be used as an exit route in case of fire emergencies. But the awareness regarding activating fire alarm among health care staffs was satisfactory. Though it is advisable that all the health staffs employed in health care facility must know the correct usage of fire extinguisher for different types of fire accidents, it was seen from our study that a significant proportion of health professionals were not aware of using specific type of fire extinguisher. It was obvious from our study that most of the health staffs were under the impression that electrical defects, human negligence and ignition due to garbage at the hospitals were the major causes of fire accidents in the hospitals. Majority of the study participants perceived that water should not be used for electric fire accidents.

CONCLUSION

The general perception regarding fire safety measures was found to be adequate, but the particulars regarding the type of fire extinguisher to be used in different fire mishaps was minimal among the health staff working in the hospital. Every attempt should be made at each and every level of health facilities to ensure all the health staffs are adequately trained in fire management, active participation during fire mock drills which has to be conducted on a regular basis as patient safety being a fundamental principle in health care.

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Health Services Responsiveness during Political Unrest in Bangkok, Thailand

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ABSTRACT

Background: The 2013–14 was a period of political instability in Thailand. Anti-government protests rigorously took place between November 2013 and May 2014 with demonstrators occupying government offices, blocking major road intersections and holding mass rallies in Bangkok, a capital city, to call for the Prime Minister (PM)'s resignation and her government. We aimed to share the snapshots of health services responsiveness during recent political unrest in Thailand.

Method: We conducted an observational study to describe the evolution of health services delivery system in all protest areas in Bangkok from 14th December 2014 to 17th January 2015, and health assessment was done during 12–21 March 2014.

Results: Four phases of health services responsiveness were demonstrated: Non-medical staffs, medical staff involvement, team formation, and network system. Eleven health service units were organized to serve 13 satellite rallying locations with accessible range from 10 to 800 meters. 63.6% of health service units had at least one part-time physician. All units were staffed with nurse, pharmacist, and other non-medical volunteers. Morning and evening were busy hours. Social media and social networks have played a major role in health-related resources pooling, allocation and reallocation. Common health problems were usually accommodated by self tolerance or taking care by health services units in the protest areas.

Conclusion: Political unrest brings about negative impacts to population health. We emphasize the necessity of multi-sectoral collaboration in health services preparedness and proper channels for communication for effective responsiveness.

Keywords: Health services, Political unrest, Political instability, Preparedness, Responsiveness.

BACKGROUND

The 2013–14 was a critical period of political instability in Thailand. Anti-government protests

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rigorously took place between November 2013 and May 2014, mainly organized by the People's Democratic Reform Committee (PDRC), a political pressure group set up and led by former members from opposition party. Deeply divisive in Thailand, the primary aim of the protests was the removal of former Prime Minister (PM)'s influence on Thai politics and the creation of an unelected "people's council" to oversee reforms of the political system. Protesters viewed former PM as highly corrupt and damaging to Thailand's democracy, although they

enjoyed strong support in many areas of Thailand, particularly the poorer north, due to his reforming social programs and economic policies. Political parties allied to him have won a majority in every election since 2001. Other issues, such as a rural-urban or north-south divide, social inequality and inequity, over-centralized bureaucracy, and military influence in politics and middle-class status have also been seen as factors behind the crisis by analysts and commentators¹⁻².

Initially, the protests were triggered by a proposed blanket amnesty bill that would pardon several politicians from various charges since 2004. Opposition from across the political spectrum, including the pro-government Red Shirt movement, caused the bill to be rejected unanimously by the Senate of Thailand. Anti-government protests continued, however, with demonstrators occupying government offices, blocking major road intersections and holding mass rallies in Bangkok to call for the PM's resignation and her government. On 8th December 2013, all 153 opposition party members resigned, and the PM dissolved the House of Representatives following with her calling for a snap general election on 2nd February. Voting was disrupted in areas of Bangkok and Southern Thailand by PDRC protesters blocking entry to polling stations, leading to an annulment of the result by the Constitutional Court. Sporadic violence, including shootings, bomb attempts and grenades thrown at protesters, led to 28 deaths and over 800 injuries during the course of the protests. On 21st January, PM's government declared a state of emergency in Bangkok and the surrounding areas with very little effects. The protests finally resulted in the removal of the incumbent prime minister, a coup d'état and the establishment of a military junta in May 2014².

Since health services provision and political instability have been demonstrated to be an important issue among several countries in the past decades, this study aimed to share the snapshots of health services responsiveness during recent political unrest in Thailand in order to be a lesson-learnt for health authorities to better plan for preparedness system future unrest events³.

MATERIAL & METHOD

We conducted an observational study to gather descriptive data regarding the evolution of health services delivery system in all protest areas in Bangkok from 14th December 2014 to 17th January 2015. Subsequently, Health and environmental assessments were done during 12-21 March 2014 at Lumpini park, which was the main protest area in Bangkok during late stage of protest, by using interviewer-administered questionnaire, in-depth interview, and focus group discussion in accordance with convenience and voluntary agreement with the key informants and surroundings.

FINDINGS

During 4-month period of observation, the main area taken by the protesters was Bangkok, a capital city of Thailand. Satellite rallies were organized throughout Bangkok from time to time with permanent stages of the rally speeches near major government agencies.

It was obvious that health services delivery system in response with emerging health problems from political unrest in Bangkok had evolved over time and can be divided into four phases as shown in Figure 1.

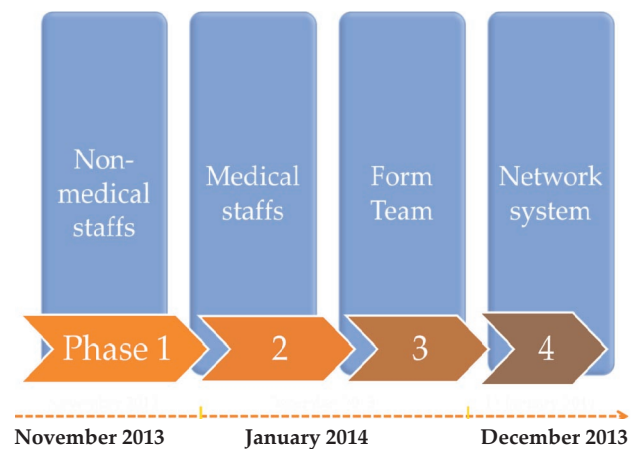


Figure 1: Four phases of health services development in protest areas

Phase 1: No medical professional involvement. This stage was noted in early stage of protest in November 2014. Those injured from the attack in unrest situation were sent to nearby hospitals by the protester group.

Phase 2: Beginning of medical professional involvement. 2-3 weeks after phase 1, individual medical professional began participating in health service provision in the field. Basic medicines as well as other medical supplies were still limited and had been donated from those medical professionals in protester group.

Phase 3: Team formation. Since there were satellite protest areas throughout Bangkok, the protesters reconciled and medical team formation was observed during this period, around mid December 2014. Medical team mostly comprised physician, nurse, pharmacist, and non-medical volunteers. Medicines and related supplies were still acquired by donation within each protester group.

Phase 4: Network system. In January 2015, the protesters reshaped their plans with the result of network formation. Individual node from several areas had been working together to effectively and efficiently provide health services, share, and transfer medicines and medical supplies using mobile and social networks. Government and private agencies from various provinces willingly participated in this phase, and took turn to provide health services in protest areas.

Accessibility to healthcare services in protest areas

Eleven health service units were organized to serve 13 satellite stages of the rally speeches (Figure 2-4). Some stages were temporarily organized at specific occasions. Four main stages were permanently located with regular activities. The distance between each stage and allocated health service units was in the range of 10-700 meters, whereas the distance from the end of protest area to health service units were 50-800 meters.

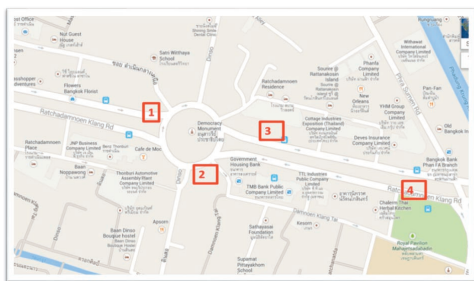


Figure 2: Location of 11 health services units surrounding 1st main stages
(Star: main stage, Number: each health services unit)

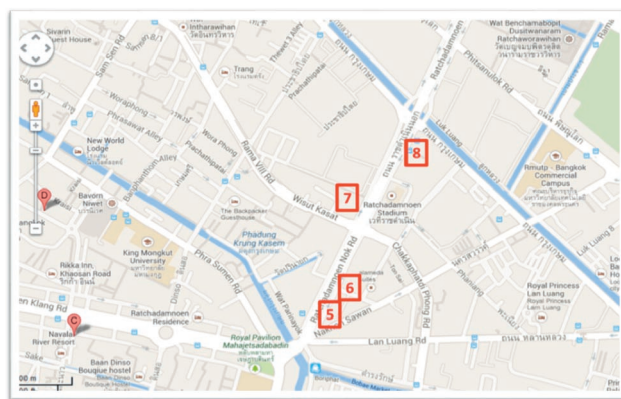


Figure 3: Location of 11 health services units surrounding 2nd main stage
(Star: main stage, Number: each health services unit)

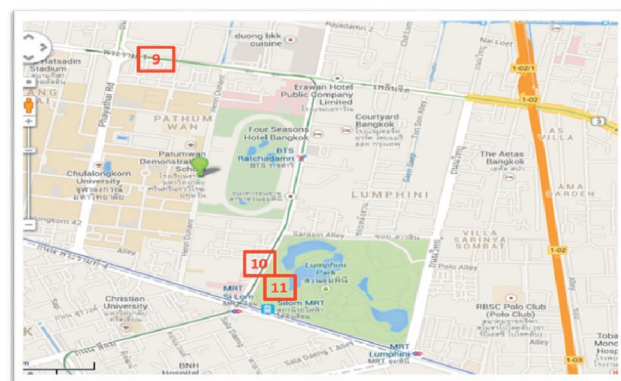


Figure 4: Location of 11 health services units surrounding 3rd and 4th main stages
(Star: main stage, Number: each health services unit)

Service provision and utilization

The staff in all health service units served all people under non-discrimination policy. There was at least one part-time physician in 63.6% of health service units. All units were staffed with nurse, pharmacist, and other non-medical volunteers. If the patient needed physician attention, those units without physician would refer to another unit or nearby hospital where the physician was on duty. Ambulances were standby in order to promptly transport to appropriate facility within 15-20 minutes. Most stations operated all day long, however, 0600-0900 AM and 0600-0900 PM were usual busy hours. Approximately, each unit served 1,000 visits daily.

Self reliance capacity on human resources and medical supplies

Almost all units exercised similar strategies to acquire their personnel. Successful strategies included social network communication such as Facebook, Line, as well as calling through friend networks and

snowball technique. In light of money, medicines, and other medical supplies, most units were independent to each other, and managed their own supplies. Those resources were donated from their own connections which came from friends, private sector, and public donation through mass media campaign except some health service units that were responsible by public hospitals or foundation.

Health assessment in protest area

At later stage of protest, we conducted a rapid health assessment at Lumpini park that was the main protest area during March 2014. Protesters can be categorized into 2 groups: those who stayed all day all night in the park during protest period, and those who travelled back and forth by working during daytime and rallying during evening and night time. 490 people were invited and voluntarily participated in this anonymous 1-week survey during daytime for safety reason and to focus on regular and all-day-long protesters.

Almost 80% of respondents were protesters, 16.7% served as guards, and the remaining included leaders, volunteers, and sponsors. 53.3% were female with average age of 49.19 years (± 13.26). Nearly quarter of participants (23.1%) were elderly, i.e., more than 60 years. 73.6% were from Southern region of Thailand. More than half (53.2%) graduated at primary school level, whereas 26.9% at secondary school level and 9.4% at bachelor degree. 52.8% were farmers with average monthly salary more than 20,000 baht (approximately US\$700). Only 3.6% indicated that they had no salary and unemployed.

Some interviewees expressed the nature of rallying participation that they took turn with their neighbors in their provinces either monthly or biweekly. Among survey participants, 92.4% continuously stayed in the park for rallying less than two weeks. More than half of respondents have rallied at least 3 stages during 4-month duration (Table 1).

Table 1: Rallying characteristics

| Rallying characteristics | Number | Percentage |
|---|--------|------------|
| Participating rally locations(n=498) | | |
| Lumpini | 401 | 80.5 |
| Ladprao | 92 | 18.5 |
| Chaengwattana | 78 | 15.7 |
| Silom | 92 | 18.5 |
| Pathumwan | 259 | 52.0 |
| Asoke | 88 | 17.7 |
| Victory monument | 131 | 26.3 |
| Rajaprasong | 137 | 27.5 |
| Chamaimaruchet | 52 | 10.4 |
| Rajadamnearn | 333 | 66.9 |
| Samsen | 72 | 14.5 |
| Urupong | 51 | 10.2 |
| Others | 24 | 4.8 |
| Status in protest (n=496) | | |
| Leaders | 7 | 1.4 |
| Guards | 83 | 16.7 |
| Volunteers | 10 | 2.0 |
| Protesters | 393 | 79.2 |
| Sponsors | 3 | 0.6 |
| Rallying duration (n=470) | | |
| 1-7 | 108 | 23.0 |
| 8-14 | 326 | 69.4 |
| >14 | 36 | 7.7 |

Regarding baseline health status and health-related issues, we found that one-third of the respondents indicated that they had common underlying diseases such as hypertension, diabetes, and hyperlipidemia. Due to quite long period of the protest, we also assessed their perception on their physical activity by comparing between before rallying period and in rallying period. It was interesting that 40% pointed out that their physical activities were more than their routine life as shown in Table 2.

Table 2: Baseline health status and perception on physical activity

| Baseline health status and physical activity | | Number | Percentage |
|---|-----------------|--------|------------|
| Underlying diseases (n=493) | | | |
| | Yes | 177 | 35.9 |
| | Hypertension | 58 | 32.8 |
| | Diabetes | 28 | 84.2 |
| | Hyperlipidemia | 20 | 11.3 |
| | No | 316 | 64.1 |
| Perception on physical activity during rallying (n=495) | | | |
| | As usual | 126 | 25.5 |
| | More than usual | 200 | 40.4 |
| | Less than usual | 169 | 34.1 |

We explored common health problems among the protesters and how they dealt with those problems as demonstrated in Table 3. Most health complaints were rarely required healthcare at hospital or clinic due to long distance and high costs. Most people decided to tolerate for a while or go directly to health services units in surrounded areas.

Table 3: Common health problems among the protesters and treatment decision

| Chief complaints | Treatment decision (N(%)) | | |
|-------------------------|---------------------------|----------------------|------------------|
| | Self tolerance | Health service units | Hospital/clinics |
| Fever (n=85) | 9 (10.6) | 72 (84.7) | 6 (7.1) |
| Cough(n=142) | 26 (18.3) | 109 (76.8) | 7 (4.9) |
| Sore throat(n=117) | 18 (15.4) | 93 (79.5) | 8 (6.8) |
| Runny nose (n=79) | 9 (11.4) | 66 (83.5) | 5 (6.3) |
| Headache(n=86) | 22 (25.6) | 60 (69.8) | 3 (3.5) |
| Nausea/ vomiting(n=8) | 0 (0) | 8 (100.0) | 0 (0) |
| Abdominal pain (n=18) | 3 (16.7) | 14 (77.8) | 2 (11.1) |
| Diarrhea (n=38) | 14 (36.8) | 24 (63.2) | 0 (0) |
| Dyspepsia (n=30) | 18 (60.0) | 12 (40.0) | 0 (0) |
| Itching(n=86) | 47 (54.7) | 39 (45.3) | 0 (0) |
| Dermatitis (n=7) | 5 (71.4) | 2 (28.6) | 0 (0) |
| Scabies(n=2) | 0 (0) | 2 (100.0) | 0 (0) |
| Tinnitus(n=7) | 5 (71.4) | 1 (14.3) | 1(14.3) |
| Fainting (n=14) | 6 (42.9) | 8 (57.1) | 0 (0) |
| Muscle ache (n=135) | 67 (49.6) | 64 (47.4) | 4 (3.0) |
| Wound (n=8) | 0 (0) | 8 (100.0) | 0 (0) |
| Insomnia(n=79) | 66 (83.5) | 11 (13.9) | 2 (2.5) |
| Loss of appetite (n=32) | 27 (84.4) | 5 (15.6) | 0 (0) |
| Insect bites (n=28) | 24 (85.7) | 4 (14.3) | 0 (0) |
| Conjunctivitis (n=3) | 0 (0) | 3 (100.0) | 0 (0) |
| Others (n=44) | 18 (40.9) | 23 (52.3) | 2 (4.5) |

DISCUSSION

From our 4-month observational study of Thailand's one of the most political unrest situations, it is worth noting that political conflict has brought

about several phenomena. First of all, as indicated in our finding of four phases of health services development in the protest areas, first two phases can be explained by reluctance from most of health professionals whether or not to be careful of their

manners, and how they should do something to help the people. Since political conflict is quite sensitive, we observe that there have been many criticisms from both pro-government and anti-government sides before and when health professionals entering the protest areas to help people. Secondly, it is obvious that social media and social networks have played a major role in health-related resources pooling, allocation and reallocation during this political unrest. Although there have been some evidences regarding their roles in various health and non-health situations, there is limited evidence specific to political unrest situation⁴⁻⁸. Lastly, most of health services units are quite independent to each other. When they encountered operational problems such as lacks of medicines and medical supplies, most of them tried to solve by asking to borrow or getting from other units by their own hands with limited capacity. Besides the quantity of resources, there have been some speculations on the quality of resources acquired from many sources that might negatively affect the health outcomes on consumers. To our perspective and from our research findings, ideal health services preparedness for unrest situation should be collaboratively planned through multi-sectoral stakeholders including governmental agencies, private sector, health and non-health foundation, and civil society representatives. Planned communication channels are essential and should be triggered at proper moment. Since future political conflicts might be unavoidable either at local, national, regional, or global level, both aforementioned recommendations should be taken into account by related authorities so that effective responsiveness can be achieved when it comes.

