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Effect of Raja Yoga Meditation on Pulmonary Functions of Young Obese Medical Students

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ABSTRACT

Obesity is common problem in people of high socioeconomic status of all age group. Obesity reduces the pulmonary as well as cardiac efficiency of subjects. It is associated with depression and negative thought process also making a vicious cycle. Raja Yoga is a type of yogic technique which is widely used by Brahma Kumaries. Raja Yoga generates mental piece and calmness. The present study was conducted to assess the effect of Raja Yoga meditation on pulmonary functions of young obese medical students. A total of 60 obese (BMI>30), non-smoker healthy male subjects of age 18-25 years, voluntarily participated in this study. After getting training of Raja Yoga, subjects practiced Raja Yoga for 4 weeks. Pulmonary function parameters were recorded before and after 4weeks practice of Raja Yoga. Pulmonary function parameters were recorded by using computerized spirometer. Statistical analysis was done by Student's paired t-test. After 4 weeks practice of Raja Yoga; significant increase was found in forced vital capacity (FVC), expiratory reserve volume (ERV) ($p<0.05$) and more significant increase was seen in peak expiratory flow rate (PEFR) and maximum voluntary ventilation (MVV) ($p<0.01$). However FEV1/FVC and inspiratory capacity did not show any significant improvement. The results suggest that practicing Raja Yoga is significantly improves the pulmonary functions in obese people.

Keywords: Obesity, Raja Yoga Meditation, Pulmonary Functions Test

INTRODUCTION

Yoga and meditation have been extensively studied for their beneficial effects on human health. Yoga was widely practiced in ancient India. Yoga influences physical, mental, social, spiritual aspect of people. Meditation is an age-old self-regulatory strategy and is used to reduce stress and anxiety. Meditation gives a sense of calmness, peace and balance that benefits both emotional well-being and overall health. Meditation restores the mental calmness and inner peace. Raja Yoga is practiced by the Brahma Kumaries. It aims at controlling all thought-waves or mental modifications. In Raja Yoga, person concentrates the mind and sight between the

eyebrows. Raja Yoga is the path of Yoga that focuses on meditation and contemplation^{1,2}.

Raja Yoga Meditation helps to re-discover the use of positive qualities which are already latent within one self, this enables to develop strengths of character and to create new attitudes and responses to life. Various autonomic and respiratory variables have been reported during the practice of Raja Yoga meditation^{1,3}. Raja Yoga meditation of Brahma Kumaris is a behavioral intervention which is simple to practice. Raja Yoga meditation leads to relaxation of body and mind with positive approach (autogenic relaxation). Positive approach in human life is very essential to live a happy and peaceful life. However development of negative approach in commonly seen in obese persons specially in young adults which leads to further morbidities like depression, overeating, laziness, lack of interest in sports etc which further deteriorates the condition and a vicious cycle starts. Pulmonary functions are deranged in obese people.

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Obesity is a state of excess adipose tissue mass. Obesity is therefore more effectively defined by assessing its linkage to morbidity or mortality. Although not a direct measure of adiposity, the most widely used method to gauge obesity is the body mass index (BMI), which is equal to weight/height² (in kg/m²). Other approaches to quantifying obesity include anthropometry (skin-fold thickness), densitometry (underwater weighing), computed tomography (CT) or magnetic resonance imaging (MRI), and electrical impedance. Using data from the Metropolitan Life Tables, BMIs for the midpoint of all heights and frames among both men and women range from 19 to 26 kg/m²; at a similar BMI, women have more body fat than men. Based on unequivocal data of substantial morbidity, a BMI of 30 is most commonly used as a threshold for obesity in both men and women. Intra abdominal and abdominal subcutaneous fat has more significance than subcutaneous fat present in the buttocks and lower extremities. This distinction is most easily made by determining the waist-to-hip ratio, with a ratio >0.9 in women and >1.0 in men being abnormal. Many of the most important complications of obesity, such as insulin resistance, diabetes, hypertension, and hyperlipidemia, and hyperandrogenism in women, are linked more strongly to intra-abdominal and/or upper body fat than to overall adiposity. Pathophysiology of obesity seems simple: a chronic excess of nutrient intake relative to the level of energy expenditure^{4,5}. Obesity may be associated with a number of pulmonary abnormalities. These include reduced chest wall compliance, increased work of breathing, increased minute ventilation due to increased metabolic rate, and decreased total lung capacity and functional residual capacity. Severe obesity may be associated with obstructive sleep apnea and the obesity hypoventilation syndrome⁴.⁶. Pulmonary function test (PFT) is a very useful tool to find out the effect of obesity on respiratory system. Obesity may adversely affect pulmonary function tests including impairment on pulmonary function testing, small airway dysfunction and expiratory flow limitation, alterations in respiratory mechanics, decreased chest wall and lung compliance, decreased respiratory muscle strength and endurance, decreased pulmonary gas exchange, lower control of breathing, and limitations in exercise capacity^{7,8}. Obesity is a common morbid clinical condition in

population of high socioeconomic status of all age group including children and young adults. Obesity is also associated with negative thoughts and mental depression while Raja Yoga is expected to produce positive approach and also associated with controlled breathing during meditation¹⁰. Therefore the present study was done to assess the effect of Raja Yoga meditation on pulmonary functions of young obese medical students.

MATERIAL & METHODS

The present study was conducted in the department of physiology, Saraswathi Institute of Medical Sciences, Hapur. A total of 60 obese (BMI>30), non-smoker healthy male subjects of age 18-25 years, were chosen for the study with no history of pulmonary diseases. Subjects were asked to report the laboratory after 2 hours of taking light breakfast in the morning. Procedure was well explained to all the subjects and written consent was taken to conduct the study. Pulmonary function tests were done using computerized spirometer (RMS-Helios, Recorders and Medicare Systems Pvt. Ltd., Chandigarh, India). Then, Raja Yoga meditation training was given to the subjects. After training, subjects were asked to practice Raja Yoga meditation for 30 minutes daily for 4 weeks. After 4 weeks practice of Raja Yoga meditation, subjects again reported to the lab and pulmonary function tests were repeated. All the collected data before and after 4 weeks Raja Yoga practice were analyzed. Statistical analysis was done by Student's paired t-test using the window SPSS Statistics 16.0 version.

FINDINGS

Table 1: Baseline characteristics of all subjects

S.N.		
1	Age (in years)	20.1±3.2
2	Height (cms)	166.5±6.1
3	Weight (Kg)	85.5±6.3
4	BMI (kg/m ²)	31.2±1.14

Data are expressed as Mean±SD

Table 2: Comparison of pulmonary function parameters before and after 4 week practice of Raja Yoga meditation

S.N.	Parameters	Before practice of Raja Yoga	After 4 weeks practice of Raja Yoga
1	FVC(L)	3.6±0.14	3.92±0.12*
2	FEV1/FVC	0.78±0.01	0.80±0.02
3	IC (L)	3.02±0.93	3.18±0.93
4	ERV (L)	0.72±0.03	0.79±0.02*
5	PEFR (L/min)	421.39±11.09	445.85±15.36**
6	MVV (L/Min)	110.50±11.18	120.68±17.69**

Data are expressed as Mean±SD. *p<0.05, **p<0.01

Table 2 shows that on comparison of pulmonary function parameters before and after 4 weeks practice of Raja Yoga; significant increase was found in forced vital capacity (FVC), expiratory reserve volume (ERV) (p<0.05) and more significant increase was seen in peak expiratory flow rate (PEFR) and maximum voluntary ventilation (MVV) (p<0.01). However FEV1/FVC and inspiratory capacity did not show any significant improvement.