CONCLUSION

Political unrest brings about negative impacts to population health in all dimensions: physical, mental, social, and spiritual. Health services preparedness for such situation should be priority well-planned. Our lessons learnt from political unrest in Thailand point out necessity for multi-sectoral collaboration in health services preparedness, and proper channels for communication to foster effective responsiveness when the time comes.

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Conflict of Interest: None

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Evaluation of Potential Public Health Risk Associated with Waste Water Treatment in Some Halal Abattoirs of Malaysia

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ABSTRACT

Background: Abattoir waste can be detrimental to humans and the environment if proper precautions are put in place. In general, the major environmental problem is linked to abattoir liquid wastes which serve as vehicle for dissemination of pathogenic microorganisms. Epidemiological investigations have implicated food and water as most common vehicle for infections cause by pathogens such as *E.coli* O157:H7. **Method;** A cross-sectional study was performed to assess potential health risk of liquid waste disposal from some selected Halal abattoirs in Malaysia. A total of 120 waste water samples were collected. Total coliform count was performed to determine the levels of pollution before and after filtration. Cultural, Biochemical and serological tests were used for identification and characterization of the isolates. **Results:** Results showed that the abattoir located in Dungun in Terranganu region had the highest cfu/ml before (2200) and after waste water filtration while Senawang abattoir in Negeri Sembilan had the lowest. Highest occurrence rate of *E.coli* were recorded in Shah Alam, Banting and Tampin(40% each). Non-O157:H7 *Escherichia coli* were found to be present in almost all the abattoirs before waste water filtration. Samples collected after discharge revealed that five of the abattoirs had 100%. Other pathogenic bacteria isolated from the abattoirs include *Salmonella enteritidis* and *Citrobacter freundii*. **Findings:** Occurrence of pathogenic bacteria coupled with increased total bacteria count have indicated alarming risk of dissemination of harmful bacterial into the environment. **Conclusion:** Effectiveness of waste water treatment was found to be very low in most of the abattoirs from the assessment.

Keywords: waste water, *Escherichia coli*, Water treatment, Public health, Risk Assessment

INTRODUCTION

Zoonotic infections are mainly transmitted by water and may create a serious threat to global health and the economy. Estimated figures showed that 33% of the world's population which could increase to about 70% by the year 2025. About 20% of the world's population in 30 countries faces water shortage ^[1]. It is estimated that 3 billion people will face water shortages within the next two decades and water use

is expected to increase by 40% by then. In, Asia, Africa and Latin America, approximately 600 million urban inhabitants thrive in homes or neighborhoods that lacks proper sanitation^[2].

Additionally, more than a billion people have increased risk to diarrheal and parasitic diseases due to lack of access to safe drinking-water. Abattoir wastewater refers to water used in the washing of slaughtered animal carcasses, slaughter equipment and the floor/wall of slaughter hall ^[3]. Generally, wastewater contained high concentration of suspended solid particles of semi-digested and undigested feeds^[4]. Abattoir waste may pose serious

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public health burden to human population and the environment if appropriate precautions are not implemented. The continuous need to increase meat production for the protein needs of the ever increasing world population has been related to serious health and environmental problems [5] [6]. Abattoirs or slaughter houses are generally less equipped in developing countries compared to developed countries, where Environmental Impact Analysis and treatment are considered before constructing the abattoir. The negative impact on the environment include introducing microbes into the soil surface and ground water [7]. Abattoir waste may get bound to the soil leading to an anaerobic condition where oxygen becomes less available. Release of wastes containing high concentration of microbial nutrients by abattoirs would definitely promote an after growth of significantly high coliform bacteria and other microbial forms both in the effluent and the receiving waters [8].

Furthermore, leaching to ground water is a major concern from the environmental Health point of view [9]. It can lead to the production of large quantities of mal-odorous gases. Abattoir effluent may considerably affect human health, portable water, agriculture and ecology of aquatic species and has become a major problem for many urban communities. Some pathogenic microorganism can survive in the effluents and run off into the environment contaminating vegetation through irrigation water, especially in areas where sewage effluents are collected in reservoirs and used for agricultural purposes [10]. Epidemiological investigations have implicated food and water as most common vehicle for infections cause by *E.coli* O157:H7. Raw vegetables such as lettuce have been implicated in many outbreaks [11]. Although a source of infection has only occasionally been ascertained, epidemiological and bacteriologic evidence have revealed that both food-borne and water-borne transmission, especially in association with ground-beef products (e.g., hamburgers), and raw milk [12]. Water sources including recreational water well water and even municipal water system, have also been associated [13] well water and even municipal water system [14] have also been associated with outbreaks. Recreational waters such as beach water are susceptible to fecal contamination which may increase in health risk associated with swimming

in polluted beach water [15].

Epidemiological evidence has also supported relationship between *E.coli* O157:H7 and incidence of gastrointestinal illness following recreational water exposure and provide basis for water quality regulations [16]. *E.coli* O157:H7 has been isolated from surface water and can survive for many weeks in these kinds of environments [17]. Commonly wastewater is discharged with little or no treatment in natural water bodies, which can become highly polluted. Farmers in urban and semi-urban areas of almost all developing countries who are in need of water for irrigation have often no other option than using wastewater. They even intentionally use undiluted wastewater as it provides nutrients or is more available or cheaper than other water sources [18]. This practice can negatively affect human health and the environment, despite farmers good reasoning [19] The association of waste water and risk to human health has been assessed in various countries such as Morocco, Israel, Mexico and Pakistan, where waste water is frequently used for irrigation [20]. To our knowledge very few studies were conducted in Malaysia to assess waste water disposal by cattle abattoirs into the environment. Hence, there is a need for a study to be carried out to assess the microbiological quality of abattoir waste water so that prompt measures can be taken to prevent the dissemination of pathogens in the environment.

MATERIALS & METHOD

STUDY LOCATION; Tampin, Shah Ahlam, Senawang, K.Pilah, Banting, Kuantan, Kemaman, Dungun, Alor Gajah, Jasin, Ipoh, Teluk Intan

SAMPLES COLECCTION: A total of one hundred and twenty (120) samples were aseptically collected using grab sampling method. Sterile Universal bottles with wide mouth with tight screw dust proof stoppers were used for sampling. Waste water samples were collected at the abattoirs from a point where it is thoroughly mixed (before filtration) and the discharging point (after filtration) below the surface. Samples for the microbiological analysis were placed on ice pack during transportation to the laboratory and kept refrigerated at 4°C and process within 24h as described by Nafarnd *et al.*, 2012 [21]. Total coliforms and *E.coli* were analyzed by membrane

filtration method. Membrane filtration technique was employed for enumeration of *E. coli* counts using the filter membrane (Merck, Germany) with a pore size of 0.44 µm. The filter disk was then carefully removed and placed on MacConkey agar (Merck, Germany). Colonies of *E. coli* were characterized biochemically based on methods previously described [22]. Isolates identified biochemically as *E. coli* were further screened on Cefixime Tellurite Sorbitol MacConkey agar (Merck, Germany) by incubation for 24 hrs at 37 °C. *E. coli* O157:H7 appeared colorless, while Non-O157H7 appeared pink^[23]. Colonies that appeared colorless (non-Sorbitol fermenters) on CT-SMAC were presumptively identified as *E. coli* O157:H7 and were preserved on nutrient agar slant for confirmation using Slide agglutination test. Isolates that were colorless were serotyped using Serotest® for *E. coli* O157:H7 (S&A Lab., Thailand), a polyclonal antibody produced for serological identification based on agglutination method.

RESULTS

Table 1: Total coliform counts cfu/100ml of waste water before and after discharge into the environment

| Abattoir | Total coliform cfu/100ml | |
|------------|--------------------------|-----------------|
| | Before Discharge | After Discharge |
| Shah Alam | 2100 | 2150 |
| Banting | 1810 | 1500 |
| Senawang | 1310 | 50 |
| K.pilah | 1340 | 120 |
| Tamping | 1890 | 150 |
| Alor Gajah | 1440 | 1240 |
| Jasin | 2000 | 1030 |
| Ipoh | 1430 | 110 |
| T.Intan | 980 | 60 |
| Kuantan | 1020 | 520 |
| Kemaman | 1950 | 1780 |
| Dungun | 2200 | 2250 |

Table 2. Prevalence of *E.coli* O157:H7 and Non-O157:H7 in abattoir waste water before and after discharge

| Abattoir | <i>E.coli</i> O157:H7 | | Non-O157:H7 | |
|------------|-----------------------|-------|-------------|-------|
| | Before | After | Before | After |
| Shah Alam | 40% | 0% | 100% | 100% |
| Banting | 40% | 20% | 100% | 100% |
| Senawang | 0% | 0% | 40% | 0% |
| K.Pilah | 20% | 40% | 100% | 20% |
| Tampin | 40% | 40% | 100% | 100% |
| Alor Gajah | 0% | 0% | 40% | 40% |
| Jasin | 0% | 60% | 100% | 60% |
| Ipoh | 20% | 0% | 60% | 0% |
| T.Intan | 20% | 20% | 60% | 20% |
| Kuantan | 0% | 0% | 0% | 0% |
| Kemaman | 20% | 20% | 100% | 100% |
| Dungun | 0% | 0% | 100% | 100% |

DISCUSSION

Results from the total coliform count showed that the abattoir located in Dungun had the highest cfu/100ml (2200) before waste water filtration while Senawang abattoir had the lowest. Highest cfu/ml was observed in Dungun from waste water samples collected after discharge as shown in Table 1. The figures exceed the recommended limit for waste water disposal [24]. Lack of waste water facilities in most of the abattoir may be linked with high cfu/ml and hence an indication of pollution. Similar findings were reported by Sarva *et al.*, 2013 (20-1940) [25] from Malaysia while Sherman *et al.*, 2007^[26] found the cfu/100ml to be 7291 in waste water samples collected in Zimbabwe. In addition, high prevalence of *E.coli* O157:H7 was recorded in some of the abattoir waste water before filtration. Highest occurrence rate were recorded in Shah Alam, Banting and Tampin (40% each). Zero prevalence was observed in Senawang, Jasin and Kuantan. Samples collected at the point of discharge indicated that Jasin had the highest prevalence of *E.coli* O157:H7 after discharge even though zero prevalence was recorded before filtration.

This can be pointed to the fact that the bacteria come from previous slaughtering process as not all the water used in the abattoir is usually discharged, small amount of water remain in the sewage tanks. Senawang abattoir recorded zero prevalence of *E.coli* O157:H7 before and after discharge (Table.2). For non-O157:H7, it was found to be present in almost all the abattoirs before waste water discharge, an exception was the Kuantan abattoir. High occurrence rate of the bacteria was recorded in seven of the abattoirs while Senawang had the lowest. Samples collected after discharge revealed that five of the abattoirs had 100% prevalence after discharge. The five abattoirs were observed to have no proper water treatment facilities and in some cases not fully functional which may be the reason for high pollution levels. Lowest figures were recorded in Senawang, Ipoh and Teluk Intan (0%) as shown in Table 2. The three abattoirs have functional facilities for waste water treatment as observed by the researchers.

Further more, some bacteria of medical of importance were isolated (*Salmonella enteritidis* and *Citrobacter freundii*). The total prevalence in the waste water before discharge was 63% and 47% for the two bacteria species while after discharge it remain unchanged for *S.entitidis* and 65% was recorded for *C.fruendii*. Factors contributing to the increase in prevalence of *C.fruendii* may be connected with the retention of the waste water in sewage tank in most of the abattoir. This will provide the bacteria with necessary nutrient to grow and reproduce.

CONCLUSION

Occurrences of pathogenic bacteria coupled with increased total bacteria count have indicated alarming risk of dissemination of harmful bacteria into the environment. Effectiveness of waste water treatment was found to be very low in most of the abattoirs from the assessment. Waste water retention was also found to be a contributing factor to the proliferation pathogenic bacteria which pose risk to human and environmental health. *Escherichia coli* O157:H7 as one of the major concern globally need to be controlled from disseminating in to the environment and can be achieved through regular surveillance. Effected waste water treatment should be put in place to tackle the potential public health dilemma that can arise from indiscriminate waste disposal.

RECOMMENDATION

More research needs to be conducted to provide more information on waste water disposal by the abattoirs. It recommended that advance techniques should be employed for the identification of the pathogenic bacteria. Environmental health education should be formulated to arrest the potential health risks associated with indiscriminate waste water disposal.

LIMITATION

The study is cross-sectional and there does not consider how some factors such as seasonal variation affects the occurrence rate of the pathogens and total coliform counts. Again the number of the samples taken may not be enough to favor generalized conclusion.

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Clinicopathological and Biological Behaviour of Malignant Pigmented Villonodular Synovitis – A Retrospective Analysis of 10 Cases

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ABSTRACT

Malignant pigmented villonodular synovitis (MPVNS) is a rare lesion whose existence may be debatable. We studied 10 cases of malignant pigmented Villonodular synovitis among the age group of 20-40yrs. Females dominated males in the incidence & wrist was the commonest joint involved presenting with pain & swelling in most of our cases & only 2 patients had restricted movements. In 3 cases MPVNS was found to be arising from the previous cases of benign PVNS & 7 cases were primary with histological features similar to that of secondary. Most of the MPVNS showed histological features like nodular, solid infiltrative pattern of the large, plump, round or oval cells with deep eosinophilic cytoplasm and indistinct borders, large nuclei with prominent nucleoli, and necrotic areas. Atypical mitoses were frequent about more than 10 /10hpf. 3 cases showed immunoreactivity for CD68, CD163, and vimentin. 3 cases recurred & died of pulmonary metastasis & inguinal lymph node metastasis in a span of 2 yrs.

The malignant nature of this lesion, the histologic architecture similar to that of PVNS, and the fibrohistiocytic appearance of the cells suggest that malignant PVNS is an entity. Thus corroborative evidence of clinical, pathological, radiological & immunohistochemical findings are essential in arriving at a definitive diagnosis & treatment of MPVNS.

Keywords: MPVNS, D-TGCT, osteoclast like giant cells, atypical mitotic figures, solid infiltrative, plump cells.

INTRODUCTION

These are rare tumors occurring predominantly in females most commonly seen in the age group of 20-40yrs, involving most commonly the smaller joints like wrist, local aggressive tumors, and some tumors have the tendency to metastasize to lungs.¹ These tumors can recur even after complete surgical resection.²

The designation malignant giant cell tumor of the tendon sheath/pigmented villonodular synovitis (MPVNS) is used for lesions in which a benign giant cell tumor or pigmented villonodular synovitis

coexists with frankly malignant areas. Clinically malignant cases are characterized histologically by a diffuse infiltrative growth pattern, scant giant cells, nucleomegaly and macronucleoli, tumor cell dyscohesion, necrosis, and mitotic counts of more than 10 mitoses/10hpf.³

Malignant tenosynovial giant cell tumour is defined by the presence of overtly malignant sarcomatous areas.⁴ The 2013 WHO Classification of Tumors of Soft Tissue and Bone classifies Diffuse tenosynovial giant cell tumor as a locally aggressive neoplasm characterized by high rate of local recurrences.⁵ The malignant nature of this lesion is the histologic architecture similar to that of PVNS, and the fibrohistiocytic appearance of the cells suggest that malignant PVNS is an entity.⁶ Important histologic features of malignancy are a nodular, solid infiltrative pattern of the lesion large, plump, round or oval

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cells with deep eosinophilic cytoplasm and indistinct borders, large nuclei with prominent nucleoli and necrotic areas.⁶ In addition to the predominant histiocyte-like cells, subpopulation of large dendritic, desmin-positive cells showing characteristic, but potentially misleading, cytologic features, including abundant eosinophilic cytoplasm, large vesicular nuclei, paranuclear eosinophilic inclusions, and occasional nuclear inclusions are seen.¹

MATERIALS & METHOD

This study comprises retrospective analysis of 10 cases of clinically suspected malignant pigmented villonodular synovitis from the clinical & surgical data received at dept. of pathology, J.J.M Medical College, Davangere.

Materials for study were obtained from Bapuji Hospital, Chigateri District Hospital, Woman and Children Hospital and from other well equipped private and Government Hospitals in and around Davangere.

Clinical information required for the study were obtained from the respective medical faculty and were recorded chronologically in the proforma and later categorized accordingly, which included complete clinical details, necessary investigations and procedures adapted to obtain the material.

After obtaining the specimens detailed gross examination was done and salient morphological features were recorded and the whole biopsy material was fixed in 10% formalin for 12-24 hours. Finally representative bits were given. Tissues were processed routinely and paraffin blocks were prepared and stained with haematoxylin and eosin. Prussian blue stain for haemosiderin were carried out in suspected cases of pigmented villonodular synovitis for the demonstration of haemosiderin pigment. Wherever necessary the available clinical, radiological findings, immunohistochemical marker study was done using microwave tissue processing to categorize the lesions with different markers.

FINDINGS

A total of 10 cases of clinically suspected malignant pigmented villonodular synovitis from the Department of Pathology, J.J.M. Medical College, Davangere.

All the 10 cases selected for the study were between the age group of 20-40 yrs. 7 patients were affected in the age group of 20-30 & 3 patients were affected in the age group of 30-40 yrs.

Amongst the 10 cases, highest incidences of 7 patients were in females 3 were in males indicating higher ratio among females.

Pain & swelling were the predominant clinical features encountered in 8 patients with only 2 patients showing difficulty in movements in patients.

Wrist was the common site involved accounting to 5 cases in this study and the other joints involved were knee in 2 cases, ankle in 2 cases & temporomandibular joint in 1 case.

Macroscopically these tumors appeared as bulky hypertrophied irregular masses of synovial tissue varying in sizes from 3.5- 4cms dark brown to grey white masses (fig 1,2).

Histologically all these tumors showed nodular, solid infiltrative pattern of the large, plump, round or oval cells with deep eosinophilic cytoplasm and indistinct borders, large nuclei with prominent nucleoli, and necrotic areas. Atypical mitoses were frequent about more than 10 /10hpf. 2 cases showed additional features like spindle cell morphology, cytological atypia and high mitotic rate. One case showed osteoclast type of giant cells (fig 3, 4).

In 3 cases MPVNS was found in association with benign PVNS & showed areas of benign D-TSGCTs blending abruptly or gradually with frank sarcomas composed of pleomorphic, spindle, or enlarged oval cells, forming malignant fibrous histiocytomalike, fibrosarcomatous, myxosarcomatous or giant cell tumorlike patterns.

Immunohistochemistry was performed on 3 tumors, and immunoreactivity was present for CD68, CD163, and vimentin. In one case the large synovial-like mononuclear cells was strongly positive for clusterin.

Aneuploidy for chromosomes 5 and 7 was seen in 2 patients with clinically aggressive MPVNS.

Magnetic resonance imaging revealed expansile or infiltrative masses with frequent lobulation and heterogeneous signals in 2 cases.

MRI Scan in 1 patient showed imaging findings of prominent low signal intensity and "blooming" artifact from the hemosiderin which are nearly pathognomonic of this diagnosis.

Out of these 10 cases, 3 cases recurred & died of pulmonary metastasis & inguinal lymph node metastasis in a span of 2 yrs.

3 patients who were treated by arthroscopic synovectomy had an unfavourable outcome, and in the rest 7 cases in which primary open synovectomy was undertaken to prevent recurrence or residual disease had favourable outcome.

DISCUSSION

Exploratory arthrotomy and synovial biopsy are recognized procedures for early diagnosis of joint diseases particularly when clinical and radiological findings are inconclusive.⁷

Malignant pigmented villonodular synovitis (MPVNS) was diagnosed histopathologically in 10 patients in our study & showed a female predominance, commonest age group affected was 20-40 years. Wrist was the commonest joint involved, similarly observations were made in Srinivas Rao and Vincent J. Vigorita study in 1984⁸ & other authors^{1,9} & in 1 case temporomandibular joint was involved like in the study of Tosun F et al study¹⁰ and other authors^{11,12} most of these cases presented with pain & swelling.⁶

Histologically all these tumors showed nodular, solid infiltrative pattern of the large, plump, round or oval cells with deep eosinophilic cytoplasm and indistinct borders, large nuclei with prominent nucleoli & nuclear pleomorphism, and necrotic areas. Atypical mitoses were frequent about more than 10 /10hpf. similar observations were made in study by Bertoni F et al⁶ & other authors^{2,13-21} except for the presence of frequent atypical mitotic figures in our study & whereas in their study they observed only occasional mitotic figure.

Spindle cell morphology, cytological atypia and high mitotic rate were observed in 3 cases similar to Oda Y et al study.²²

One case showed osteoclast type of giant cells like in Furlong MA et al study¹³ and other authors²³⁻²⁴.

In 2 cases it was found in association with rheumatoid arthritis as observed by Vigorita V.J.²⁵

In 3 cases MPVNS was found in association with benign PVNS & showed areas of benign D-TSGCTs blending abruptly or gradually with frank sarcomas composed of pleomorphic, spindle, or enlarged oval cells, forming malignant fibrous histiocytomalike, fibrosarcomatous, myxosarcomatous or giant cell tumorlike patterns like in the study of Li CF et al²⁶ & other authors²⁷.

Immunohistochemistry was performed on 3 tumors, and immunoreactivity was present for CD68, CD163, and vimentin, CSF-1/CSFR expression similar observations were made by Furlong MA et al^{13, 28-31}

In one case the large synovial-like mononuclear cells were strong positive for clusterin majority of the large mononuclear synovial like cells expressed clusterin in Tang L et al study.³²

Aneuploidy for chromosomes 5 and 7 was seen in 2 patients with clinically aggressive MPVNS like in Layfield LJ et al study³³ and other authors^{9, 34-35}.

The CSF1/CSF1R expression in MPVNS helps in targeted therapy.³⁵

Magnetic resonance imaging revealed expansile or infiltrative masses with frequent lobulation and heterogeneous signals in 2 cases.^{27, 24, 36}

MRI Scan in 1 patient showed imaging findings of prominent low signal intensity and "blooming" artifact from the hemosiderin which are nearly pathognomonic of this diagnosis.³⁷⁻³⁸

Out of these 10 cases, 3 cases recurred & died of pulmonary metastasis & inguinal lymph node metastasis in a span of 2 yrs as observed by many authors.^{4,1,6,30} Whereas no one presented with metastasis or died in Furlong MA et al study¹³ & other authors².

3 patients who were treated by arthroscopic synovectomy had an unfavourable outcome, and in the rest 7 cases in which primary open synovectomy was undertaken to prevent recurrence or residual disease had favourable outcome like in van der Heijden et al study³⁴ and other authors^{2,39-41}.

CONCLUSION

MPVNS are the rare tumors which have almost similar histological features as that of a benign PVNS. Hence it needs to be carefully distinguished from the benign PVNS by the presence of frequent atypical mitotic figures, areas of necrosis, presence of spindle cell morphology & cytological atypia, over expression of clusterin in MPVNS.

These tumors have tendency to recur & metastasize distantly.

Tumor expression of the receptors like CSF1/CSFR helps in the target therapy against these tumors. Thus corroborative evidence of clinical, pathological, radiological & immunohistochemical findings are essential in arriving at a definitive diagnosis & treatment of MPVNS.

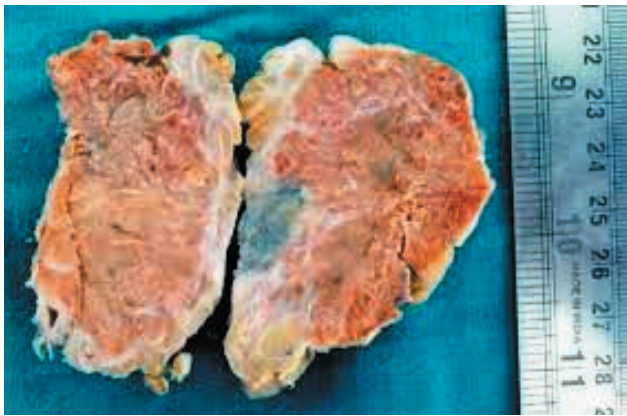


Fig.1- Grey white to grey brown irregular masses with areas of pigmentation.

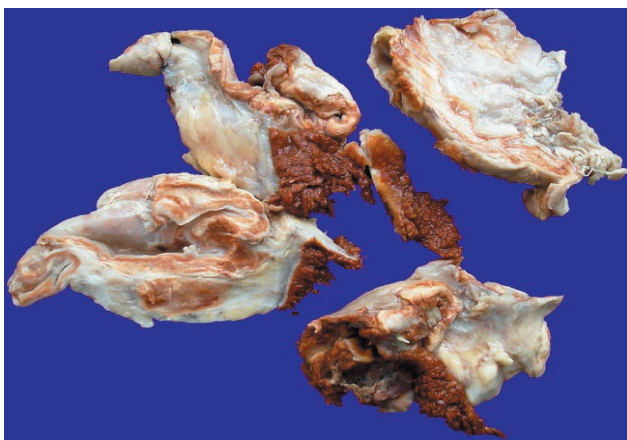


Fig -2 : Grey white to brown irregular masses

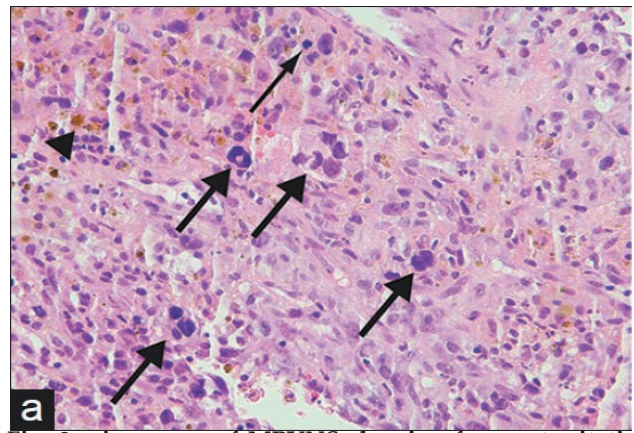


Fig -3 microscopy of MPVNS showing frequent mitotic figures & other features. (10X)

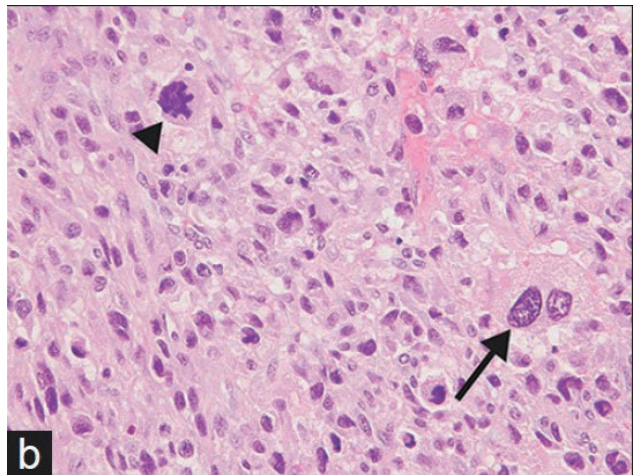


Fig -4 microscopy of MPVNS showing frequent mitotic figures & other features. (40 X)

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Clinical Outcomes of Systemic Hypertension on Inner Ear Functions

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ABSTRACT

Aims and Objectives: The objective of this study was to assess the sensor neural hearing loss and vestibular symptoms in patients with arterial hypertension.

Method: The study comprised of audio vestibular evaluation of 50 proven hypertensive patients and results were compared with age and sex matched 50 controls.

Results: Hearing threshold levels were raised in all frequencies along with impaired vestibular functions in hypertensive patients and correlated with degree of hypertensive retinopathy changes.

Discussion: Vascular pathology caused by hypertension affects the vessels in the inner ear to impair its function in similar way as of hypertensive retinopathy.

Conclusion: Patients with hypertension are having more silent cochlear dysfunction associated with vascular disease caused by hypertension, without significant vestibular dysfunction.

Keywords: Arterial hypertension, audio vestibular functions, hypertensive retinopathy

INTRODUCTION

Cochlea, the sensory organ which is located in the inner ear is far more complex than any other sensory organ in our body. It sub serves the function of auditory stimulation as well as balance. The "Organ of Corti" represents the sensor of cochlea converting and amplifying mechanical stimuli to electrical impulses. The striavascularis is the cochlea's battery which generates energy for maintaining cochlear fluid homeostasis. The spiral ganglion features axons which transport the electrical signals from cochlea to the CNS. Hypertension is a common chronic disease encountered in clinical practice in India. The WHO report 1988 states that considering the prevalence of any disease, hypertension ranks 4th in the world. Pooled epidemiological studies show average prevalence of hypertension in India is 25% in urban and 10% in rural population¹. The macro vascular changes that occur in hypertension include increased synthesis of the major connective tissue components, elastin and collagen by smooth muscle cells, which contribute to the thickening

of the arterial wall. The smooth muscle cell in the media of the vessels also undergoes changes such as hyperplasia and hypertrophy. The tunica intima of the arteries subjected to high blood pressures manifests with thickening as a result of increase in the size and height of the endothelial cells². There is a possibility of similar pathological changes occurring in the internal auditory vessels in patients suffering from hypertensive retinopathy due to chronic hypertension, thereby resulting in sensor neural hearing loss and vestibular symptoms since the arterial supply to the inner ear is also an end artery. Therefore this study was planned to assess the impact of hypertension on inner ear function at a tertiary care teaching hospital.

MATERIALS & METHOD

The study was a prospective study conducted at Santhiram Medical College and General Hospital, Nandyal, AP, India. The study was carried out on 100 patients, 50 of who were proven Hypertensive on treatment attending department. of ENT and Medicine on outpatient basis. Other 50 age/sex

matched patients attending the outpatient department for other illnesses, who denied any history of hypertension and had normal blood pressure were chosen as control. Patients with Diabetes Mellitus (DM) or Dyslipidemias were excluded from the study. A fundus examination was carried out on all patients by expert ophthalmologists to determine the presence of hypertensive retinopathy. Grading was done based on Keith Wagner-Barker classification³. A clinical evaluation was performed along with a questionnaire on vestibular and hearing symptoms⁴. The patients in both groups were then subjected to Tympanometry, Distortion product Otoacoustic emissions (DpOAE), pure tone audiometry (PTA) and vestibular function tests. Any patient with tympanometry findings of middle ear disease was excluded. The differences between the 2 groups were studied based on Symptoms of vestibular instability and hearing loss

RESULTS

There were a total of 100 patients included in the study with an age range of 45 to 65 years. Distortion product Otoacoustic emissions (DpOAE) were not evident in the octaves from 2 to 5 KHz in 22% of patients suffering from hypertension as compared to 8% in normotensive individuals. This difference was statistically significant. Based on PTA findings the individuals in the study group (Group A) showed an increase in the hearing threshold levels as compared to the control group (Group B) at frequencies of 1 KHz, 2KHz, 4KHz, 8KHz. Fundus examination of both groups was done. In Group A 17 patients had Grade I hypertensive retinopathy changes, 7 patients had Grade II hypertensive retinopathy changes. In Group B 3 individuals were noted to have Grade I hypertensive retinopathy changes though they were never detected with high blood pressure (table 1). An assessment of hearing loss and grades of retinopathy was made and it was found that: 24% of Group A patients having normal hearing showed Grade I hypertensive retinopathy. 40% of hypertensive patients with normal hearing with high frequency dip had Grade I retinopathy. 38% of hypertensive patients with minimal hearing loss had Grade I hypertensive retinopathy and around 30% had Grade II hypertensive retinopathy. 75% of hypertensive patients with mild hearing loss showed grade I hypertensive retinopathy and 100% with moderate

hearing loss had Grade II hypertensive retinopathy. In Bithermal caloric testing on ENG 10% of Group A patients showed vestibular hypo function. However there was no canal paresis. Vestibular hypo function was not seen in Group B.

DISCUSSION

Hypertension is a common chronic disease and is on the rise due to modern day sedentary lifestyle. Uncontrolled blood pressure can also result in generalized arteriosclerosis. This vascular narrowing can be seen during fundus examination as hypertensive retinopathy. In this study we looked at the effect of hypertension on hearing thresholds, vestibular function & on the retina and correlate them as the inner ear is supplied by an end artery. Systemic arterial hypertension has been associated with hearing and vestibular symptoms in the past. Studies have documented that chronic hypertension potentiates noise induced decrease in cochlear function and development of histological cochlear damage⁵. Tachibana et al. (1981)⁶ demonstrated that the extravasation of a macromolecule in the temporal bone tissue was increased by acute hypertension. It is possible that in chronic hypertensive states, some noxious substance in the plasma may penetrate into the extracellular space of striavascularis to cause damage to component cells⁷. Parving and collaborators did not find any evidence of effect of arterial hypertension on hearing abnormalities⁸. Likewise Torre et al.⁹ did not identify any association between the history of arterial hypertension and results of DpOAE. Reports on vestibular symptoms related to arterial hypertension are scarce. A study in Chile, by Fasce and collaborators¹⁰ did not find a statistically significant difference between hypertensive and normotensives in vestibular function. Hypertensive vascular changes in the retina are well established and are related to the severity, duration and age. It is the only place where the vessels can be directly observed. Diffuse vascular pathology caused by hypertension also affects the vessels in the inner ear. When the blood flow to cochlea was compromised, a reduction in the DpOAE level was noted in a rabbit model¹¹. These animal models suggest that reduction in blood supply will have a corresponding reduction in cochlear function and may create irreversible damage to cochlear integrity. The results of this study show that retinal vascular compromise may be associated

with silent deterioration of cochlear function, with no evidence of vestibular damage on clinical testing. It is of significance though that the audiological findings were not consistent with symptoms reported through the questionnaire showing that inner ear disease was developing silently. Otoacoustic emissions reflect the activity of the external hair cells of organ of corti. In this study, the deterioration of the hearing thresholds linked to absence of DpOAE indicates cochlear dysfunction which was related to retinal vascular compromise. These results were consistent with a similar study done by Esparza C.M. et al.¹² which suggested patients with arterial hypertension may have cochlear dysfunction. A similar study by T.Y. Tan et al. found that the mean hearing thresholds were higher in all frequencies in the hypertensive group compared with normal subjects¹³. The selection criteria allow us to relate these findings to high blood pressure. However the sample size and the design of the study did not allow us to take into account the possible role of antihypertensive treatment on hearing deterioration. Therefore followup studies are needed to analyse the development of vascular compromise due to arterial hypertension and to consider if it could be prevented through a timely control of blood pressure. The dissociation between the cochlear and vestibular findings is consistent with previous studies suggesting that vertigo should not be considered a primary manifestation of arterial hypertension¹⁴. However to investigate the circumstances in which the vertigo is related to hypertension will require specialized testing which was beyond the scope of this study.