CONCLUSION

From our results it is evident that after 4weeks practice of Raja Yoga, significant improvement was seen in forced vital capacity, maximal ventilatory ventilation and Peak expiratory flow rate. Previous studies have also shown statistically significant increase in PEFR after yoga practice ^{11, 12}. Some researchers have also have reported that pranayama training improves ventilatory functions in the form of increase in FVC, FEV1 and PEFR ^{13,14}. Thus our results are consistent with the findings of other workers who have reported beneficial effects of yoga training on pulmonary function as measured by spirometer.

In yoga there is prolonged inspiration as well as expiration. This stretches the elastin & collagen fibres. Hence after yoga practice these fibres elongate to a greater extent there by increasing the compliance of the lungs. The surface tension of the fluid lining of the inside walls of the alveoli tends to collapse the alveoli. The surface tension is greatly reduced by surfactant. It is claimed that the lungs inflation near to the total lung capacity which occurs during pranayama is a

major Physiological stimulus for release of surfactant hence increase in lung compliance ¹⁵. In the same way Raja Yoga may bring about improvement in pulmonary functions in obese people as well.

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Conflict of Interest: Nil

Source of Funding: Nil

Ethical Clearance: procedures followed in the present study were in accordance with the ethical standards of the responsible committee on human experimentation (Institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000 (5). Informed consent was obtained from the subjects.

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A Study to Assess the Effectiveness of Lavender Oil Versus Povidine Iodine on Healing of Episiotomy Wound among Postnatal Mothers

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ABSTRACT

Purpose: To assess the effectiveness of lavender oil on healing of episiotomy wound to provide maximum comfort to postpartum women and its comparison with povidine – iodine.

Material and Method: The research design was quasi experimental and was conducted from Dec. 2012 to Jan 2013 in Department of Obstetrics and Gynaecology of Guru Gobind Singh Medical College and Hospital, Faridkot, on 60 subjects (30 for experimental and 30 for control group) intervention in experimental group was application of lavender oil and in control group was povidine – iodine. Healing of episiotomy was assessed by using REEDA Scale at 24 hours, day 3 and day 5 for both the groups.

Results: Lavender oil helps in episiotomy wound healing in experimental group from day 1 to day 5. Lavender oil was more effective in episiotomy wound healing from day 1 to day 3 as compared to povidine-iodine. But at day 5 both lavender oil and povidine iodine were statistically equally effective. No association of episiotomy wound healing with age, parity, education, duration of 2nd stage was found in the study.

Conclusion: It can be concluded that lavender oil is as effective as povidine iodine in healing of episiotomy wound.

Keyword: Lavender oil, episiotomy wound healing, povidine-iodine, post-natal mothers.

INTRODUCTION

Labour is a spontaneous act of nature, and unique to every childbearing woman. The postpartum phase can become even more challenging when the new mother experiences perineal or genital tract trauma as a result of child birth¹. In the last 20 years, the issue of safe motherhood has evolved from the neglected

issue to an essential and integrated element of women health agenda. So safe motherhood initiative announced in 1987 had set targets to reduce maternal mortality rate by 50% in one decade.

Puerperium or post partum period is the time during which the body adjusts both physically and psychologically. The word puerperium is from the latin word puer, meaning child and parere, meaning to bring forth. The post partum period is a critical stage for both mother and baby. Both are recovering from the physical process of birth and they are also initiating a new relationship.

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Postpartum period is a time of physical

adjustment, healing, emotional mood swings and expanding roles.² Postpartum assessment of mother focuses on the maternal response to labour and delivery, the biophysical changes and the psychological adjustment to parenthood. The time of greatest risk for postpartum complications is during the first 24 hours. However the potential for problems can persist throughout the six weeks postpartum period.

Post natal women are more prone to puerperal infection, which can be prevented with proper hygienic measures. Any trauma such as episiotomy, tear and lacerations will increase the tendency for development of infection in postnatal period. Proper care of episiotomy incision should be encouraged to ensure that the trauma is healing satisfactorily. Wound healing is complex and requires safe and effective treatment modalities. Attention should be given to episiotomy wound care since it parallels any other wound.

Episiotomy is defined as a surgical incision in the perineum to enlarge the introitus for birth. It is the only surgical procedure in the obstetrics that is performed without the patient's specific consent.³ Episiotomy can decrease amount of bearing down efforts of mothers during delivery. The probability of episiotomy is very high when doctors conducted the delivery. Episiotomy can be associated with extension or tears. Other complications include bleeding, infection, swelling and local pain. The typical healing time for an episiotomy is around 4-6 weeks depending on the size of the incision and the type of suture material used to close the wound.⁴ The timing of performing the episiotomy requires judgement. If done early, the blood loss will be more. If done late, it fails to prevent the invisible lacerations of the perineal body and thereby fails to protect the pelvic floor, the very purpose of the episiotomy is thus defeated. Bulging thinned perineum during contraction just prior to crowing is the ideal time.

Women report varying degree of pain and discomfort that can have short and long term negative consequences for their health and well being. In the immediate postpartum period, perineal pain can inhibit a woman from mobilizing fully and can make it difficult for her to sit down comfortably. In some cases it may be distressing to void or defaecate.

In long term, perineal pain can impair a woman's ability and willingness to care for her new born baby. Dyspareunia and relationship disharmony can lead to irritability, resentment, depression and maternal exhaustion.^{5,6}

Studies show that episiotomy rates around the world ranged from 9.7% to 96.2% with lowest episiotomy rates in English speaking countries. In India, overall rate of episiotomy is 40.6%. In India birth rate being very high, the incidence of episiotomy is very high.⁷ The degree of perineal pain and discomfort associated with perineal trauma is often under estimated.

Care of the perineum is important for comfort and cleanliness as well as to prevent odour and infection.⁸ The women with episiotomy is prompted to clean the perineal area herself as soon as the women is ambulatory.

Research has highlighted that many practices relating to perineal care remain un-researched and therefore the need for evaluation is urgent.

Aromatherapy has a long history of use. Dating back to the time of Hippocrates, skin problems were treated with aromatic baths. Valnet, a physician used essential oils on wounds in Indo-China War when antibiotics ran out.

Lavender essential oil is known as the most popular and versatile essential oil. It is steam distilled from *Lavandula angustifolia*, a perennial bushy shrub with a flowery top. It is highly regarded as an antiseptic, anti inflammatory for skin care.⁹ In ancient Greece, Pedanius Dioscorides, a physician, pharmacologist and botanist, extolled the medicinal qualities of lavender. The Romans used lavender in their baths for washing for its healing and antiseptic qualities and to deter insects. The lavender oil is antibacterial, antifungal, sedative, ant depressive and effective for burns and insect bites. Alpha terpineol and terpinen-4-ol and camphor are the chemical constituents of lavender essential oil that have antibacterial effects. Most lavender species are indigenous to the mountain regions of the countries bordering the western Mediterranean, the islands of the Atlantic, Turkey, Pakistan and India.