Table 1: No of patients with Hypertensive Retinopathy

| | Group A Hypertensive patients (n) | Group B Controls (n) |
|--|---|-------------------------|
| Grade 1 hypertensive retinopathy | 17 | 3 |
| Grade 2 hypertensive retinopathy | 7 | 0 |

CONCLUSION

We concluded that the mean hearing thresholds in hypertensive were higher in all frequencies (except

250Hz) as compared to individuals with normal blood pressure and were statistically significant ($p < 0.05$). Further 48% of hypertensive patients had hypertensive retinopathy. In these patients the hearing thresholds were also found to be higher and these corroborated with the severity of retinopathy. The results suggest that the patients with hypertension are having more silent cochlear dysfunction associated with vascular disease caused by hypertension, without significant vestibular dysfunction.

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Investigating the Job Involvement among Operating Room Personnel of Medical Sciences Organization's Hospitals of Zahedan in 2015

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ABSTRACT

Background: Job involvement is considered as a key for creating motivation of employees and increasing efficiency and as a factor for increasing motivation and individual's performance, personal growth and job satisfaction. Given that by considering the job involvement, the efficiency in organization can be increased, therefore, it is required that it is conducted a study for investigating the job involvement among operating room personnel of medical sciences organization's hospitals of Zahedan.

Methodology: This study is descriptive-analytical study which was conducted in training hospitals of Zahedan in 2015. The sample size was 71 people which were selected by census. A standard questionnaire of Kanungu was used to collect data and finally, the data were analyzed after gathering in Spss19 software by statistical tests, T-test and analysis of variance.

Results: overall, the average score of job involvement earned by personnel was 27.33 ± 7.55 and was low. The average age of participants were 28.34 ± 5.05 and from among all the participants 59 participants were women and 12 participants were men. There were not significant relationship between job involvement and age, gender and educational level ($P > 0.05$) but there were significant relationship between job involvement and job experience of personnel ($P = 0.03$).

Conclusion: The results of this study show job involvement among personnel of operating rooms of Zahedan negatively and given that job involvement has great effect on organization, personnel and patient, it is necessary managers make serious decisions for improving this situation.

Keywords: Job involvement, Personnel of operating room, Zahedan.

INTRODUCTION

Nursing has particular importance because it includes most workforces in hospitals and has direct contact with patients than other jobs [1, 2] and the nursing profession is associated with high stress, because nursing and faces to many daily problems [3, 4], so that 7-10 % European nurses experienced

clinical and grueling burnout and almost 25 percent of them faced to a degree of burnout [5]. Due to the shortage of nurses and increasing the workload and other factors that endanger nursing cares, one of the issues that is important in nursing profession is job involvement, because job engagement and intention of job leaving affect the nurse [6] and needs for further studies in the field of job involvement [7]. From the view of organization, job involvement is a key for making motivation of employees and increasing organization's efficiency and from the view of individual, is considered as a factor for increasing motivation, performance of individual,

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personal growth and job satisfaction ^[8]. In general, job involvement indicates that how much people are involved in their jobs and required decision-making in this regard and in fact how much they spend their time for doing their works, so that whatever the individual has authority in the process of decision-making and in his job process, his job involvement will increase correspondingly ^[9]. Employees interested in their job have lots of energy and enough passion to perform the duties of their jobs and they focus on their work so that they do not notice the passage of time ^[10]. In the study of Ravangard and colleagues job involvement among the nurses was reported average ^[11]. Several studies have proven the relationship between job involvement and commitment to the job ^[12-16]. As well as job involvement has relationship with the intention of job leaving, inversely ^[15]. Recent technical advances have made to increase the demand for skilled and motivated individuals and high job involvement ^[17].

Employing new people in addition to high cost, is associated with many risks, because these new individuals are novice that before they were not in such a situation ^[18]. The researches proved that in organizations in which individuals have high job involvement, commitment to work is more among the people ^[19] and in a study conducted by Gheisari and colleagues, it also reported there are significant relationship between organizational commitment and job involvement ^[20]. Committed employees participate in the activities of the organization and adapt their desires with the aims and intention of organization ^[21]. Job involvement is considered as an important and effective factor in productivity of an organization, quality of life ^[22], job satisfaction ^[23] and marital relationships ^[24] and is a desirable feature of employees that makes positive spirit in the work, a sense of passion, pride and drowning in work and good feelings about work. As well as individuals with low job involvement is in the risk of job burnout, neuroticism and extraversion ^[25].

According to lots of job involvement effect on organization and employees, so a research was conducted to investigate the job involvement among operating room personnel of medical sciences organization's educational hospitals of Zahedan.

METHOD

This study was a descriptive-analytical study was conducted on 71 participants which were selected by census in 2015 in educational hospitals of Medical Science Organization of Zahedan including three hospitals, Ali-Ibn-Abitaleb hospital, Alzahra Ophthalmology hospital and Khatam hospital. The feature of participants was their one year work experience in the hospital. The measuring tools of data in this study included two-part questionnaire, the first part related to demographic data and second part related to Kanungu standard questionnaire of job involvement which was used. The questionnaire contains 10 questions and all the questions are in the form of 5-item scale of Likert and the scores 1 to 5 were considered for the options of strongly disagree, disagree, no comment, agree and strongly agree, respectively. Therefore, the minimum score of each individual was 10 and the maximum score was 50. Score above 30 indicates high involvement and score under 30 represents low involvement. The reliability of the questionnaire obtained 0.79 ^[26] and the validity of the questionnaire was approved also by Salim and colleagues in 2013 ^[27]. To collect the data, researcher by going to every hospital in the morning, afternoon and evening and after the purpose of the study for personnel and getting the permission from them the questionnaire were given them and after completing the questionnaires were collected. Finally, the data after collecting were analyzed in SPSS 19 software by using t-test and test of variance analysis.

RESULTS

The average age of participants was 28.34 ± 5.05 in this study and 59 participants were female and 12 participants were male and females had more job involvement than males. In general, the average score of job involvement obtained from the personnel was 27.33 ± 7.55 and it was low.

The relationship between the demographic feature and job involvement among the personnel of operating room of educational hospitals of Medical Science University in Zahedan is illustrated in table 1.

Table 1: The relationship between the demographic feature and job involvement among the personnel of operating room

| Demographic features | | Individuals' percent | The average score obtained from job involvement questionnaire | P Value | Statistical test |
|----------------------|---------------------|----------------------|---|---------|------------------|
| Gender | Female | 79.7 | 27.67 | 0.40 | T-test |
| | Male | 16.2 | 25.66 | | |
| Work experience | 1-5 years | 51.4 | 28.68 | 0.03 | ANOVA |
| | 5-10 years | 28.4 | 23.61 | | |
| | 10-15 years | 9.5 | 27.57 | | |
| | Upper than 15 years | 6.8 | 32.40 | | |
| Hospital | Ali-Ibn-Abitaleb | 40.5 | 29.53 | 0.10 | ANOVA |
| | Khatam | 33.8 | 25.50 | | |
| | Alzahra | 21.6 | 27.33 | | |
| Degree of education | Technicians | 17.6 | 28.38 | 0.53 | T-test |
| | Bachelor | 75.7 | 26.94 | | |

The relationship between degrees of education, hospital of personnel work place, gender and age of personnel and job involvement was not significant ($P>0.05$), but the relationship between work experience and job involvement was significant ($P=0.03$). According to the results in table 1, it is illustrated that individuals with above 15 years work experience and technicians have high job involvement.

DISCUSSION

In this study, job involvement among the employees was low which was lower than Ghaderi and Colleagues study^[28], Saeed and colleagues study and also, than Riahi and Colleagues^[29] that this suggests to increase job involvement among the employees of educational hospitals of Zahedan, effective actions should be taken by managers. Job involvement is an ethical and interpersonal variable which is indicator of individual's responsibility. Therefore, every one that this value is internalized job involvement will be probably more^[27]. Theoretical basis indicated this point that different factors are effective in the rate of job involvement. So, the observed difference in this study with other studies may be because of one or more factors including: situational factors related to the job and factors related to education could effect on the rate of job involvement. In other words, job involvement increases when the work is suitable for

abilities, attitudes and other features of employees^[30]. To have personnel interested to job, their positive spirit, Self-confidence and in general, their positive emotional features should be reinforced. Thus, it seems supervisors' attention at different levels for establishing joyful atmosphere in the organization and attention to psychological factors at work can help employees to do their duties with more passion and to have more interested in their jobs.

In this study, no significant relationship was observed between age and job involvement that is consistent with the studies of Ravangard and colleagues^[11], Tsai and colleagues^[6]. But in the studies by Ghaderi and colleagues^[28] and Marshal and colleagues^[31] the results were different. There was no significant relationship between job involvement and educational degree which is consistent with the study by Ahmed and colleagues^[32]. In the Mir Hashemi's study people who have higher academic degree had more interested in their jobs and it was observed significant relationship between educational degree and job involvement. It was not also observed a significant relationship between job involvement and gender which is consistent with Ravangard's study^[11] and Tsai's study^[6]. But females had higher job involvement than males and this despite the fact in the studies by Ghaderi and colleagues^[25], Mir Hashemi^[26] and Saeed and colleagues^[9] males

had more job involvement than females which are inconsistent with the results of this study. But it is expected because women in addition to job role have the responsibility of motherhood and housekeeping they cannot probably be employed full time and compared with men are evaluated at a lower level in terms of job involvement [33].

In this study there was a significant relationship between job involvement and work experience of individuals, so that by increasing work experience, job involvement among personnel has increased which is inconsistent with the studies by Ravangard and colleagues [11], Tsai [6] and Ahmed and colleagues [32]. It should be noted that to study the relationship between individual's feature and job involvement, it seems by other factors such as individual, environmental, organizational factors, even the nature and type of job can be controlled. Therefore, the results of this study and many other studies cannot alone resolve the ambiguities and cannot be given a certain comment in this field and by more extensive studies among different organizations with different social, economic and cultural contexts and by controlling some variables like environmental, organizational factors and inner nature of job can achieve more accurate results.

CONCLUSION

In conclusion, it can be said that job involvement among the personnel of an organization, especially the nurses which are a large part of the health system, is very important. Lack of job involvement among the personnel of operating room can cause a lot of damage organizations and patients as well as is effective in the quality of personnel's life and affects on required cares for patients. Thus, according to the results of this study and according to low rate of job involvement among the personnel of operating room and because of its great importance of job involvement for personnel and organization, it is recommended that managers take necessary actions for improving this issue and provide suitable fields to increase the rate of job involvement among the employees.

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A Study of Anemia among Pregnant Women in District Hapur, U.P., India

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ABSTRACT

Anemia is the most common nutritional deficiency disorder in the world. The aim of study was to determine the prevalence and the various sociodemographic factors associated with anemia among pregnant women at Rama Medical College, Hospital, Pilkhwa, Hapur, U.P., India. This study was carried out from Jan 2015 to Feb 2016. A total of 482 pregnant women were selected using a systematic random sampling technique. Sociodemographic characteristics of the mothers were extracted using an already prepared proforma. The blood haemoglobin concentration of the women were determined and the results were analysed. Pregnant women who had hemoglobin (Hb) value of < 11gm were selected in study. Overall prevalence of anemia among the pregnant women was found to be 65.15%. Factors such as level of education of women and socioeconomic status were found to be significantly associated with the prevalence of anemia in pregnancy in this area. There is a need to monitor hemoglobin during pregnancy and thereby improve the outcome of pregnancy. This research work presents the magnitude of anemia and its determinant factors among pregnant women. As far as this research is done in the western part of U. P. India, where there is a different cultural issue related to pregnancy and dietary habit, it will help the researchers to know the problem in different parts of the country.

Keywords: Anemia in pregnancy, literacy, LMP, socioeconomic class

INTRODUCTION

Anaemia is a condition in which the oxygen carrying capacity of the red blood cells is insufficient to meet the body physiological needs. It can cause various health complications in every age group including pregnant women, where it can lead to adverse maternal and foetal outcomes¹. It is estimated that as many as 20% of maternal deaths are directly caused by anaemia through its complications and it is an associated cause in as many as 50% of maternal deaths worldwide^{1,2}. The World Health Organization (WHO) defines anaemia as blood hemoglobin

concentration less than 11gm/dl or hematocrit less than 37% in pregnant women¹.

The WHO estimates that 58% of the women in developing countries are anaemic². The prevalence of anaemia among pregnant women in Karnataka State in India is 62.6%³. Iron deficiency is thought to be the most common cause of anaemia globally, accounting for more than half of anaemia cases in pregnancy¹.

Iron, is an essential nutrient, which is required for haemoglobin synthesis, its demand increases highly during pregnancy and many times does not get supplied through the regular diet. This can be worsened by the loss of appetite during pregnancy⁴. Therefore the most suitable mass intervention for iron supplementation is administering Iron along with Folic acid in the form of tablets to pregnant women aimed at increasing the haemoglobin concentration, so that the level of anaemia at term could be reduced to the best possible extent^{5, 6, 7}.

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Most Ministries of Health in developing countries have policies to give pregnant women either iron by itself or combined with folic acid in tablet form (IFA tablets). The National protocols in India require the provision of 1 tablet containing 100 mg elemental iron and 0.5 mg folic acid for daily consumption to all women during pregnancy for 100 days.

The effectiveness and success of such interventions depend on the compliance to the Iron-folic acid tablets. Compliance describes the degree to which a patient correctly follows a medical advice. Many experts believe that one of the main reasons that national iron supplementation programs have failed is women's "noncompliance"^{1,5}. There are factors including health system and patient factors which determine the compliance, which are not studied extensively^{5,6}. There are no clear cut offs for non-compliance. Missing 2 or more doses consecutively is usually considered as non-compliance⁴.

Thus compliance is essential for Iron Folic Acid therapy is influenced by several social and demographic factors. This study was carried out in a tertiary care centers in district Hapur to assess the awareness, practices, level of compliance and the factors affecting the level of compliance among the pregnant women.

Anemia in pregnancy accounts for one fifth of maternal deaths and is a major factor responsible for low birth weight. In India, 16% maternal deaths are attributed to anemia. The association between anemia and adverse pregnancy outcome, higher incidence of preterm and low birth weight deliveries has been demonstrated. ¹¹ In view of the low dietary intake of iron and folate, high prevalence of anemia and its adverse health consequences, India became the first developing country to take up a National Nutritional Anemia Prophylaxis Program (NNAP) to prevent anemia among pregnant women. NNAPP was initiated in 1970 during the fourth 5-year health plan with the aim of reducing the prevalence of anemia to 25%. The Government of India recommends a minimum dose of total 100 iron and folic acid tablets to be prescribed during pregnancy. ¹² Public health program of distribution of the iron tablets to the pregnant women (during last trimester) and preschool children is in operation in India as part of Maternal and Child Health (MCH) services.

¹³ However, high prevalence of anemia among pregnant women persists despite the availability of this effective, low-cost intervention for prevention and treatment. ¹² Unfavorable sociodemographic factors are the major barriers to the efforts put in place for the prevention of anemia during pregnancy. Knowledge of the sociodemographic factors associated with anemia in pregnancy can be used to formulate a multipronged strategy to attack this important public health problem.

SUBJECTS

The present cross-sectional study was carried out at Obstetrics & Gynaecology and Pharmacology Department of Rama Medical college Hapur, U.P. India to determine the prevalence of anemia and the association of the various sociodemographic factors with anemia in pregnant women.

The study was carried out from Jan 2015 to Feb 2016. A total 160 pregnant women visiting the health center for the first time were included in the study by systematic random sampling technique. The participants with the history of amenorrhea underwent a urine pregnancy test and Ultra Sound to diagnose pregnancy. Pregnant women with multiple pregnancies, history of high-grade fever in the last 3 months, passing worms in the stool, bleeding disorder in the previous pregnancy and taking iron and folic acid tablets before registration were excluded from the study. Informed consent was obtained and explanation as to the purpose of the study was offered. A pilot study was conducted with the predesigned proforma and necessary modifications were made. Thus, pregnant women were interviewed with the predesigned, pretested proforma and clinical examination was done. A detailed demographic profile of the women, that is, age, age at first pregnancy, religion, type of family, family size, educational level of a woman and her husband, occupation of a woman and her husband, was collected. Socioeconomic classification suggested by B.G. Prasad was adopted and updated⁴. A dietary history was taken with the help of 24-h recall method and also assessed about various food items avoided, especially during pregnancy⁵.

Gestational age was assessed from the last menstrual period. For those women who did not

remember the LMP, gestational age was confirmed by ultra sound.

LABORATORY METHOD

Hemoglobin level was estimated by Sahli's acid hematin method of hemoglobin estimation⁶. According to World Health Organization (WHO), hemoglobin level below 11 g/dL is labeled as anemia during pregnancy and classified as mild (10.0-10.99 g/dL), moderate (7.0-9.9 g/dL), and severe (<7.0 g/dL) anemia⁸. The same criteria were used for diagnosing anemia in pregnancy⁷. Individual discussion with each mother about anemia, importance of regular treatment with iron/folic acid tablets and correction of faulty dietary practices was conducted.

SAMPLE SIZE DETERMINATION

Minimum sample size required for the study was calculated with the help of practical manual for sample size determination by S.K. Lwanga and S. Lemeshow at 10% relative precision and 95% confidence level⁹. Data analysis was performed using Epi info software version 3.5.1. Descriptive statistics, including mean, range, and standard deviations, were calculated for all variables. Proportions were compared using Chi-square tests and chi square for trend at 0.05 level of significance.

RESULTS

In the present study, the mean duration of married life of pregnant women was 4.3 years. Mean age at menarche was found to be 13.2 years. Similarly mean values for gravid status and parity were 2.3 and 1.0, respectively. Mean spacing interval was 1.7 years. Mean height and weight of the study subjects were 152.1 cm and 48.9 kg, respectively. Average calorie consumption per day was 1551 calories with deficit in 18.1%. The demographic characteristics of the study subjects are summarized in Table 1:

Demographic characteristics of pregnant women (n = 482)

The table no-1 shows majority of the subjects 368 (76.35%) were between ages 20 to 29 years with an average age of 22.7 years. About 5.6% of all the pregnancies occurred among teenagers and 18.05% were among women aged 30 years and above.

The table no-2,3, and 4 shows the maximum number of the study subjects 314 (65.15%) were anemic. The anemic subjects who belonged to unable to read and write educational status were 240 (76.43%). The maximum numbers of anemic women were from poor socioeconomic class 220(70.06%).

As shown in the overall prevalence of anemia among pregnant women was found to be 65.15%. The prevalence of mild, moderate, severe anemia were observed as 24.7%, 54.5%, and 7.9%, respectively. Thus the prevalence of moderate anemia was high in comparison to the other degrees of anemia.

Table-1: Distribution of pregnant women according to age (n = 482)

| Age group (Years) | No of cases | Percentage |
|-------------------|-------------|-------------|
| 17-19 | 27 | 5.60% |
| 20-29 | 368 | 76.35% |
| 30 and above | 87 | 18.05% |
| Total | 482 | 100% |

Table-2: Distribution of pregnant women to according hemoglobin level(n = 482)

| Hemoglobin level | No of patients | Percentage |
|------------------|----------------|---------------|
| Above 11gm | 168 | 34.85% |
| Below 11 gm | 314 | 65.15% |
| Total | 482 | 100.0% |

Table-3: Distribution of anemic pregnant women according to Educational status (n = 314)

| Educational status | No of patients | Percentage |
|--------------------------|----------------|------------|
| Unable to read and write | 240 | 76.43% |
| Read and write only | 22 | 7.01% |
| Primary school (1-8) | 19 | 6.05% |
| Secondary school | 10 | 3.19% |
| College and above | 23 | 7.32% |

Table-4: Distribution of anemic pregnant women according to Occupation (n = 314)

| Occupation | No of patients | Percentage |
|---------------------|----------------|------------|
| Housewife | 277 | 88.21% |
| Government employee | 12 | 3.83% |
| Business | 25 | 7.96% |

Table-5: Distribution of anemic pregnant women according to socioeconomic class (n = 314)

| Socioeconomic class | No of patients | Percentage |
|---------------------|----------------|------------|
| Upper class | 08 | 2.55% |
| Upper Middle class | 11 | 3.45% |
| Middle class | 16 | 5.10% |
| Lower class | 56 | 17.84% |
| Poor class | 220 | 70.06% |

The results of study showed that as the socioeconomic status decreased, the prevalence of anemia increased. Thus, lower socioeconomic status is associated with the increase in the risk of development of anemia in pregnancy. This association between the socioeconomic status of the family and anemia in pregnancy was found to be statistically significant.

It is observed that proportions of pregnant women suffering from anemia were 76.43% illiterates, those educated up to primary, middle school, and high school only 13%. It was found that the lower the educational level of the women, the higher the probability of suffering from anemia during pregnancy.

DISCUSSION

Although much effort has been taken to prevent anemia in Indian women, still the prevalence of anemia during pregnancy is found to be 87.2% from this study. A study carried out among 7 states by Nutrition Foundation of India had observed the overall prevalence of anemia as 84% among pregnant women similar to the present study¹⁰. "Indian Council of Medical Research (ICMR) Task Force Multicenter Study" revealed that the overall prevalence of anemia

among pregnant women from 16 districts was 84.9% (range 61.0% -96.8%)¹¹. The prevalence observed is similar to that reported for pregnant women (60%-77%) in Dar es Salaam-Tanzania^{12,13,14}, Sudan^{15,16}, and Nigeria¹⁷.

In developed countries, the prevalence of anemia was only 18% among pregnant women as reported by WHO (1998)¹⁸. The socioeconomic developments, higher standard of living, better utilization of health care facilities along with increasing literacy rate are associated with the low prevalence of anemia in developed countries. A high prevalence of anemia among pregnant Hindu women as compared with Muslim women was observed in the present study. The religion itself may not be the cause for this finding, but probably it works through different dietary patterns, food taboos, and so on. In India, pregnant Hindu women are advised to avoid non vegetarian diet during pregnancy as it generates heat. Low socioeconomic status was associated with a higher prevalence of anemia in pregnancy. A cross-sectional study in New Delhi had revealed that there was a trend of decreasing severity of anemia with higher per capita income as found in the present study¹⁹. In the present study, it was found that anemia increases steadily with decrease in the level of educational attainment. One study found that anemia was most common in illiterate women (53.7%) as compared with 37.1% in literate women¹². A study conducted in 7 states with similar sample used in National Family Health Survey (NFHS) -2 had observed an association between the literacy status of husband with anemia in pregnant women¹⁰.

Unfavorable sociodemographic factors are the major barriers to the efforts in place for the prevention of anemia during pregnancy. Educating the women only will not produce any desirable change but increasing the degree of literacy of the family will definitely help to solve this problem. The educational status of the husbands and the women are equally important factors as it makes the couple receptive to the advice given by the health staff. Therefore, there is a need for dietary counseling and nutritional education in antenatal clinics to tackle the issue of anemia in pregnancy with missionary zeal, innovative approach, and evidence-based interventions.

CONCLUSION

Low socioeconomic class, illiteracy were significantly associated with high prevalence of anemia during pregnancy in Indian women. More than half of the pregnant women in the world have hemoglobin levels indicative of anemia. Knowledge of the current situation of the condition in our environment is necessary. This knowledge will motivate antenatal caregivers toward early detection and prompt management of anemia in pregnancy. Ethical approval for the study was obtained from the ethical committee at the Rama Medical college Hapur, U.P. India.

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The Survey of the Relationship between Job Burnout and Organizational Commitment among Zahedan Medical Sciences University Staff Members in 2016

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ABSTRACT

Introduction: organizational commitment changes subject to various environmental factors. The internal and external work environment factors can exert considerable effects on organizational commitment. Among the work environment internal factors, which is recently very common, is job burnout or exhaustion. According to the fact that the cultural differences can be effective on the staff performance, commitment and quality of their work, justifying this hypothesis can help managers to enhance the staff organizational commitment through improving job exhaustion conditions. Therefore, the present study aims at the survey of the relationship between job burnout and organizational commitment in Zahedan medical sciences university staff.

Implementation method: the present study is a descriptive-analytical research of the cross-sectional type which has been conducted on 165 individuals of Zahedan medical sciences employees all of whom have been selected randomly in 2016. To gather the information required for the analysis, a three-part questionnaire was applied, the first part of which was related to the demographic characteristics, the second part pertained to Maslach burnout inventory (MBI) and the third part included Allen and Mayer's standard questionnaire. In the end, the data were analyzed by making use of SPSS 19 software and the descriptive statistics, Pierson correlation, variance analysis and independent t-test were analyzed.

Findings: the results of the present study indicated that the individuals' average age was 36.32 ± 9.96 . And 103 individuals were women and 139 were married. The overall mean score obtained from the organizational commitment questionnaire was 73.45 ± 4.54 and the overall mean score of the job burnout inventory score was 58.58 ± 10.15 . There was not found a significant relationship between the gender and marital status with job burnout and organizational commitment ($P > 0.05$). The relationship between job exhaustion and organizational commitment was not statistically significant ($P = 0.235$).

Conclusion: according to the results obtained in the present study which are indicative of the lack of statistically significant relationship between job burnout and organizational commitment, it seems that other factors are playing parts in organizational commitment and job burnout which are not taken into consideration in the present study.

Keywords: organizational commitment, job burnout, university staff.

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INTRODUCTION

Undoubtedly, the most basic and the most effective group in the development of the developing countries is the scientific institutions and especially the university associations ^[1]. Nowadays, the

enhancement of the organizational competencies for facing the today's dynamic environments can lead to the establishment of the values for the organization [2]. If the human assets are not paid attention to and if they are not well-fostered and well-guided, the deployment of their competencies and capabilities will not be possible. Human assets unlike the physical assets do not easily lend themselves to evaluation, prediction and management [3]. In recent years, organizational commitment has been the important part of the organizational and research concentration, since it is proved to have close relationship with the organizational life quality and the studies have shown that it has been defined as an effective and strong workforce in organizational success. Organizational commitment is an attitude toward staff loyalty to an organization and it is deemed as a continuing process which can prepare the ground for the organizational success and welfare via getting them involved in organizational decision making, paying attention to the organizational staff members [4]. The studies have shown that the staff committed to the organization exhibit higher productivity; their tendency to stay with the organization is higher and they are less absent [5]. Also, organizational commitment is among those constructs which influences the staff behavior in the organization and it is also effective on many of the organizational variables such as staff intent to be displaced, job performance, organizational citizenship behavior, absenteeism rate and conflict and stress as well and it is determinative of the staff intent to leave or stay with an organization [6].

Studies on other countries have evaluated factors including lowering the work volume, task and duties adjustment and increasing the salary and wage levels as factors effective on job satisfaction, organizational commitment and also on the reduction of job burnout [7-10]. Organizational commitment also changes subject to various environmental factors, the work environment internal and external factors can exert considerable effect on organizational commitment [11]. Among the work environment internal factors common nowadays is the job burnout or exhaustion. Maslech [12] considers job burnout as being resulting from worries and fears of losing one's job, too much and extremely working, insecure work environment, inflexible programming and work hours [13]. Job burnout is a psychological three-dimensional

syndrome and it includes emotional exhaustion, depersonalization and the lack of personal accomplishment [14].

Because cultural differences can influence the staff performance, commitment and work quality and also because proving this theory can help the managers to improve their staff job burnout condition [15 & 16], the present study intends to survey the relationship between job burnout and organizational commitment in Zahedan medical sciences staff members.

IMPLEMENTATION METHOD

The present study is a descriptive-analytical research of the cross-sectional type which has been conducted on 165 individuals from Zahedan medical sciences University staff members all of whom were randomly selected in 2016. The entrance priority was given to those staff having at least a MA degree and they had to provide an oral consent to be participated in the study. To gather the information required for the study a questionnaire was used which was comprised of three parts, the first part of which was related to the demographic characteristics (age, gender, work history and marital status) and the second part was related to Maslech's burnout inventory which contained 22 items that deal with the emotional exhaustion, depersonalization and lack of personal actualization phenomena in the framework of professional activity and it is specially applied for the burnout assessment and prevention in professional groups such as nurses and teachers and so on. The scoring method of the questionnaire items is performed based on a five-point scale. The test options range from completely agree, agree, no idea, disagree and completely disagree and it is in this way that the tested expresses his or her emotions according to the choices s/he has available. The minimum score in the present test is 22 and the maximum score is 110. The questionnaire validity and reliability have been evaluated and confirmed by Beirami [17]. The third part of the questionnaire pertains to Allen and Mayer standard questionnaire and this instrument includes 24 questions and they are designed based on Likert's 5-point scale, in which 1 means "completely disagree" and 5 means "completely agree". Some of the questions are scored inversely and the total scores sum indicates the organizational commitment score and the higher the individual's score it is indicative

of a higher level of organizational commitment. The maximum score for this questionnaire is 120 and the minimum score is 24. The current questionnaire's validity was confirmed by Rahmanzadeh et al and its reliability was obtained as equal to 0.82 via the Cronbach's alpha [18].

To collect data, after the study plan was ethically verified and confirmed by Zahedan medical sciences University research vice chancellorship and after coordination with the university security office and acquiring a letter of recommendation, the researcher referred to Zahedan medical sciences university administrative office and firstly the study objective was explained and after adopting oral consent from the individuals the questionnaire was administered with a sufficient number to the participants. After the questionnaires were completed they were collected and reviewed by the researcher and they were returned to the respondents again in case of the existence of incomplete parts and the respondent was asked to complete the related part. In the end, after the questionnaires were collected, the data were analyzed by the use of SPSS 19 and descriptive statistics, Pierson correlation, variance analysis and independent t-test.

FINDINGS

The results obtained in the present study indicated that the individuals' average age was 36.32 ± 9.96 . There were 103 women (62.4%) and 139 married individuals (84.2%) present in the study. 58 individuals (35.2%) had a work history ranging from 1 to 5 years, 37 individuals (22.4%) had a work history of 5 to 10 years, 19 people (11.5%) had a work history of 10 to 15 years, 20 individuals (12.1%) had a work history of ranging from 15 to 20 years and 31 individuals (18.8%) had a work history of 20 years and more. The organizational commitment questionnaire total mean score was 73.45 ± 4.54 and the total mean score of the burnout inventory was 58.58 ± 10.15 . There was not observed a significant relationship between gender and marital status with job burnout and organizational commitment ($P > 0.05$). There was not so much difference between the men and women scores in organizational commitment and job burnout. Relationship between age and organizational commitment was not statistically significant ($P = 0.615$) but the relationship between

age and job burnout was statistically significant ($P = 0.01$). Also, the relationship between job burnout and organizational commitment was not significant ($P = 0.235$). The relationship between work history and job burnout and organizational commitment has been tabulated as table (1).

Table 1: The relationship between work history and job burnout and organizational commitment

| | | Mean | Standard deviation | P-value |
|---------------------------|-------|---------|--------------------|---------|
| Organizational commitment | 1-5 | 76.5345 | 6.21886 | 0.339 |
| | 5-10 | 75.2703 | 7.25584 | |
| | 10-15 | 73.0526 | 7.25315 | |
| | 15-20 | 76.1000 | 8.50325 | |
| | 20> | 73.8065 | 9.83673 | |
| | Total | 75.2848 | 7.64678 | |
| Job burnout | 1-5 | 72.6897 | 9.62308 | 0.193 |
| | 5-10 | 76.2973 | 8.74600 | |
| | 10-15 | 71.1579 | 10.75104 | |
| | 15-20 | 75.8000 | 9.64420 | |
| | 20> | 72.5484 | 9.45459 | |
| | Total | 73.6727 | 9.60257 | |

DISCUSSION

In the survey of the relationship between job burnout and organizational commitment in the present study there was not observed a significant relationship which is not corresponding with the results obtained in the studies by Rad et al, Cropanzano et al and Leiter et al [12, 19, 20]. The disagreement between the results of the present study and the results obtained in other studies can be due to this reason that the information collected from Zahedan medical sciences university was via distributing questionnaires. In other words, there was this possibility that some organizational and individual constraints and barriers may have been the cause behind the staff refraining from completing the questionnaire. The other results obtained by the present study indicated that job burnout and organizational commitment were in an intermediate level. Staff organizational commitment should not be seen as unimportant since it is accompanied with important concepts and values such as job satisfaction [21].

McElroy to improve the staff organizational commitment, some suggestions are presented here:

including job security, selected payment, autonomous groups and decentralization, compensation proportionate to the organizational performance and the elimination or reduction of the position and standpoint differences [7]. Therefore, human resources managers should enhance organizational commitment and job satisfaction through the appointment of the qualified workers, substitution, development and proper and on-time rewarding, keeping the competent and qualified staff in the organization and educational and training activities [8]. Among the reasons that are reflective of the importance of the survey and evaluation of the organizational commitment is that the organizations with members in higher levels of the organizational commitment usually enjoy higher performances, lower absence and delay from the staff part and in many of the cases the organizations are in need of the individuals who work in favor of the organization and act beyond their determined duties and this issue is particularly important in sensitive occupations such as military, security, medical and educational professions [9]. To decrease the job burnout several factors seem to be effective such as the increase in salary and benefits, reducing the work hours, arranging recreational programs, establishing work groups in various sessions, holding sport and physical activity classes, educational workshops for teaching methods for counteracting the psychological tensions and stress [12, 22].

In the present study, there was no statistically significant difference between gender and organizational commitment. Also, the mean score in both genders was not so much different. In a study performed by Lavasani et al it was also indicated that there was no significant difference in organizational commitment scores of females and males [23]. But, in the study performed by Sajadi et al, affective commitment mean score was higher in men in comparison to the women and this was confirmed to be statistically significant [24]. Also, the relationship between gender and job burnout was not statistically significant. Of course there was this expectation that the women are more highly likely to experience job burnout than the men due to the responsibilities they have in work environment besides their heavy duties at home for instance children upbringing and taking care of the home affairs and due to long work hours and other factors in work environment which

causes them interferences in their responsibilities and roles but the results obtained in the present study are reported inversely and in other forms here.

CONCLUSIONS

According to the results obtained in the present study which is suggestive of the absence of a statistically significant relationship between job burnout and organizational commitment it seems that some other factors play a role in organizational commitment and job burnout which are not taken into consideration in the present study.

This articles was extract from a student research project and got the approval of ethical committee of the zahedan University of Medical Sciences.

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Conflict of Interest - Nil

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Profile of Leptospirosis Patients Admitted in Tertiary Care Centre of South Gujarat

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ABSTRACT

Introduction: Leptospirosis is a zoonotic disease with worldwide distribution caused by pathogenic leptospira. Leptospirosis is more prevalent in South Gujarat due to heavy rain, salinity of soil and water logging.