Tork Zahranish et al (1998) carried out a study

to compare the effect of povidine-iodine and water in episiotomy wound healing and concluded that betadine has no effect on wound healing of episiotomy and there is no indication for its use.¹⁰

The use of lavender oil for perineal discomfort was first investigated by Dell and Cornwell (1994). They conducted a clinical trial on 635 women using lavender oil and placebo following normal vaginal delivery for perineal healing. In this study, mean discomfort score was lower in women using lavender oil, with no significant side effects.¹¹

Vakilian K et al (2010) carried out a study to assess the effect of lavender oil in episiotomy wound healing and concluded that application of lavender oil had better results than povidine iodine for episiotomy wound care.¹²

Huang M Y et al (2012) studied that lavender oil is one of the most favourite and widely used essential oil in aromatherapy. In this study the effect of lavender oil was examined on lipopolysaccharide induced inflammation reaction in human monocyte THP-1 cells. They found that treatment with lavender oil significantly increased cell viability and inhibited IL-1 beta.¹³

AIM OF STUDY

1. To assess the effectiveness of lavender oil on healing of episiotomy wound among post-natal mothers.
2. To assess the effectiveness of povidine-iodine on healing of episiotomy wound among post natal mothers.
3. To compare the effectiveness of lavender oil versus povidine-iodine on episiotomy wound among post natal mothers.

MATERIAL & METHODS

Purposive sampling technique was used to select the sample. A total sample of 60

postnatal mothers in Department of Obstetrics and Gynaecology of Guru Gobind Singh Medical College, Faridkot was selected. Out of which 30 were assigned to experiment group and 30 to control group. Data collection was done from Dec 2012 to Jan 2013.

Variables under Study

Independent Variables

1. Lavender oil.
2. Povidine –iodine solution.
3. Age.
4. Education
5. Parity

Dependable Variables

Healing of episiotomy wound.

The criterion measure used in the study was REEDA scale which is a standardized scale to assess the healing of episiotomy wound.

Score

0-2	Good wound healing
3-5	Moderate wound healing
6-8	Mild wound healing
9-15	Poor wound healing

In the experiment group lavender oil application was done. After the suturing of episiotomy immediately it was cleaned with normal saline then sterile lavender oil was applied. Lavender oil was applied over the episiotomy wound twice a day.

In control group, povidine-iodine was used in place of lavender oil in the same manner twice a day.

Post intervention assessment of the episiotomy wound healing was done after 24 hours, on 3rd day and 5th day.

RESULTS

Table 1: Distribution of postpartum mothers according to selected socio demographic variables N = 60

Sr. No.	Variable	Experimental Group		Control Group		χ^2	df	At P<0.05
		Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)			
1	Age (in years)							
	18-22	11	36.7	19	63.3	4.28	2	0.19 ^{NS}
	23-27	17	56.7	10	33.3			
	28-32	2	6.7	1	3.3			
	33-37	0	0	0	0			
	38 & above	0	0	0	0			
2	Education							
	Illiterate	10	33.3	17	56.7	4.91	5	0.43 ^{NS}
	Primary Level	7	23.3	5	16.7			
	Middle level	6	20.0	5	16.7			
	Secondary Level	5	16.7	1	3.3			
	Higher Secondary	1	3.3	1	3.3			
	Graduate level & above	1	3.3	1	3.3			
3	Parity							
	1	29	96.7	27	90.00	1.07	1	0.30 ^{NS}
	2	1	3.3	3	10.0			

As shown in Table 1 after the chi-square test was computed and its value was 0.118 which was non-significant at the level of $p < 0.05$. Hence there was no significance in experimental and control group on the basis of age.

On the basis of education and parity there was no significant difference in experimental and control group.

Table 1 shows that sample in control group and experimental group were homogenous.

Table 2: Effectiveness of Lavender Oil on healing of Episiotomy would in experimental group N = 30

Healing (In days)	Mauchly's test of sphericity	Greenhouse Geisser correction	Mean difference	Sig*
Day 1 - Day 3	W = .486 Appro. $\chi^2 = 20.177$ df = 2 Sig. = .000	F = 6.034 df = 1.321 Sig. = .012	0.167	0.068
Day 1 - Day 5			0.200*	0.035*
Day 3 - Day 5			0.033	0.977

*Significant at $p < 0.05$

Table 2 depicts the effect of lavender oil on healing. Mean difference on day 1 – day 3 and day 3 – day 5 was found non-significant at $p < 0.05$ whereas on day 1-day 5, mean difference was significant at $p < 0.05$. This indicated that healing of episiotomy was more on day 5.

Table 3: Effectiveness of Hospital Routine Care on Healing of Episiotomy Wound in Control Group

Healing (In days)	Mauchly's test of sphericity	Greenhouse Geisser correction	Mean difference	Sig*
Day 1 - Day 3	W = .623 Appro. $\chi^2 = 13.271$ df = 2 Sig. = .001	F = 38.939 df = 1.452 Sig. = .000	0.733	0.000*
Day 1 - Day 5			0.900	0.000*
Day 3 - Day 5			0.167	0.068 ^{NS}

*Significant at $p < 0.05$

NS = Non Significant

Table 3 depicts the effect of povidine-iodine on healing. Mean difference of healing of episiotomy from day 1 – day 3, day 1 – day 5 and day 3 - day 5. Mean difference from day 3 – day 5 was found non-significant whereas the main difference on day 1 – day 3 and day 1 – day 5 was significant. There was a significant effect of povidine-iodine on healing of episiotomy.

As shown in Table 3 lavender oil application was more effective than povidine-iodine on first 3 days. It revealed that episiotomy wound healing was faster in experimental group than in control group. But on day 5 both groups were showing same healing.

DISCUSSION

The findings of the present study revealed that most of the study subjects experienced moderate to good episiotomy wound healing. In present study the significant finding was that lavender oil helps in episiotomy wound healing in experimental group from day 1 to day 5. This finding was supported by Valkilian K et al (2010). who concluded that REEDA score was significantly lower in experimental group with lavender oil 5 days after episiotomy.¹²

Furthermore, Hur MH et al (2004) also highlighted that the REEDA score was significantly lower in experimental group at postpartum 5th and 7th day.¹⁴

Ujiniyas Sri Hari (2012) revealed the effect of lavender oil on episiotomy healing was significant.¹⁵

Jones C (2011) highlighted that anecdotal evidence suggests that some women find lavender oil effective at relieving some of the symptoms associated with

perineal trauma following child birth.¹⁶

Mandana et al (2008) investigated that the impact of lavender cream on episiotomy pain and wound healing in primiparous women. In this a double blind randomized clinical trial, 90 primiparous women aged between 17-35 years old with gestation age between 37-42 weeks were allocated subjects were allocated randomly into two groups. It showed that topical application of lavender cream is effective in relieving perineal pain and episiotomy wound healing.¹⁷

Sheikhan F, et al (2012) conducted a clinical trail in Kamali Hospital in Iran, to find out the effect of lavender oil on post partum mother's perineal healing. The women were randomly categorized into two groups. Case (using lavender oil) and control (usual hospital protocol). The study suggested that lavender oil may be preferable to the use of betadine for episiotomy wound care.¹⁸

In present study on comparing the mean difference of healing of lavender oil versus povidine-iodine, lavender oil was more effective in experimental group on day 1 and day 3 as compared to povidine-iodine in control group. This mean difference was significant at $p < 0.05$, whereas on day 5, both were equally effective on episiotomy wound healing.

CONCLUSION

1. The finding of present study revealed that most of study subjects had moderate to good healing of episiotomy.
2. Lavender oil helped in healing of episiotomy wound in experimental group from day 1 to day 5 which was found to be statistically significant.
3. Lavender oil was more effective in healing of episiotomy wound from day 1 to day 3 in experimental group. But on day 5 both lavender oil and povidine-iodine were equally effective.

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A Study on Profile of Patients Attending a Filariasis Clinic at Rajahmundry, Andhra Pradesh

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ABSTRACT

Case records of 200 patients attending the filariasis clinic at National Centre for Disease Control, Rajahmundry, and Andhra Pradesh were analyzed to study some epidemiological and clinical profiles. When compared with an earlier study at the same centre it was observed that there was a drop in patients hailing from urban areas and an increase from rural areas. It was found that majority (95%) of patients attended the clinic from the twin Godavari districts of Andhra Pradesh, mostly females (67.5%) above the age of 15 years (99%), house wives by occupation and majority (41%) illiterate followed by education up to primary level (35.5%). Amongst most common clinical manifestations, 92.5 % of the patients had swelling in the lower limbs with a slight preponderance for the left side. Hydrocele and other genital manifestations were uncommon. All the 200 subjects under study were found to be negative for microfilaria in their peripheral blood smears. There has been no appreciable change in the findings of the present study when compared with the earlier study findings. Coverage of MDA was not satisfactory and there is an urgent need to streamline MDA for effective interruption of transmission.

Keywords: Lymphatic filariasis, Hydrocele, Chyluria, Lymphadenitis, Lymphangitis, Microfilaria, MDA

INTRODUCTION

Lymphatic filariasis is the world's second leading cause of long-term disability. Although filariasis does not kill, it causes debility and imposes severe social and economic burden to the affected individuals, their families and the endemic communities. The current estimate reveals that 120 million people in 83 countries of the world are infected with lymphatic filarial parasites, and it is estimated that more than 1.1 billion (20% of the world's population) are at risk of acquiring infection. Over 40 million people are severely disfigured and disabled by filariasis and 76 million are apparently normal but have hidden internal damage to lymphatic and renal systems. According to the World Health Organization, India,

Indonesia, Nigeria and Bangladesh alone contribute about 70% of the infection worldwide. It has been estimated that approximately 5 million Disability Adjusted Life Years (DALYs) lost annually. In addition, the social and psychological impact is enormous - often destroying marriages and family relationships. Although filariasis does not kill, it causes debility and imposes severe social and economic burden to the affected individuals, their families and the endemic communities. Lymphatic filariasis is a major impediment to socioeconomic development and cause and effect of poverty¹.

Effective implementation of WHO-recommended strategies in many countries has already produced a significant reduction in mf rates and morbidity associated with the disease. As of 2008, nearly 2 billion treatments have been administered globally, covering over 560 million people in 48 countries. It is estimated that MDA would have globally protected 9.5 million people from LF and prevented 800,000 cases of lymphedema and 1.4 million cases of LF-related hydrocele.².

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A study was conducted between March – August 2015 on patients attending the filarial clinic at the Rajahmundry Branch of National Centre for Disease Control during the period March – August 2015 to study any change in some epidemiological and clinical aspects of bancroftian filariasis observed during earlier studies and also after implementation of Mass Drug Administration (MDA). The findings are presented in this paper.

AIMS AND OBJECTIVES

1. To study some epidemiological and clinical profile of patients attending the clinic.
2. To compare the findings with earlier studies carried out at the same site.
3. To study the impact of MDA on epidemiology and clinical manifestations.

MATERIALS & METHOD

A filarial clinic is functioning at the Rajahmundry Branch of National Centre for Disease Control (Formerly Regional Filaria Training and Research Centre) in East Godavari district of Andhra Pradesh since 1963. The clinic runs one night clinic and two day clinics on three days in a week which attracts large number of filarial patients primarily from the twin Godavari districts as well as other coastal districts of the state. Annually, about 10000 patients avail the services at the clinic. Predesigned and pretested case cards of 200 patients attending the clinic during the period March – August 2015 were analyzed manually with a view to study any change in profile of patients after implementation of MDA and also to compare the findings with observations made in earlier studies.

RESULTS AND DISCUSSION

Geographic distribution:

It was observed that 95% of patients attended the clinic from the twin Godavari districts while the remaining 10% came from other districts of Andhra Pradesh, Telengana and other states. The finding are similar to the earlier study³ carried out at the centre. A relatively high 64% of the patients came from rural areas whereas 36% came from urban areas. In an earlier study³, 54.8% of patients came from rural areas and 45.2% from urban areas. Thus, there is a

drop in patients from urban areas and increase from rural areas. There is a need to analyze the reasons for this rural affinity particularly any hurdle in proper implementation of MDA in rural areas.

Age and Sex distribution:

Table.1: Age and sex distribution of patients:

Age (Years)	Sex		Total
	Male	Female	
< 2	0	0	0
2 -5	1 (0.5%)	0	1(0.5%)
6 – 14	1 (0.5%)	0	1 (0.5%)
15 and above	63 (31.5%)	135 (67.5%)	198 (99%)
Total	65 (32.5%)	135 (67.5%)	200 (100%)

It may be seen from the above table that 99% of the patients were above 15 years of age. This is in concordance with the results of some earlier studies^{3, 4, 5}. In the present study, Percentage of female patients was more (67.5%). This finding is similar to an earlier study at the same centre³. However, it will not be proper to generalize this observation in the population since it is a clinic based study and more number of female patients attend the clinic to prevent progression of disease and deformities in them.

Occupation:

Occupation wise, 57.5% of the patients were housewives. This is obvious because 67.5% of the patients were females. The rest 42.5% were divided between laborers (14.5%), Semi-skilled workers (10.5%), service (6%), business (4%), students (1%) and others (6.5%). More or less, similar observations were recorded earlier³.

Education:

As many as 153 (76.5%) patients were illiterate (41%) or had education up to Primary level (35.5%). Others constituted Middle standard (11.5%), High school certificate (3.5%), Intermediate (2%), Graduate (6%) and Postgraduate (0.5%). Thus, the disease rate varied according to the level of education.

Family size:

Maximum patients (81%) came from small families having less than 5 members. In an earlier

study³ relatively lesser (62.1%) patients came from small families. The disease rate did not vary by family size.