Aims & objectives: The current study was conducted to know the profile of patients who were admitted as suspected Leptospirosis cases in New Civil Hospital, Surat (NCHS).

Material and Methods: A prospective study, carried out between July to October 2013. The profile of patients who were suspected for Leptospirosis and admitted in NCHS was obtained using standard pre designed structured questionnaire.

Statistical Analysis: Data entry and analysis was done in excel and SPSS v 16

Results: Among the 159 suspected cases of Leptospirosis, 111 (69.8%) were males and age of patients ranged from 15 to 80 years with mean age of 37.45 years. Fever, myalgia, and headache were predominant complaints and all had history of contact with animals or contaminated environment. Liver functions and renal functions were deranged in 52.2% and 45.3% cases respectively. Calf tenderness having higher negative predictive value of 84% and fever having the higher positive predictive value of 92.9% so we can say suspected cases having both symptoms together has higher chance of Leptospirosis.

Conclusions: Majority of the patients belong to the rural area and almost all had history of contact with animals. Fever, myalgia (calf tenderness), jaundice and conjunctival suffusion were characteristic findings. Jaundice and renal failure are associated with severity of the disease and are considered bad prognostic signs with high mortality rate (54%). More than 50% of patients, who died due to Leptospirosis, were alcoholic.

Keywords: Leptospirosis, Profile, South Gujarat, Zoonosis, rainy disease

INTRODUCTION

Leptospirosis is zoonotic disease, occurs worldwide, in both rural and urban areas and in temperate and tropical climates.⁽¹⁾ It is an occupational

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hazard mostly occurs in people working in farm where water is lodged and contaminated by the urine of the carrier host. It probably ranges from 0.1 to 1 per 100000 per year in temperate climates to 10 or more per 100000 per year in the humid tropics. During outbreaks and in high-risk groups, 100 or more per 100 000 may be infected.⁽¹⁾ In India first time Leptospirosis reported from Andaman in 1920.⁽²⁾ Since 1980s Leptospirosis is a remarkable public health problem in Kerala, Maharashtra, Karnataka, Andaman, Gujarat state in India.⁽²⁾ Leptospirosis

was first detected in Gujarat in the year 1994 and it is constantly present mainly in the south Gujarat part of Gujarat.⁽²⁾ Leptospirosis is not a notifiable disease in India and, therefore, no accurate disease incidence figures are available. The disease is underreported and it has many reasons, including difficulty in distinguishing clinical signs from those of other endemic disease and lack of appropriate diagnostic laboratory services.⁽²⁾ Seasonal rains and seasonal flooding are the most important factors in the occurrence of epidemic leptospirosis. Tropical humid environments, poor sanitation leading to rodent infestation, and uncontrolled dog populations are important for endemic transmission. Sporadic leptospirosis is associated with human contact with contaminated environments in various settings: on the job (veterinary, sewer, and slaughterhouse workers), in poorly hygienic inner-city alleys and slums.⁽³⁾

METHODOLOGY

Study design: prospective study design.

Study setting: This study was done at New Civil Hospital, Surat (N.C.H.S.) which is a tertiary care centre attached with Government Medical college, Surat.

Study population: All suspected cases of Leptospirosis who were admitted in hospital were taken in study.

Material & Methodology: Data was collected from all the 159 suspected cases of Leptospirosis admitted during July to October 2013 in this hospital using structured questionnaire.

Statistical Analysis: Data was entered, compiled and analysed in MS excel sheet, SPSS v 16 software and appropriate statistical methods were applied.

Case definitions: To label the cases as suspected, probable, confirmed cases Guidelines of the Regional Medical Research Centre (ICMR) and WHO Regional Office for South-East Asia⁽⁴⁾ was used.

FINDINGS

The numbers of patient studied were 159 and the age range of patients studied was 15 to 85 years with a mean age of 37.45 years (SD±13.48). It was affecting mainly productive age group between 23 to 51 years. In suspected cases of leptospirosis out of total 159

cases 111(70%) were male and 48(30%) were female.

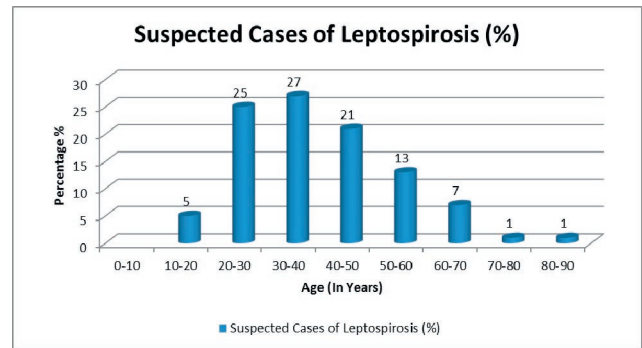


Figure: 1 Age wise distribution of suspected cases of Leptospirosis (n=159)

Most of the cases of Confirmed Leptospirosis cases occurred in productive age group in both the gender (20-59 years of age) [Tablet: 1].

Table: 1 Age & Gender wise distribution of confirmed case of Leptospirosis (n=84)

| Age group | Male | | Female | | Total | |
|--------------|-----------|-------------|-----------|-------------|-----------|------------|
| | n | % | N | % | n | % |
| Years | | | | | | |
| 0 -19 | 03 | 05.6 | 02 | 06.7 | 05 | 06.0 |
| 20-39 | 30 | 55.6 | 13 | 43.3 | 43 | 51.2 |
| 40-59 | 19 | 35.2 | 09 | 30.0 | 28 | 33.3 |
| 60-79 | 02 | 03.7 | 06 | 20.0 | 08 | 09.5 |
| Total | 54 | 64.3 | 30 | 35.7 | 84 | 100 |

Almost all the cases of Leptospirosis were observed in farm worker with very few exceptions [Table: 2].

Table: 2 Occupation wise distribution of Leptospirosis cases (n=159)

| Occupation | Number of cases | Percentage (%) |
|---------------------|-----------------|----------------|
| Farm Worker/ Farmer | 155 | 97.5 |
| Peon | 1 | 0.6 |
| Electrician | 1 | 0.6 |
| Labourer | 1 | 0.6 |
| Housewife | 1 | 0.6 |

Almost half of the patients (55%) who died due to Leptospirosis were found to be alcoholic [Figure: 2].

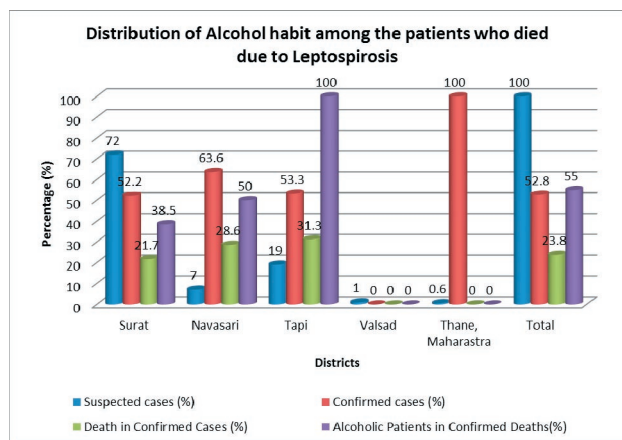


Figure: 2 Distribution of Alcohol habit among the patients who died due to Leptospirosis.

We observed that as the rainy season progresses there was an increase in the number of leptospirosis cases and as the rainy season comes to the end there was a gradual decrease in the cases [Figure: 3].

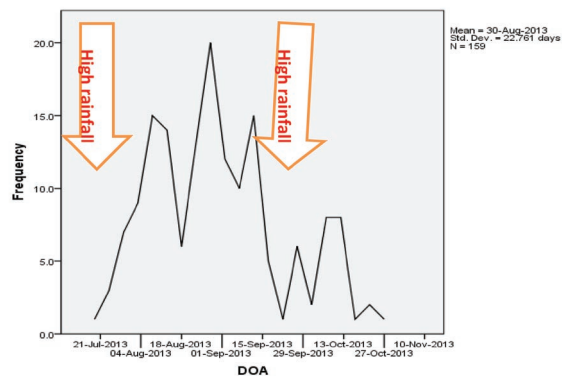


Figure: 3 Incidence of Suspected Leptospirosis cases as the rainy season Progress

In our study we observed calf tenderness having a negative predictive value of 84% and fever having the positive predictive value of 92.9% so we can say suspected cases having both symptoms together there is a high chance of Leptospirosis. Conjunctival suffusion has an odds ratio of 5.9 so we can say that in suspected cases having this symptom 5.9 times the chance of having a confirmed case of Leptospirosis [Table: 3]

Table: 3 Distribution of sign & symptoms of Leptospirosis according to different tools of screening

| Symptoms | Suspected cases(n=159) | Confirmed cases(n=84) | Sensitivity (%) | Specificity (%) | PPV (%) | NPV (%) | Odds ratio |
|------------------------|------------------------|-----------------------|-----------------|-----------------|---------|---------|------------|
| Fever | 145 | 78 | 53.8 | 57.1 | 92.9 | 10.7 | 1.6 |
| Myalgia | 139 | 73 | 52.5 | 45.0 | 86.9 | 12.0 | 0.9 |
| Headache | 107 | 55 | 51.4 | 44.2 | 65.5 | 30.7 | 0.8 |
| Calf tenderness | 34 | 22 | 64.7 | 50.4 | 26.2 | 84.0 | 1.9 |
| Conjunctival suffusion | 25 | 21 | 84.0 | 53.0 | 25.0 | 94.7 | 5.9 |
| Jaundice | 83 | 48 | 57.8 | 52.6 | 57.1 | 53.3 | 1.5 |
| Oliguria | 72 | 40 | 55.6 | 49.4 | 47.6 | 57.3 | 1.2 |
| Bleeding tendency | 06 | 03 | 50.0 | 47.1 | 03.6 | 96.0 | 0.9 |
| Breathlessness | 72 | 56 | 50.0 | 44.8 | 42.9 | 52.0 | 0.8 |
| Pulmonary haemorrhage | 14 | 06 | 57.1 | 47.6 | 09.5 | 92.0 | 1.2 |

In our study sensitivity of Lepto-check, IgM ELISA, PCR, MAT was 72.5%, 78.1%, 85.7%, 93.9%, respectively and specificity of Lepto-check, IgM ELISA, PCR, MAT was 69%, 73.2%, 57.3%, 60% respectively [Table:4]

Table: 4 Sensitivity & specificity of different laboratory test in Suspected Leptospirosis Cases

| Test | Confirmed Cases detected | Sensitivity (%) | Specificity (%) |
|--------------------|--------------------------|-----------------|-----------------|
| Leptocheck (n=151) | 58 out of 80 | 72.5% | 69.0% |
| ELISA (n=120) | 50 out of 64 | 78.1% | 73.2% |
| PCR (n=117) | 30 out of 35 | 85.7% | 57.3% |
| MAT (n=113) | 31 out of 33 | 93.9% | 60.0% |

DISCUSSION

During the past decade in south Gujarat Leptospirosis has emerged and resulted in epidemics causing significant morbidity & mortality in South Gujarat. Key reasons of disease in these region are: (i) leptospira microorganism require three conditions for its survival, namely a reservoir host (Rodents, Cattle, Goats, Pigs etc.) alkaline soil & wetness (heavy rainfall & water logging conditions). All these factors viz., alkaline soil, presence of leptospira serovars in domestic animals & wetness are present in South Gujarat. When the agricultural workers pass through or work in these waterlogged conditions, they become susceptible to the disease. (ii) The areas from where the disease is being reported are agriculturally advanced areas and the main crops cultivated here are paddy, sugarcane, and banana. The water requirement of these crops is quite high and to meet this requirement lift irrigation system as well as the water from Ukai-Kakrapar Dam project is used. From the experience of flood of 1994, 1998, 2006 it was observed that the excess water released from the Ukai dam during the monsoon season spread in larger low lying areas of South Gujarat results in waterlogged conditions. (iii) Two canals originating from Ukai dam project supply the water to the agricultural fields covering major areas of Surat, Tapi, Navasari, and Valsad districts. The water seepage from these canals and excess water received during the monsoon is the main cause of water logging in these areas. ⁽²⁾

Two-thirds of cases in this study belonged to 23-50 years of age-group and were male, which are usually involved in labour and farming and represent the economically productive age group. Age distribution is comparable to the study done by Bhardwaj P. et al⁽⁶⁾ as well as other studies.^(6,7) Male preponderance is believed to be due to occupational differences rather than sex linked susceptibility. In our study, the patients were mostly from a rural setting where

exposure to cattle and rodents is present. Out of 159 cases 155(97.4%) were either farmer or farm worker so people working in field or engaged in any farm work are the mostly susceptible.

The most frequent presenting symptom was fever followed by muscle pain and headache a reflection of the study done by Parmar et al⁽⁸⁾ wherein 100% of the patients had fever, headache(92%), muscle pain(77%). Study done by Prasad R. et al⁽⁶⁾ shows fever(93%), vomiting (66%), bodyache(63%), muscle pain(46%), headache (40%). Another study done by Mendoza et al⁽⁷⁾, shows fever(98.5%), headache(55.6%) and epigastric pain(52%). In the study done by Parmar et al⁽⁸⁾, the most frequent symptoms noted were fever, chills, myalgia, and headache.

MAT (Microscopic Agglutination Test) does not have any diagnostic significance in 1st week and peak about 3rd week. Hence IgM ELISA for Leptospirosis should be done at the end of first week and MAT can be done in the 3rd week. Modified Faine's criteria is a more a practical methods to diagnose Leptospirosis.⁽⁴⁾ Availability of simple diagnostic tests (ELISA – IgM or SAT) should help in diagnosis of milder forms (anicteric) of Leptospirosis, which is more common (90%) than severe Leptospirosis (10%).⁽⁴⁾

In this study most frequent presenting symptom was Fever, Myalgia, Jaundice, Headache, and Breathlessness. Fever & myalgia had higher positive predictive value (PPV) and conjunctival suffusion, pulmonary haemorrhage, bleeding tendency & Calf tenderness had higher negative predictive value (NPV). In this study alcohol was associated with more than 50% of confirmed case death.

CONCLUSIONS

Cases of suspected Leptospirosis usually increase during rainy season leading to sharp rise in admission in the hospital. Majority of the cases belonged to

rural area and almost all had history of contact with animals. Fever, myalgia (calf tenderness), jaundice and conjunctival suffusion were characteristic physical examination findings. Jaundice and renal failure are associated with severity of the disease and are considered bad prognostic signs with high mortality rate (54%).

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Conflict of Interest : NIL

Source of Funding: This study was undertaken as part of routine leptospirosis control activities of the Government of Gujarat for South Gujarat region, as per Government order.

Ethical Clearance: This study was undertaken as part of routine leptospirosis control activities of the Government of Gujarat for South Gujarat region, as per Government order.

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The Survey of the Organizational Commitment among Zahedan Medical Sciences Staff in 2015

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ABSTRACT

Introduction: among the organizations superiority indices evaluation in relation to one another is the employees working in them, the level of loyalty and commitment of whom makes them perform the assigned duties with a higher quality and this in itself can bring about an increase in performance, productivity and organizational efficiency. The present study has been performed aiming at the survey of the organizational commitment among Zahedan medical sciences university staff.

Implementation method: the present study is a descriptive analytical research of the cross-sectional type which has been conducted on 165 individuals from Zahedan medical sciences university all of whom have been selected based on a random method in 2015. To collect the information required for the study there was made use of a two-part questionnaire the first part of which was related to demographic attributes and the second part pertained to Allen and Mayer standard questionnaire. Data were analyzed by taking advantage of SPSS 19 and descriptive statistics, Pierson correlation, variance analysis and independent t-test.

Findings: the individuals' average age was 36.41 ± 9.79 , 103 people were women and 140 individuals were married. The organizational commitment total mean score was 73.45 ± 4.55 and the total mean score for affective commitment, continuance commitment and normative commitment were 24.93 ± 2.59 , 24.06 ± 2.61 and 24.46 ± 3.25 , respectively. The relationship between age, gender and marital status with organizational commitment and each of its components was not statistically significant ($P > 0.05$).

Conclusion: the staff organizational commitment was in an intermediate level. Since, staff commitment can be effective on services quality and the optimum deployment of the resources, it is necessary for the managers to pay more attention to the effective organizational commitment factors including provision of welfare facilities, decision making participation, proper relations and job enrichment.

Keywords: organizational commitment, university staff members, Zahedan.

INTRODUCTION

Undoubtedly, the scientific institutions, particularly the academic associations, are the most effective and the most fundamental groups in developing countries growth ^[1] and the staff are the

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most valuable assets every organization can invest on. The human workforce with proper performance can work in the direction of organizational objectives accomplishment or quite inversely if it is not guided and navigated. Therefore, the recognition of the human workforce behavior and attitude is of a particular interest and importance in management ^[2]. Among the organizations' superiority indices in respect to one another one can refer to the employees and workers working therein the extent of their loyalty and commitment determines the quality with

which they perform their duties and responsibilities and this per se can bring about an increase in productivity, performance and efficiency [3]. There is a wide spectrum of definitions regarding organizational commitment. Zannad and Rouet believe that commitment is an aptitude and attachment to an organization and it is envisaged as a process through which the organizational and individual objectives become united and coordinated. Commitment refers to the individuals' tendency for providing their social systems with energy and loyalty. In the social psychologists ideas, commitment makes the individuals to make use of all of their capacities to fulfill the organizational objectives and prevent from any sort of separation between employee and the organization [4]. Tella et al believe that personal, organizational and managerial factors and non-organizational ones influence the individuals' commitment in an organization [5]. Based on the organizational commitment multifaceted nature there is a great deal of support for Allen and Mayer's three-component model [6, 7]. In other words, commitment is a sort of affective and fanatical attachment to the values and objectives of an organization in a way that the staff identifies itself with the organization and enjoys being part of it. Absence of commitment in the employees of an organization diminishes the sense of duty towards the organizational objectives and immorality domineers, organizational commitment is a new concept which differs from job satisfaction [8]. Among the organizational commitment facilitating factors one can refer to work attributes, work importance, autonomy [9], owing to the organization and being interested in doing one's job. Perception of discrimination in an organization, ignoring the employees' needs, lack of participation in organizational affairs and being unmotivated are among the preventive organizational commitment factors. When the staff consult with the organizational leaders about making decisions in relation to and solving their problems a type of environment will result in which the staff feels satisfied with its job and it will become more committed to the organization [10].