Multiple cases in families:

Most of the patients (93%) said that there was only one case in their families. Only 7% had more than one case in their families. In the earlier study at the same centre³, 24% had multiple cases in their families. This might be due to origin of patients from small families.

Duration of disease:

As regards duration of illness, 35.5% of the patients got the manifestations within the past one year, 33% one to two years back, 16.5% two to five years back and 15% more than 5 years back. This finding does not auger well with the implementation of Mass Drug Administration (MDA) by which old cases before implementation of MDA should have been more than the recent ones. Incidentally, the twin Godavari districts of Andhra Pradesh have already been covered with more than 10 rounds of MDA.

Clinical manifestations:

Table 2: Clinical manifestations of patients:

Affected part	Number	Percent
Lower limb:		
Right	74	37
Left	105	52.5
Both lower	6	3
Upper limb:		
Right	6	3
Left	1	0.5
Both upper	0	0
Chyluria	5	2.5
Hydrocele	2	1
Breast	1	0.5
Total	200	100

It may be seen that 92.5% of the patients had swelling of lower extremities whilst 3.5% had swelling of the upper extremities, 2.5% chyluria, 1% had hydrocele and 0.5% had involvement of breast. The distribution of swelling in the limbs was more or less even in both sexes. It may be concluded

that the lower extremities are the most affected by lymphatic filariasis with a little preponderance for left lower limbs. Similar clinical observations have been recorded in earlier studies^{3, 4}. Only 1% of the patients had hydrocele suggesting that Genital manifestations are uncommon in this part of the country. A similar observation was made in an earlier study³ at this centre. Srivastava et al (1969), Kar (1986) had observed the genital manifestations outnumbering other clinical manifestations in Utttar Pradesh and Orissa. Lymphadenitis (9.5%) formed the main manifestation of acute attacks followed by lymphangitis and fever (7%).

Association of microfilaria (mf) with clinical manifestations:

All the 200 subjects under study were found to be negative for microfilaria in their peripheral blood smears. This could possibly due to disappearance or presence in extremely low density of mf in circulating blood when a patient develops chronic symptoms even though they may still harbor a large number of adult worms⁷.

Mass Drug Administration (MDA):

Out of 200 subjects, only 92 (46%) said that they had consumed the drugs during MDA. Of them, 26 (13%) had taken only one round, 53(26.5%) two rounds and 13 (6.5%) had taken three rounds although more than 10 rounds of MDA have been completed in the twin Godavari districts. The findings suggest that the MDA programme needs to be reviewed and streamlined to achieve interruption of transmission.

CONCLUSION

It can be concluded that majority (95%) of patients attended the clinic from the twin Godavari districts and majority (76.5%) were illiterate or had education up to primary level only. When compared with an earlier study at the same centre it was observed that there was a drop in patients from urban areas and increase from rural areas. Amongst most common clinical manifestations, 92.5 % of the patients had swelling in the lower limbs with a slight preponderance for the left side. Hydrocele and other genital manifestations were uncommon. All the 200 subjects under study were found to be negative for microfilaria in their peripheral blood smears. This

could possibly due to disappearance or presence in extremely low density of mf in circulating blood when a patient develops chronic symptoms. There has been no visible change in the findings of the present study when compared with the findings of earlier studies. Coverage of MDA was not satisfactory and there is an urgent need to streamline MDA for effective interruption of transmission.

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Ethical Clearance: was obtained from the Institutional ethical committee.

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Type-2 Diabetes Mellitus & its Risk Factor: Community based Study amongst Workers of a Tea Garden in Darjeeling District, West Bengal, India

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ABSTRACT

Background: Diabetes mellitus is on the rise in the Indian subcontinent. There is a dearth of information on diabetes mellitus among rural population specially among those in hilly terrain. **Objectives:** to find out the sociodemographic pattern and associated factors of Diabetes mellitus among tea garden workers in the district of Darjeeling West Bengal. **Methodology:** a cross sectional study was conducted among tea garden workers in Darjeeling district of West Bengal, the selected population was interviewed with a schedule, capillary blood glucose was tested and anthropometric measurements were done by standard methods. **Result:** Diabetes mellitus is more among the mid age group with higher percent in the higher socioeconomic class. Alcohol fast food and non smoking tobacco showed an association while raised BMI, obesity and altered waist hip circumference were seen as risk factors. No association was observed with hypertension

Keywords: Diabetes mellitus, teagarden workers, risk factors

BACKGROUND OF STUDY

Diabetes Mellitus is a major threat to global public health that is rapidly getting worse, and the biggest impact is on adults of working age in developing countries. At least 171 million people worldwide have diabetes. This figure is likely to be more than double by 2030. Worldwide 3.2 million deaths were attributed to diabetes every year. In developing countries the number of people with diabetes will increase by 150% in next 25 years. The global increase in diabetes will occur because of population aging and growth, and because of increasing trends towards obesity, unhealthy diets and sedentary lifestyles. In developed countries most people with diabetes are above the age of retirement, whereas in developing countries those most frequently affected are aged between 35 and 64.¹

It is estimated that 20 percent of the current global diabetic population resides in South-East Asia Region. The number of diabetic persons in the countries of this region is likely to triple by the year

2025 increasing from the present estimates of about 30 million to 80 million. With this projected increase in the diabetic population in future, South-East Asia countries will become the most challenged region in the world and the region will bear the maximum global burden of the disease in the initial decades of the 21st century.²

The population of India has an increased susceptibility to diabetes mellitus. This propensity was demonstrated by multiple surveys of migrant Indians in Fiji, Singapore, South Africa, U.K and USA. The rate of Diabetes in migrants from the Indian subcontinent has consistently shown to exceed those of local population. The first national study on the prevalence of diabetes in India was done between 1972 and 1975 by the Indian Council of Medical Research (ICMR, New Delhi). The prevalence was 2.1% in urban population and 1.5% in the rural population while in those above 40 years of age, the prevalence was 5% in urban and 2.8% in rural areas.³ In India most recent assessment carried out in rural area showed lower rates.⁴ The National Urban

Diabetes Survey, a population based study reported the prevalence in the southern part of India to be higher -13.5% in Chennai, 12.4% in Bangalore, 16.6% in Hyderabad compared to eastern India which shows to be 11.7% in Kolkata. On the other hand in northern India (New Delhi) it was 11.6% and in western India it was Mumbai 9.3%. The study also suggested that there was a large pool of Impaired Glucose Tolerance (IGT), 14% with a risk of conversion to diabetes in near future.⁵

In rural areas prevalence rates had increased from 1% to 5-17% within last 40 years. National Family Health Survey (NFHS-III) suggested the prevalence of diabetes in rural India are highest in Kerala, Tripura, West Bengal, Goa and Sikkim (1500 to >2000 individual per 100,000 populations).² The study named Prevalence of Diabetes in rural Andhra Pradesh showed 15.2% prevalence among adult population (Chow et al, 2006) and two other studies conducted by Ramchandran et al, 2008 in Rural Tamilnadu and by Deo et al in Rural Maharashtra, 2006 showed the prevalence of diabetes was 9.1% and 9.3% correspondingly where rural area showed lower rates.⁴

Most of the studies in India were conducted in urban setting to quantify Diabetes Mellitus. The picture in the rural area is also pretty dismal. However there is a dearth of extensive studies on rural prevalence of diabetes mellitus as also any comparison of rural urban prevalence or risk factors study.

There is large number of people engaged in tea production industries in Darjeeling. Considerable number of tea-garden workers are suffering from different non-communicable diseases and that leads to loss of DALYs in every year. Production was also hampered due to absenteeism of the efficient staffs. In Jalpaiguri District, West Bengal, total DALY loss due to Cerebrovascular accident, complications related to Diabetes and Cardiovascular diseases among tea-garden workers in registered tea-gardens under Jalpaiguri Tea Board was 15.9% in 2008⁹. In Pahargoomiah Tea Estate of Naxalbari Block 9.2% of their total expenditure due to drugs and treatment benefits was attributed to diabetes and related complications.

With this back ground in view and feeling the

necessity to explore the picture of diabetes mellitus (Tea Gardens of Darjeeling, West Bengal) this study was designed with the following objectives

OBJECTIVES

- To estimate the magnitude Type-2 diabetes mellitus among the study population in the tea garden.
- To find out association if any, of diabetes mellitus with some socio-demographic factors in the study subjects.

METHODOLOGY

Study area

The present study was carried out in Tea Gardens of Siliguri sub-division of the district of Darjeeling, West Bengal. All permanent workers of Tea-gardens situated in the study area were selected as study population. Approximately 24% of the total workforce of the Siliguri subdivision was working in the various tea-gardens of Siliguri subdivision⁷. In this study only Registered Permanent Tea-Garden Workers of tea-gardens were included.

Study Period and sample size: The present Study was conducted from August, 2011 to April, 2012. Prevalence of diabetes mellitus among rural community of Andhra Pradesh was more than 15.2%⁸. Reports or study documents on prevalence/magnitude of diabetes mellitus among tea garden workers in Darjeeling district was not available even after extensive search. As all the tea-garden areas of Siliguri sub-division situated in the rural part of its jurisdiction, So, Sample size (was) calculated by using $4pq/L^2$ formula; Here $p=15.2$, $q=(1-p)$, $L=20\%$ (Allowable error, Relative precision) with 95% confidence the calculated sample size was 560 and adding 5% non-respondents and absentees the final sample size was 590. The final sample after data cleansing was 574.

Sample design: Darjeeling district was selected for the study.

Darjeeling district is constituted of 3 subdivision in hills and one, Siliguri, in the plains. Out of four rural blocks in Siliguri SD, a tea garden in Phansidewa was selected randomly for the study.

An initial discussion with the authority of the garden helped in listing all the permanent workers. Those who were interested to take part in the present study, written consent form were filled up by each of them. Afterward every respondent was interviewed with a schedule. Capillary blood sugar testing, blood pressure checking and anthropometric measurements were done in the tea-garden hospital. Every respondent was informed about the method of preparation regarding blood test and also intimated their scheduled date of attendance in the hospital.

Exclusion Criteria:

A tea-garden worker refusing to take part in the present study was excluded from the study. Some workers working as temporary basis during plucking season to combat heavy workload in the Taipoo Tea-Estate were also excluded due to their migrant nature.

Ethical clearance was obtained from All India Institute For Hygiene And Public Health for this study.

Operational Definition: In the present Study Diabetic was considered when Fasting Blood Glucose level (Capillary Blood) $\geq 126\text{mg\%}$. [Current WHO Guideline jointly updated

The analysis was done using standard test of significance .

RESULT

Age and sex distribution of the study population (n=574) shows that majority of both males (48.5%) and females (45.6%) was in the age bracket of 30-44 years. About one in every three subjects (32.6%) belonged to lower socioeconomic group of Modified Prasad scale, while the next largest group was the upper-lower group contributing to 28.2%.

Table 3 shows that proportion of subjects with Diabetes mellitus had gradually decreased down the socio economic scale with 24.4% of subjects in upper socio-economic stratum suffering from the disease. . The proportion decreased to 19.4% among Upper-middle, 18.8% among Lower-middle and to 9.3% in Upper-lower S.E class. Lowest prevalence was detected in Lower S.E class and that was 6.4%.

Table 4 shows Diabetes mellitus to be significantly associated with family history, smoking alcohol and fast food consumption. However no significant association was seen with hypertension. The table also shows diabetes mellitus to be significantly associated with raised BMI and other parameters of it namely central obesity and increased waist circumference.

DISCUSSION

This study conducted among tea estate workers of Darjeeling district of West Bengal brings forth the findings that of the risk factors which are associated with diabetes mellitus. Similar studies exploring similar associations among rural and urban population have been conducted in different areas of India. On comparing these studies with this study the lacunae in research areas or further proof in strengthening associations can be explored. Thus we find most importantly in this study that, of risk factors in this population that a positive family history coupled with smoking (rather than no smoke tobacco consumption) seems to be significantly associated with Diabetes mellitus. (Table -4)

Alcohol and fast food the two most notorious agents of host of non communicable disease along with diabetes mellitus in this case are significantly associated. Noteworthy that fast food chiefly associated with urbanization seems to have made serious inroads in these rural areas of difficult terrain..

Features such as obesity (with or without central obesity) overweight (both indicate altered BMI) , and an increased waist circumference were all significantly associated with diabetes mellitus in this study population. In keeping with this finding further corroborating it we find that in study conducted in TamilNadu among rural population⁶ a prediction was made of increased risk of diabetes mellitus with increase of BMI.

In a study in Bangaledesh⁹ where a comparison was done between urban and rural population it was seen that despite similar BMI, diabetes mellitus was more among urban population. Difference in obesity waist hip ratio or hypertension failed to explain this difference.

In keeping with this observation, in this study

though a comparison between rural and urban was not sought it was seen similarly that increased BMI, increased waist circumference and central obesity were independent risk factors for diabetes mellitus in this set of rural population. It may be assumed that raised BMI along with its other variables namely central obesity, waist hip ratio acts as risk factors for Diabetes mellitus irrespective of rural or urban status.

Diabetes and hypertension share common pathways such as SNS, RAAS, oxidative stress, adipokines, insulin resistance, and PPARs. These pathways interact and influence each other and may even cause a vicious cycle. Hypertension and diabetes are both end results of the metabolic syndrome.¹¹ Hypertension though often found to be associated with these factors failed to show any association with diabetes mellitus in this study. Stress causing factors which are often associated with hypertension have however not been sought in this study may explain to some extent the failure of any observable association.

Also hypertension though proved to be associated with for diabetes mellitus it was seen to have a significant association in the urban population in the study conducted in Bangladesh⁹ but this study done among rural population (in tea garden) also that done in Wardha¹⁰ failed to show hypertension to be

significantly associated with Diabetes mellitus in the rural population.