According to the fact that there are many factors influencing organizational commitment and the commitment level plays a considerable role in the organization's success or failure, on the other hand,

low organizational commitment can be followed by negative outcomes of the quality of the services provided by the staff and also it will increase the likelihood of the intent to leave; thus, the researchers decided to conduct a study with the objective of the survey of the organizational commitment level among Zahedan medical sciences university.

IMPLEMENTATION METHOD

The present study is a cross-sectional descriptive-analytical research which has been conducted on 165 individuals of Zahedan medical sciences university staff all of whom had been selected based on a random method in 2015. The study entrance priority was given to those employees who had at least a MA degree and they had to provide an oral consent to be participated in the study. To collect the necessary information there was made use of a questionnaire which included two parts the first part of which was related to demographic characteristics (age, gender, work history and marital status) and the second part pertained to Allen and Mayer standard questionnaire and this instrument contained 24 questions and three affective, continuance and normative commitments subscales. The questionnaire was designed based on Likert's 5-point scale, in which "1" denotes "completely disagree" and "5" means "completely agree". Some of the questions have been scored inversely and the organizational commitment score was obtained from the total sum of all of its aspects and the higher the individual's score it is indicative of the higher level of organizational commitment. The questionnaire validity and reliability were confirmed by Rahmanzadeh et al and the Cronbach's alpha coefficient was obtained 0.91 for affective commitment and it was obtained 0.90 for continuance commitment and it was obtained 0.66 for normative commitment [11].

To collect the data, after acquiring an ethical confirmation letter from Zahedan medical sciences university vice chancellorship and obtaining a letter of recommendation and making the necessary coordination with the university security office, the researcher referred to the university administrative office, and firstly the objective of performing the research was explained to the individuals and after acquiring an oral consent the questionnaire was distributed to the respondents. After the

questionnaires were completed they were gathered and reviewed by the researcher and they were returned to the respondents again in case there were uncompleted parts and s/he was asked to complete the deficient sections. Finally, after the questionnaires were gathered the data were analyzed by taking advantage of SPSS 19 and descriptive statistics, Pierson correlation, variance analysis and independent t-test.

FINDINGS

The individuals' average age was 36.41± 9.79. 103 individuals (62.4%) were women and 140 individuals (84.4%) were married. 57 individuals (34.5%) had a work history of 1-5 years, 35 individuals (21.2%) had a work history of 5-10 years, 19 individuals (11.5%)

had a work history of 10-15 years. 22 individuals (13.3%) had a work history of 15-20 years and 32 individuals (19.4%) had a work history of 20 years and more. The organizational commitment total mean score was 73.45 ± 4.55 and total mean score for each of the components of continuance and normative commitment was 24.06 ± 2.61 and 24.46 ± 3.25, respectively. The relationship between age, gender and marital status with organizational commitment and each of its components was not statistically significant (P>0.05). The affective commitment mean score indicated no significant difference in both genders.

The relationship between work history and organizational commitment and each of its components has been tabulated as table (1).

Table 1: the relationship between work history and organizational commitment and each of its components

| | | Mean | Standard deviation | P-value |
|---------------------------|-------------|---------|--------------------|---------|
| Organizational commitment | 1-5 years | 73.5789 | 4.34638 | 84.00 |
| | 5-10 years | 73.2571 | 4.79793 | 83.00 |
| | 10-15 years | 73.6842 | 5.64754 | 83.00 |
| | 15-20 years | 73.4545 | 3.92461 | 80.00 |
| | 20> years | 73.3125 | 4.58917 | 83.00 |
| Affective commitment | 1-5 years | 24.7719 | 2.22018 | 30.00 |
| | 5-10 years | 24.8857 | 2.70915 | 32.00 |
| | 10-15 years | 24.8947 | 3.47842 | 31.00 |
| | 15-20 years | 25.4091 | 2.57569 | 31.00 |
| | 20> years | 24.9375 | 2.63888 | 30.00 |
| Continuance commitment | 1-5 years | 24.0702 | 2.41912 | 29.00 |
| | 5-10 years | 24.2571 | 2.30527 | 29.00 |
| | 10-15 years | 23.7895 | 2.41704 | 29.00 |
| | 15-20 years | 23.1364 | 2.25294 | 28.00 |
| | 20> years | 24.6563 | 3.46046 | 32.00 |
| Normative commitment | 1-5 years | 24.7368 | 2.70929 | 32.00 |
| | 5-10 years | 24.1143 | 3.23375 | 31.00 |
| | 10-15 years | 25.0000 | 4.04145 | 32.00 |
| | 15-20 years | 24.9091 | 3.06919 | 30.00 |
| | 20> years | 23.7188 | 3.76087 | 29.00 |

DISCUSSION

In the present study, the organizational commitment was in an intermediate level and the affective commitment score was higher than the other dimensions which is corresponding with the results obtained in the studies performed by Sajjadi et al [12], Ferreira [13] and Ravaqi et al [14]. And this means that the medical sciences university staff were committed to this organization due to the high level of their

affective commitment towards the organization or because of unavailability of better opportunities outside the organization and it also indicated that the staff are not reluctant to leave the organization for finding a better job with better conditions and this is what the organizational managers should be more aware of and pay more attention to it. In the study performed by Lotfi et al which aimed at the survey of Shiraz medical college educational department managers' leadership style and its relationship with

organizational commitment it was shown that the faculty members' organizational commitment level was mostly in an intermediate level^[15]. Although the results of the present study and the other studies have shown that the staff commitment is in an optimum level but this can be upgraded. Expert and committed human resources consistent with the organizational objectives tend to preserve their organizational membership and they work beyond their predetermined framework of responsibilities and duties.

An interesting result is that the lowest score belongs to the normative commitment and this means that the staff do not leave the organization not because of the organization itself rather due to this reason that they do not have better choices outside the organization and they have a low level of organizational commitment. Holding in-service educational and training courses, job description and division based on qualifications and competencies, continuous performance evaluation and paying attention to the staff capabilities and talents can play a role in increasing the staff normative commitment^[16]. Also, it is worth mentioning that the staff had an intermediate level of continuance commitment. This type of organizational commitment is in relationship with the benefits and costs which determine the individual's leaving or staying with an organization. In fact, such a commitment is expressive of a calculation between the benefits and costs which is also known as intellectuality commitment. The employees with such a commitment usually stay in the organization until the organization does not impose extravagant costs on them. The tendency to stay with an organization is somewhat related to the individual's perception of the costs related to leaving an organization^[17].

The organizations should pay a particular attention to the behavioral problems in the face of their human forces especially the normative and continuance aspects which are stemming from the work environment external factors. Align with this, the organizations should take measures to increase the normative commitment via emphasizing the values and organization missions and selection of the individuals based on this aspect in order to be able to enhance the overall services specially reliability and quality guarantee.

Also, the results obtained by the current study indicated that the individuals with a lower work history have higher organizational commitment. It is for sure that the employees who have been recruited recently try to make their managers and superiors satisfied with their performance because they want to stabilize their position. Also, they try their best to obtain higher positions, acquire appropriate working conditions and higher salaries to safeguard their future, thus it is maybe to the same reason that they exhibit a stronger commitment in contrast to the employees with longer work history. On the other hand, the employees with longer work history are not seeking to stabilize their positions in the organization and that after long years of providing service to the organization they have become part of the organizational assets and therefore have no concern regarding job security, they enjoy a greater freedom of action and a wider range of performance options and they are seeking to take more responsibilities, to grow and promote more, so they exhibit higher levels of organizational commitment in comparison to the employees with shorter work histories from the perspective of motivational aspect.

CONCLUSIONS

The results obtained by the present study indicated that the employees' organizational commitment was in an intermediate to high level. Since the employees' commitment can be effective on the service quality and the optimum use of the resources it seems necessary for the managers to give more weight to the elements effective on the organizational commitment such as provision of the welfare facilities, participation in decision making, proper relationships, vocational enrichment and so on. Due to the organizational commitment being in an intermediate level in the study units it is necessary for the managers to increase the staff job involvement and organizational commitment by clarifying the job descriptions and correct performance evaluation and set the ground for the staff service quality enhancement.

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The Survey of the Barriers to Reporting Medication Errors from the Perspective of the Nurses

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ABSTRACT

Introduction: Medical errors are among the important challenges threatening the health systems in all of the countries around the world. Among the most common recognized medical errors are the medication errors. One way for preventing from such medication errors from happening is to encourage the staff members to report their errors and mistakes in order to be able to establish policies and strategies for eliminating the factors effective on reporting the medication errors and therefore to prevent them from reiteration. Therefore, the present study objective is the survey of the barriers to reporting the medication errors from the perspective of the nurses.

Implementation method: the present study is a descriptive research which has been conducted on 119 nurses who were selected based on a random method in 2016. To gather the information required for the study a two-part questionnaire was applied the first part of which was related to the demographic characteristics and the second part was related to the factors effective on not reporting the medication errors. Finally, the questionnaires were collected and the data was analyzed by the use of SPSS 19 software and descriptive statistics.

Findings: the individuals' average age was 28.86 ± 6.54 , 101 individuals were women and 87 individuals had previously participated in ethics-related courses. The highest mean score was obtained in the managerial factors aspect. Also, the highest mean score in the components was pertained to the items "being reproached by the authorities" and "being reproached by the respective physician" and the lowest mean score belonged to the item "the error effect on salary deductions".

Conclusion: nurses play a significant and critical role in preventing from the medication errors, but it has to be announced that nurses' mistakes are unavoidable. Therefore, the managers should provide safe and appropriate conditions for nurses' reporting of the errors.

Keywords: Medication errors, reporting, nurses, perspective

INTRODUCTION

The accelerated changes in health and treatment systems have confronted the medical care professional personnel with numerous ethical and treatment

aspects ^[1, 2]. Nowadays, the issue of complaining and suing by the patients and their dissatisfaction of the physicians and other health care staff as a result of violations and diagnosis and treatment errors are increasingly growing ^[3]. Medical errors are among the important challenges threatening the health system in all of the countries. One such medical error is the drug and medication errors ^[4]. The first reports regarding the medication errors were proposed in 1940 and it gained so much attention by the individuals involved in the health care services from all around the world.

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As a matter of fact, a great number of errors happen during medicinal treatment [5-7].

When a medication error takes place usually it is the nurse's performance which is blamed and punished more than any other staff members in the health care profession and it is mostly the nurses who are punished and reproached following to the medication error occurrence. This is due to the reason that it is the nurses that often execute the medication decisions and they spend 40% of their time administering drugs [8]. Medication error has been defined as improper use or application of drugs which can be prevented and in case of occurrence injures the patient [9].

The financial costs respective to the medication side effects reach the approximate number of 77 billion Dollars [10]. It is estimated that 44000-98000 patients die annually due to the medical errors and this is while 7000 cases pertain to the medication mistakes [11].

The most common recognized errors in prescribing drugs include drug prescription mistakes, lack of observing the correct method of drug prescription, administering drugs with the dosage higher than what has been prescribed, lack of observing the right time for administering drugs, and administering the wrong drug to the wrong patient due to lack of patients' identification [12, 13]. Theoretically, all of the medication errors can be prevented and the studies have shown that approximately one third of the unintentional medication events are related to preventable medication errors. Thus, the recognition and systematic analysis of the factors causing them can lead to a better programming and planning in order for such mistakes to be prevented and in order for the nurses and physicians work quality to be enhanced [9, 14]. One way to prevent medication errors is to encourage the staff to report their mistakes in order to be able to think of policies and strategies for the factors influencing medication mistakes to be eliminated and consequently the medication errors can be inhibited from repetition [15].

Pointing to the importance of realizing and identifying the reasons and barriers to reporting medication errors in nurses, the present study provides appropriate individual and managerial

approaches for reporting medication errors via the exact identification of the barriers to the medication errors reporting and it aims at the survey of the reason for not reporting the medication errors from the nurses point of view.

IMPLEMENTATION METHOD

The present study is a descriptive research which has been conducted on 119 nurses who have been selected randomly in 2016. To gather the information required for the present study there was made use of a questionnaire which was comprised of two parts the first part of which was about the participants' demographic characteristics (age, gender, work history and passing a course on ethics) and the second part pertained to the factors influencing not reporting the medication mistakes which included 19 items and it was studied in three fields including fear of reporting consequences (11 items), factors related to the reporting process (3 items) and managerial factors (5 items). The items were scored based on Likert's 5-point scale from "completely agree" (score 5) to "completely disagree" (score 1). In the next stage, the scores of each of the questions and fields were computed. The content validity of the present questionnaire in the study performed by Hussein Zadeh et al [15] was confirmed and the reliability was obtained 0.86 based on Cronbach's alpha method.

To collect the data, after the ethical confirmation of the study plan by Zahedan medical sciences university vice chancellorship office and acquiring a letter of recommendation and making the required coordination works the researcher referred to the hospital and firstly the objective of the present study was explained and after obtaining an oral consent the questionnaire was distributed in sufficient number to the participants. After the questionnaires were completed they were gathered and reviewed by the researcher and they were returned to the respondents in case of uncompleted parts and the respondent would be asked to complete the related parts and in the end after the questionnaires were gathered the data was analyzed by means of SPSS 19 and descriptive statistics.

FINDINGS

The individuals' average age was 28.86 ± 6.45 , 101 people (84.9%) were women and 87 individuals

(73.1%) had passed courses on ethics. 64 individuals (53.8%) had a work history of 1-5 years, 38 individuals (31.9%) had a work history of 5-10 years, 11 individuals (9.2%) had a work history of 10-15 years and 6 individuals (5%) had a work history of above 15 years. The highest mean score was obtained in the managerial dimension. Also, the highest mean score was obtained in items related to the items of

“being reproached by the authorities” and “being reproached by the patient’s physician” and the lowest mean score obtained was related to the item “the error effect on salary deductions”.

Items frequency, mean and standard deviation related to not reporting the medication errors questionnaire from the perspective of the nurses have been given in table (1).

Table 1: Items frequency, mean and standard deviation related to “not reporting the medication errors questionnaire from the perspective of the nurses”

| | not reporting the medication errors questionnaire | Completely disagree (%) | Disagree (%) | No idea (%) | Agree (%) | Completely agree (%) | Item mean score |
|--|--|-------------------------|--------------|-------------|-----------|----------------------|-----------------|
| Being afraid of reporting consequences | The effect of the score on the annual evaluation score | 16 | 16 | 26.9 | 29.4 | 11.8 | 3.05±1.25 |
| | Error effect on salary deductions | 15.1 | 21 | 27.7 | 26.9 | 9.2 | 2.94±1.20 |
| | Being reprimanded by the authorities | 8.4 | 16.8 | 20.2 | 37 | 17.6 | 3.39±1.20 |
| | Being reproached by the patient’s physician | 10.9 | 8.4 | 23.5 | 46.2 | 10.9 | 3.38±1.13 |
| | Being reproached by the peers | 14.3 | 12.6 | 31.9 | 31.1 | 10.1 | 3.10±1.18 |
| | Expression of side effects in patient | 7.6 | 15.1 | 28.6 | 38.7 | 10.1 | 3.29±1.08 |
| | Being labeled incompetent | 12.6 | 17.6 | 28.6 | 26.1 | 15.1 | 3.13±1.24 |
| | Section peers treating style | 12.6 | 14.3 | 31.9 | 31.1 | 10.1 | 3.12±1.16 |
| | Creation of negative attitude in the patient and his or her family | 12.6 | 14.3 | 32.8 | 30.3 | 10.1 | 3.11±1.16 |
| | Suing issues | 14.3 | 19.3 | 23.5 | 34.5 | 8.4 | 3.03±1.20 |
| Dispersion of the news in other sections and centers | 12.6 | 14.3 | 29.4 | 34.5 | 9.2 | 3.13±1.16 | |
| Fear of reporting consequences field total mean score: the 3.15±0.86 | | | | | | | |
| Factors related to the reporting process | Not caring for reporting some of the medication errors | 10.1 | 22.7 | 27.7 | 26.1 | 13.4 | 3.10±1.19 |
| | Ambiguity in medication error definition | 10.9 | 16 | 37 | 28.6 | 7.6 | 3.06±1.09 |
| | Forgetting to report the medication error | 10.1 | 23.5 | 30.3 | 26.9 | 9.2 | 3.02±1.13 |
| Reporting process field total mean score: 3.05±0.96 | | | | | | | |
| Fear of managerial factors | Not receiving positive feedback following reporting from nursing authorities | 7.6 | 8.4 | 42.9 | 29.4 | 11.8 | 3.29±1.03 |
| | Nursing managers’ incorrect beliefs | 7.6 | 12.6 | 34.5 | 31.9 | 13.4 | 3.31±1.09 |
| | Officials’ sole concentration on the responsible nurse and disregarding the factors involved in the error expression | 8.4 | 16 | 28.6 | 27.7 | 19.3 | 3.34±1.20 |
| | Disproportionate officials’ reaction to the error intensity | 10.9 | 9.2 | 31.9 | 35.3 | 12.6 | 3.29±1.14 |
| | Disproportionate officials’ reaction to the error importance | 14.3 | 12.6 | 24.4 | 36.1 | 12.6 | 3.20±1.23 |
| Fear of managerial factors field total mean score: 3.28±0.98 | | | | | | | |

DISCUSSION

In the present study the highest mean score was obtained in the area of managerial factors. In the study performed by Mardani et al the managerial factors including the authorities' reaction are reported as the factors involved in not reporting the medication errors [16]. In another study the harsh managers' treatment style with punishment was announced to be an effective factor for not reporting the medication errors [17]. Also, the highest score regarding the questionnaire items belonged to the items "being reproached by the managers" and "being reproached by the patient's physician". It has to be admitted that medication errors are unavoidable but there is the possibility to prevent from injuries happening to the patients by reporting and pursuance of the likely unwanted accidents [18]. But, in case that the manner with which the managers and officials treat the personnel is not appropriate this may result in not reporting the medication errors and consequently the greatest damage is incurred by the patients. In the study performed by Musa Rezaee et al among the most common barriers to reporting medication errors from the nurses point of view were the absence of error recording facilities (84%), not being aware of the medication error definition (81%), fear of being sued (80%), time-consuming nature of reporting (73%) and the system not providing the personnel with sufficient support (68%) [19].