In conclusion we can say that prevalence of diabetes mellitus among in rural India is on the rise. Risk factors are cropping with their own individuality. The rural picture truly reflects the prevalence of the disease among the more affluent section of the society. Six prominent factors namely fast food, tobacco smoking alcohol, obesity and its entire gamut of presentation namely central obesity, increased waist circumference, increased BMI are in some undefined way influencing the occurrence of diabetes mellitus. Amongst these, the first 3 are socially modifiable factors as evidenced by prevalent amongst those with a better purchasing power, whereas factors pertaining to obesity require lifestyle training. Two pertinent factors motivate further studies. Firstly the repeated absence of hypertension in association with Diabetes Mellitus particularly in rural population as evidenced here and corroborated in studies in Wardha. Considering this be an indication that hypertension is not necessarily a risk factor for Diabetes Mellitus then this mandates further studies. Secondly of all the yardsticks of measurement of weight related ill health namely BMI, central obesity or increased waist circumference which can be conclusively said to be sensitive in rural population remains areas to further look into.

Table 1: Distribution of Study Population according to Age and Sex (N=574)

AGE (yrs)	SEX		Total
	Male	Female	
18-29	56(28.3)	103(27.4)	159(27.7)
30-44	96(48.5)	160(42.6)	254(44.3)
45-60	46(23.2)	115(30.0)	161(28.0)
Total	198(100)	376(100)	574(100)

Figures in Parenthesis indicate Percentages

Table 2: Distribution of the study population according to socio economic status (n=574)

Modified Prasad's(2008) scale	No.	Percentage
Upper	41	7.1
Upper middle	67	11.7
Lower middle	117	20.4
Upper lower	162	28.2
Lower	187	32.6
Total	574	100

Table 3: Distribution of Respondents according to Diabetes Mellitus and Socio-economic status (n=574)

Socio-economic status	Diabetes Mellitus		Total
	Present	Absent	
Upper	10(24.4)	31(75.6)	41(100)
Upper-Middle	13(19.4)	54(80.6)	67(100)
Lower-Middle	22(18.8)	95(81.2)	117(100)
Upper-Lower	15(9.3)	147(90.7)	162(100)
Lower	12(6.4)	175(93.6)	187(100)
Total	72(12.5)	502(87.5)	574(100)
$\chi^2=21.3$, d.f.=4, p<0.01			
Figures in Parenthesis indicate Percentage			

Table 4: Showing risk factor distribution among study population

Risk factors	DM present n=72	DM absent	Chi square (p-value)	OR
Family history positive	23	60	20.35(<0.0001)	3.5
Smoking	43	174	16.82(<0.0001)	2.79
Non smoking tobacco use	39	245	0.72(0.394)	1.23
Alcohol	47	99	6.8*(<0.0001)	7.7
Fast food	69	402	9.57##(0.0019)	5.7
hypertension	19	117	0.33(0.565)	1.2
Central obesity	36	126	19.2*(<0.0001)	2.98
Overweight and obese*	53	133	63.8*(<0.0001)	7.7
waist circumference >normal	23	86	9.9*(0.0027)	2.3

##Yate’s correction

*Increased BMI

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Predicting Adolescents' Moral Identity from Parenting and Moral Emotions: Empathy and Guilt

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ABSTRACT

The Research suggests that moral identity is an important source of moral motivation. The purpose of this study was to assess the relations between adolescents moral identity, parenting and moral emotions: empathy and guilt. 558 high school students (49% girls, 51% boys; M age: 16) completed Aquino& Reed's moral identity scale, empathy quotient (EQ- Short), trait guilt sub scale of guilt inventory and parenting sub scale of family function scale (FFS). Linear regression analysis showed that democratic parenting style and empathy predicted higher levels of moral identity. Moreover no direct relations were observed between guilt and moral identity. Findings are discussed in light of moral identity, moral emotion and parenting styles. Future research is needed to provide evidence of the causal link in the observed relationships.

Keywords: Moral identity, Moral emotion, Empathy, Guilt, Parenting, Adolescent

INTRODUCTION

One of the important issues raised in human societies which provides for social and mental health and security is commitment to moralities in a society. Moral identity is Considered as a promising construct that bridges the gap between moral judgment and moral behavior¹. Hart, Atkins, and Ford's (1998) define moral identity as "a commitment to one's sense of self to lines of action that promote or protect the welfare of others"². Research suggests that moral identity is an important source of moral motivation and reflect healthy adaptation and contribute to welfare of communities²⁻³. Research indicate that adolescence is an important developmental period for moral identity¹. Little is known yet about how moral identity develops, although several theoretical models have been proposed¹⁻². In that models several factors have been identified as influences on the development of moral identity, some individual

and some contextual. Our goal in this study is to investigate the predictive roles of empathy, guilt and parenting styles in adolescents' moral identity.

Empathy was defined as the ability of recognizing and understanding others' perceptions and feelings and the exact transfer of this understanding via a receptive response⁴. Empathy plays a central role in moral development, especially pro social behavior, inhibits aggression toward others⁴ and people's fundamental capacity in regulating relationships depends on supporting shared activities and group consolidation⁵⁻⁶.

One of the other emotions which is considered as a social and moral emotion which regulates social behavior is the feeling of guilt. Guilt is a feeling of responsibility or remorse for some offense, crime, wrong, etc., whether real or imagined⁷⁻⁸. Guilt is a self-conscious emotion which is incited by reflection on the self and by means of negative self-appraisal. Such appraisal can be implied or explicit. It can be experienced consciously or beyond our awareness. However, in any case, it is essentially about the self⁸. Feeling of guilt is introduced as a moral emotion which regulates social behavior^{7,9}.

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In contextual factors, research has shown that the most important factor influencing the development of moral identity is the sociocultural structure where family plays a significant part¹⁰⁻¹². There is some evidence that parenting are associated with moral identity². This study compared three parenting styles : (a) Democratic parenting style (recognizes that children are equal to their parents; not in sameness of intellect or experience but in their value as a human being), (b) authoritarian parenting style (is a restrictive, punishment heavy parenting style in which parents make their children follow their directions with little to no explanation) and, (c) laissez-faire parenting style (arises when parents are too tired, discouraged, or... to be closely involved in their children's lives, and usually also too discouraged to follow-up with consequences consistently¹³). According the above, the purpose of the research is to answer the following question:

1) Dose reported experiences of empathy predict moral identity?

2) To what extent does reported parenting style predict moral identity?

3) Dose reported experiences of guilt predict moral identity?

METHOD

Participants

The present research is a correlation study. The samples consisted of 558 high school students that were selected by multistage random sampling method. After coordinating the research with the department of education of Qom's quadruplet areas, one girl and one boy schools were randomly selected from each area. One classroom from the first, second and third grades was randomly selected from each school and the students were administered the questionnaires. Finally, twelve high schools and 558 students (49% girls; M age: 16) participated in the study.

Measures

Moral Identity (MID)

This construct was assessed using the self-report moral identity inventory developed and validated

by Aquino and Reed (14) which consists of 13 items and consists of the two subscales of symbolization and internalization, rated on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The reliability coefficient of the Iranian version of the test was calculated by Cronbach's alpha to be 0.72. The Cronbach's alpha coefficient was calculated in the research to be 0.73.

Empathy

*Empathy Quotient (EQ- Short)*¹⁵ (22 items measure was used to assess empathy. Response to items is based on a four-point Likert- type scale in which some questions are scored reversely. The reliability coefficient of this test reported by Wakabayashi¹⁵ based on Cronbach's alpha was 0.92 and the content validity is supported by a number of University of Isfahan professors¹⁶. The reliability coefficient of the questionnaire in the present study is calculated by Cronbach's alpha to be 0.97.