Tol et al also came to this conclusion that the fear of suing issues and problems is among the most important barriers to the field of fearing from medication error reporting consequences [20].

Also, the results of the study performed by Hussein Zadeh indicated that the most important barriers to not reporting the medication errors have been suing issues, officials' concentration on the direct person and the uncertainty of the medication error definition [15]. It seems that the nurses who participated in the present study are more fearful of the managers and authorities' behavior than the judicial and suing issues and the authorities seemed stricter than the suing issues to them. It is evident that the lower rates of medication errors are favored by the managers and officials, but it has to be taken into consideration that minimizing the intervals between the medication errors and reporting them is regarded

as a scale for determination of the patients' security [21].

Measures such as reducing the work pressure and proportionate increase in the number of the work force in respect to the number of the patients, improving the sections environmental conditions and the elimination of the concentration distracting and disturbing factors such as crowd, the enhancement of the control systems can be effective on the reduction of the medication errors and enhancement of the patients' security and the actions and measures regarding the prevention of and reporting the medication errors both by system and by the individual should be taken into consideration.

According to the above mentioned matters, the managers and officials should adopt an appropriate method and pattern of treating the staff in lieu of inappropriate treatments to improve the current situation and in order for the medication errors to be determined in such a manner that more reports with clearer and straightforward nature would result [22].

One of the main limitations in the present study was that the current study was performed in a specific period of time. Second, the information regarding the individuals was gathered via questionnaires. Because the present study is of a questionnaire nature this could have influenced the final results.

CONCLUSIONS

Endeavoring to reduce and control medication errors necessitates the use of a systematic approach to the survey of the leading factors, removing such factors to the maximum extent possible and also designing a system in order for the number of medication errors reported to increase by the nurses.

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A Study of Contraceptive Practices among Married Women in Rural and Urban Areas of District Amritsar

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ABSTRACT

Introduction : Contraceptive information and services are fundamental to the health and rights of all individuals. Most couples in India do not want to use a contraceptive method on a long-term basis for the fear of side-effects. Unplanned pregnancies are common. So the present study was planned to find out the contraceptive practices among married women in reproductive age group and also awareness levels regarding emergency contraception were explored among married women.

Material & method: The present cross – sectional study was conducted in rural and urban field practice areas of Department of Community Medicine, SGRDIMSAR, Amritsar. Married women were selected by adopting simple random sampling technique. Pre-Designed, pre-tested questionnaire was used to collect information. Data was analyzed using SPSS version 20.0. **Results:** The study depicted that 61.2% women in rural and 47.4% in urban area belonged to age group of 20-30 years. The present study revealed that 74.8% women in rural and 82.3% in urban area were aware about contraceptive methods. 18.3% women in rural area and 41.7% in urban area were aware about emergency contraception. Out of those aware, use of emergency contraceptive pill was mentioned by 37.5% women in rural and 62.5% in urban area. **Discussion:** Education profile of women revealed that in rural area women were mainly educated below matric while in urban area women had education till matric. More than three fourth of women were using contraceptive methods in both rural and urban area in present study. Awareness levels about emergency contraception were low in both rural & urban areas. **Conclusions:** There is need to educate women collectively through health facilities, media, government and non government organizations with emphasis on available methods of contraceptives.

Keywords : Women, Contraceptive Practices, Rural, Urban

INTRODUCTION

Family planning is key to slowing unsustainable population growth and the resulting negative impacts on the economy, environment, and national and regional development efforts¹. A woman's ability to space and limit her pregnancies has a direct impact on her health and well-being as well as on the outcome of each pregnancy². Contraceptive information and

services are fundamental to the health and rights of all individuals.³ Contraception has been a single most important intervention to reduce burden of unwanted pregnancy and promote healthy living among young women.

Contraceptive use has increased in many parts of the world, especially in Asia and Latin America, but continues to be low in sub-Saharan Africa. Globally, use of modern contraception has risen slightly, from 54% in 1990 to 57.4% in 2014. Regionally, the proportion of women aged 15–49 reporting use of a modern contraceptive method has risen in Asia it has risen slightly from 60.9% to 61.6%¹.

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India was the first country in the world to adopt an official population policy and launch official family planning programme way back in 1952 which remains the mainstay of family planning efforts⁴. Family planning is also at the core of the Programme of Action of the International Conference on Population and Development, where couples and individuals have the right to decide freely and responsibly the number and spacing of their children and to have the information and means to do so⁵.

An estimated 225 million women in developing countries would like to delay or stop childbearing but are not using any method of contraception¹. Most couples in India do not want to use a contraceptive method on a long-term basis for the fear of side-effects, especially the oral pill and intrauterine devices (IUDs), or do not like to use a method linked with coitus (barrier methods). Hence, unwanted and unplanned pregnancies are common⁶.

Many of the unintended pregnancies go for abortions which are performed in unsafe condition incurring the higher risk of morbidity and mortality. Emergency contraception (EC) is a type of contraception administered to a woman after unprotected intercourse to children's health and well being. The aspect related to emergency contraception has been explored in very few studies. So the present study was planned to find out the contraceptive practices among married women in reproductive age group and also awareness levels regarding emergency contraception were explored among married women.

MATERIAL & METHOD

The present cross-sectional study was conducted in rural and urban field practice areas of Department of Community Medicine, SGRDIMSAR, Amritsar. The study was conducted among married women in the reproductive age group (15 – 49 years) in both areas. As per NFHS- 3, prevalence for family planning practices of India is 56%. So after applying formula $4pq/l^2$, sample size was calculated. The sample size was rounded off to 350. A list of all eligible couples was prepared in rural and urban field practice areas. Married women were selected from the prepared list and data was collected by adopting simple random sampling technique. Interview was conducted for currently married women of reproductive age with

the help of pre -designed, pre-tested questionnaire. Prior consent of subjects was taken and utmost care was taken to maintain privacy and confidentiality. In case of women who refused to give their consent for the participation in the study, the woman in the next contiguous house was taken so as to complete the sample size. The questionnaire included socio -demographic details, questions related to contraceptives, current methods of contraception. Awareness about emergency contraception was also explored. The socio-economic status of rural and urban subjects was determined by Modified Udai Pareek Scale (MUP)⁷ for rural and urban areas respectively. Data was analyzed using SPSS version 20.0.

RESULTS

The study depicted that 61.2% women in rural and 47.4% in urban area belonged to age group of 20-30 years. Among study subjects, 90.3% of women were Sikhs by religion in rural and 71.4% were Hindus in urban area.(Table 1). Education status of women revealed that 40.6% of them in rural & 29.1% were having education below matric. Majority of women were housewives in rural (96.6%) and urban (76.6%) areas. Whereas education status of husbands of married women revealed that 30.3% of them in rural and 38.3% in urban were educated till matric. Age wise distribution of husbands revealed that 41.1% of them in rural and 28.6% in urban belonged to age group of 20-30 yrs.

The present study revealed that 74.8% women in rural and 82.3% in urban area were aware about contraceptive methods (Table 2). 39.5% women cited health workers, 18.6% mentioned relatives, 10.5% doctors, 1.1% media, 4% friends and 1.1% books as source of information in rural area. While in urban area 17.2% women mentioned health workers, 16.1% cited relatives, 7.3% doctors, 21.7% media, 18.2% friends, 1.8% as books as source of information for contraceptive methods.

Out of those aware, 80.2% in rural & 87.5% in urban area (Table 3) were using contraceptive methods. Table 4 elucidates the contraceptive methods used by the women. In rural area out of total women who were aware about available contraceptive methods, 42.9% women were currently practicing use of condoms while 15.2% used IUD and 5.7% women used oral

contraceptive pills as a method of contraception. Surgical methods tubectomy and vasectomy were adopted by 24.8 % & 8.5% women respectively in rural area.

In contrast in urban area 41.3% women practiced use of condoms, 4.8% women used IUD and 27.8% used oral contraceptive pill as the preferred method of contraception . 14.3% women practiced tubectomy as a method of contraception.

The main source of consultation for family planning method was mentioned as government dispensary (60.9%) followed by government hospital (22.3%), pharmacy (12.3 %)and private hospital (4.5%)in rural area. Whereas in contrast in urban area (46.8%)women mentioned private hospital followed by government dispensary (24.9%),government hospital (19.9%) and pharmacy (8.4%) as source of consultation for family planning method.

The reason cited for adopting contraceptive method was available and affordable by 27.2% women in rural & 30.1%in urban area. Methods were adopted for being effective by 44.7% women in rural 21.4 % in urban area . 28.1 % women in rural & 48.5% in urban adopted contraceptive methods without any reason.

The decision for choosing contraceptive method was taken in 73.3% cases by husbands , 11.1% cases by wives, in 15.6% by both in rural area .Whereas in urban area decision was taken in 38.8% by husbands ,15.8 % by wives and 53.2% by both.

18.3% women in rural area and 41.7% in urban area were aware about emergency contraception .Out of those aware, use of emergency contraceptive pill was mentioned by 37.5% women in rural and 62.5% in urban area.

DISCUSSION

The study showed that 61.2% women in rural and 47.4% in urban area belonged to age group of 20-30 years. In another study by Pandey SM, done in rural area of Hisar among married couples the percentage was found to be highest (57.38 %) in the age group of 30-34⁸.

Majority of women were observed to be Sikhs in rural area while maximum women were found to

be Hindus in urban area. Education profile of women revealed that in rural area women were mainly educated below matric while in urban area women had education till matric. Similar findings were observed in a study done in Nagpur among women by Ghike S ,Joshi S, Bhalerao A, Kawthalkar A⁹.

The present study revealed that 74.8% women in rural and 82.3% in urban area were aware about contraceptive methods . Knowledge of contraception is almost universal in Punjab¹⁰. In rural area women got to know about methods of contraception mostly from Health workers while in urban areas women got their information from media. Another study by Pandey SM revealed that mass media, doctors & health workers can play an important role to educate the people regarding family planning methods⁸ .

More than three fourth of women were using contraceptive methods in both rural and urban area in present study. Whereas in another study in Lucknow done by Kumar A, Bhardwaj P, Srivastava JP, Gupta P more than half 226(66.5%) of the women were currently using contraception¹¹. More use of contraceptives in present study could be because of higher education level in the study.

Barrier method of contraception , condoms were used by maximum number of females in rural and urban area .Similar findings were revealed in study by Ram U, where about half of the users of modern spacing methods reported using condoms in both rural and urban areas¹². The most commonly used spacing method by currently married women in Punjab are condoms followed by the IUD as reported in NFHS 3 data Punjab Report¹⁰ . As regards hormonal methods , more women using OCP's in urban area while more number of women were using IUD in rural area. Preferred surgical method was tubectomy in 24.7 % cases and vasectomy in 8.5% cases in rural area while tubectomy was adopted in 14.7% cases. Less number of females in both rural and urban area were using traditional methods of contraception. Worldwide in 2015, 57 per cent of married or in-union women of reproductive age used a modern method of family planning , constituting 90 per cent of contraceptive user¹³.

More than half of women in rural area mentioned government hospital & government dispensaries as source of contraceptive methods while private

hospitals were mentioned as source by less than half women in urban areas.

Decision for family planning method in rural area was mainly taken in 73.3% cases by husbands while decision for family planning was mutual in 53.2 % cases in urban areas.

Awareness levels about emergency contraception was low in both rural & urban areas. Similar findings were revealed in another study by Knowledge and practice of Emergency Contraceptive was very low in study by Makade KG, PadhyegurjarM, Padhyegurjar SB, Kulkarni RN¹⁴. Out of those aware use of emergency contraceptive pill was used more in urban women than rural women.

Table 1: Socio- demographic profile of married women

| Socio demographic profile | Area | |
|---------------------------|---------------|---------------|
| | Rural (n=175) | Urban (n=175) |
| | Number (%) | Number (%) |
| Age | | |
| Less than 20 | 4 (2.3) | 1(0.6) |
| 20-30 | 107(61.2) | 83 (47.4) |
| 31-40 | 48 (27.4) | 78 (44.6) |
| More than 40 | 16 (9.1) | 13(7.4) |
| Age husband | | |
| 20-30 | 72 (41.1) | 50 (28.6) |
| 31-40 | 71(40.6) | 89 (50.9) |
| More than 40 | 32(18.3) | 36(20.5) |
| SES | | |
| Low | 14 (8.0) | 14(8.0) |
| Low middle | 98 (56.0) | 67(38.3) |
| High middle | 63(36.0) | 91(52.0) |
| High | 0(0.0) | 3(1.7) |
| Religion | | |
| Sikhs | 158 (90.3) | 125(71.4) |
| Hindus | 16 (9.1) | 48 (27.4) |
| Others | 1 (0.6) | 2(1.2) |
| Education | | |
| Illiterate | 39 (22.2) | 28 (16.0) |
| Below matric | 71(40.6) | 51(29.1) |
| Matric | 53 (30.3) | 67(38.3) |
| Graduate & above | 12 (6.9) | 29 (16.6) |

| Education husband | | |
|-------------------|------------|-----------|
| Illiterate | 27 (15.4) | 11(6.3) |
| Below matric | 37 (21.1) | 40 (22.9) |
| Matric | 96 (54.9) | 88 (50.3) |
| Graduate & Above | 15 (8.6) | 36(20.5) |
| Occupation | | |
| Housewife | 169 (96.6) | 134(76.6) |
| Working | 6 (3.4) | 41(23.4) |

Table 2: Awareness about contraceptive methods among married women

| Area | Awareness | |
|----------------|------------|------------|
| | Yes | No |
| | Number (%) | Number (%) |
| Rural (n=175) | 131 (74.8) | 44 (25.2) |
| Urban (n=175) | 144 (82.2) | 31(17.8) |
| | 275 | 75 |

Table 3: Current use of contraceptive methods among married women

| Area | Current use | |
|---------------|-------------|------------|
| | Yes | No |
| | Number (%) | Number (%) |
| Rural (n=131) | 105 (80.2) | 26 (19.8) |
| Urban(n=144) | 126(87.5) | 18(12.5) |
| | 231 | 44 |

Table 4: Current Contraceptive methods used by married women

| Contraceptive method | Area | |
|-------------------------|-----------------|----------------|
| | Rural (n= 105) | Urban(n= 126) |
| | Number (%) | Number (%) |
| Barrier methods | | |
| Male condom | 45(42.9) | 52(41.3) |
| Hormonal methods | | |
| Oral pills | 6 (5.7) | 35(27.8) |
| IUD | 16(15.2) | 6 (4.8) |
| Injectable | 0 (0.0) | 8(6.3) |
| Surgical | | |
| Tubectomy | 26(24.8) | 18(14.3) |
| Vasectomy | 9(8.5) | 0(0.0) |
| Natural methods | | |
| Rhythm method | 0(0.0) | 4(3.1) |
| Abstinence | 0(0.0) | 1 (0.8) |
| Coitus interruptus | 3(2.9) | 2 (1.6) |

Chi square= 63.712, df = 8,p=0.000 (highly significant)

Table 5: Awareness and use of emergency contraception among married women.

| | Area | | Odds Ratio(CI) | P value |
|----------------|--------------|--------------|-----------------------|----------------------------------|
| | Rural | Urban | | |
| Aware about EC | (n=175) | (n=175) | 0.31(0.1921to0.5089) | P=0.000 (highly significant) |
| | Number (%) | Number (%) | | |
| Yes | 32 (18.3) | 73 (41.7) | | |
| No | 143 (81.7) | 102 (58.3) | | |
| Ever used EC | (n=32) | (n= 73) | 0.29 (0.1236to0.6990) | P=0.0056 (highly significant) |
| | Number (%) | Number (%) | | |
| Yes | 12 (37.5) | 49 (67.1) | | |
| No | 20 (62.5) | 24 (32.9) | | |

CONCLUSION

This study reveals poor knowledge of emergency contraceptives among women. The ill effects of unwanted pregnancy & unsafe abortions are to be stressed. In India, women (particularly, young women) virtually have no role to play or are allowed to play very limited in the making of reproductive decisions. There is need to educate women collectively through health facilities, media, government and non government organizations with emphasis on available methods of contraceptives.

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