Guilt

In the present study, this construct was assessed using the trait guilt subscale of guilt inventory¹⁷. The subscale of trait guilt is defined as an enduring disposition to be prone to the feelings of guilt, remorse and self-reproach. Responses are scored on a 5-point Likert - type scale. The reliability of the retest after a 10-week interval is reported for the subscale of guilt trait to be 0.72¹⁸. In the present research, the alpha coefficient for the subscale of guilt trait is calculated to be 0.89.

Parenting style

Dimensions of parenting styles were assessed using the 15-items parenting styles subscale of family function scale (19). The FFS is a 75 items, 4 point rating scale. The survey consists of 15 scales reflecting family relationship, system maintenance, and personal growth dimensions. It has been used successfully to differentiate intact versus divorced families¹⁹ and has adequate psychometric properties and discriminate validity²⁰. Reliability of FFS with internal consistency (Cronbach's alpha) being 0.77 and test-retest reliability was reported for the 15 dimensions ranging from 0/75- 0/86²¹. The reliability coefficient of the questionnaire in the present study is calculated by Cronbach's alpha to be 0.89. Scale scores

are constructed by reversing the points allocated to reverse-scored items and simply summing the points.

Procedures

A total of 600 high school student were invited to participate. Following a detailed briefing about the purpose and content of the study, all participants provided informed consent. Majority of high school students were from a middle-class background. All of student completed the questionnaires in the

classroom under the supervision of a master student of psychology. A total 42 questionnaires were excluded because of incomplete answers and finally 558 questionnaires were analyzed.

The relationship between MID with empathy, guilt and parenting styles was assess by Pearson’s correlation. Linear regression analysis (stepwise method) was used to assess whether empathy, guilt and parenting styles were significantly predictor of MID total score. The word predict in this context refers to statistical association and not to real casualty.

RESULTS

Descriptive statistics and t-tests for gender differences are displayed in Table 1.

Table 1: Means, standard deviations, and preliminary analyses

	Sex	N	Mean	Std. Deviation	Std. Error Mean	T	Sig
Moral identity	Female	323	51.4149	7.04916	.39223	1.03	.30
	male	211	50.7299	8.10632	.55806		
Empathy	female	201	22.4826	6.10663	.43073	.75	.45
	male	193	21.9637	7.48775	.53898		
Guilt	female	150	32.9400	8.93619	.72964	-1.44	.15
	male	215	34.2651	8.43277	.57511		
Democratic style	female	187	14.6738	2.15664	.15771	.39	.69
	male	221	14.5837	2.40804	.16198		
Authoritarian style	female	195	14.8923	2.16906	.15533	2.23	.02*
	male	225	14.3111	3.02388	.20159		
laissez- faire decision-making style	female	234	10.3162	2.19695	.14362	.15	.87
	male	226	10.2832	2.39618	.15939		

*significant at the 0.05 level (2-tailed).

There are no significant differences between girls and boys except in authoritarian style.

Table 2: Bivariate correlations for moral identity, empathy, guilt and parenting styles

		Moral identity	Empathy	Guilt	Democratic style	Authoritarian style	laissez- faire decision-making style
Moral identity	Pearson Correlation	1	.256**	-.004	.267**	.117*	-.145**
	Sig.		.000	.936	.000	.021	.003
Empathy	Pearson Correlation	.256**	1	.062	.213**	.141**	-.155**
	Sig.	.000		.289	.000	.007	.003

Cont... Table 2: Bivariate correlations for moral identity, empathy, guilt and parenting styles

Guilt	Pearson Correlation	-.004	.062	1	-.088	-.100	.080
	Sig.	.936	.289		.110	.066	.143
Democratic style	Pearson Correlation	.267**	.213**	-.088	1	.217**	-.370**
	Sig.	.000	.000	.110		.000	.000
Authoritarian style	Pearson Correlation	.117*	.141**	-.100	.217**	1	-.308**
	Sig.	.021	.007	.066	.000		.000
laissez- faire decision-making style	Pearson Correlation	-.145**	-.155**	.080	-.370**	-.308**	1
	Sig.	.003	.003	.143	.000	.000	
**. Correlation is significant at the 0.01 level (2-tailed).							
*. Correlation is significant at the 0.05 level (2-tailed).							

Table 2 shows the correlation between research variables. MID positively correlated with empathy, Democratic style and Authoritarian style. Empathy was positively correlated with MID, Democratic style and Authoritarian style. Further, laissez- faire decision-making style was negatively associated with MID and empathy. However, there was no significant correlation between guilt and MID, empathy and parenting styles.

Table 3: linear regression analysis with stepwise method predicting moral identity

Step	Predictors	R	R ²	Std. Error of the Estimate	B	T	Sig
1	Democratic Parenting s.	.27**	.07	7.60	.27	4.72	.000
2	Democratic Parenting s.	.34**	.10	7.45	.22	3.82	.000
	Empathy				.20	3.49	.001

** . significant at the 0.01 level (2-tailed).

Table 3 summarizes the results of stepwise linear regression analysis. In the final model, democratic parenting style as significant predictor of moral identity explaining 7% of variance in the moral identity total score ($R = .27$, $R^2 = .07$, $F = 22.33$, $p < .001$). In the second step, democratic parenting style and empathy could predict 10% of the variance in MID ($R = .34$, $R^2 = .10$, $F = 17.71$, $p < .001$).

DISCUSSION

The purpose of the present study was to examine empathy, guilt and parenting styles as a predictor

of moral identity. In answer to the first question and the second, this study showed that Democratic parenting style and empathy significantly predict moral identity. Our findings concur with literature that suggests democratic parenting characterized by three dimensions, responsiveness, autonomy-granting, and demandingness, seems to facilitate moral identity development³. Responsiveness enables the accurate perception and acceptance of parental moral values. When adolescents feel loved by and comfortable with their parents, they are more likely to listen to and agree with what their parents say and do. Autonomy-granting encourages identity exploration and commitment, including

reflection on and commitment to moral principles. Demandingness helps youth understand moral principles and appreciate the consequences that flow from complying with or violating such principles.

At the second stage, empathy positively predicted moral identity. Empathy is the ability of recognizing and understanding others' perceptions and feelings. So understand others' perspectives help adolescent, in addition to selection of adequate reaction to the perceived status of other, he/she gradually achieve a better understanding of he/himself, and finally resulting in identity formation. Furthermore, empathy can direct attention to others' needs and feeling which is incorporated in moral development and reflected in social behavior ⁴.

In answer to the third question about the guilt, in the final model, guilt had a negative and insignificant relationship with moral identity. As the review of literature shows, in contrast to empathy, guilt seems to be an emotion with a continuum. At one extreme of this continuum, guilt contributes to behavior reform, enhanced moral functioning, and the improvement of damaged social relations ⁷. At the other extreme, when the feeling of guilt continues and turns in to a behavioral trait, it will development abnormality, and so it will direct people toward different disorders and will disrupt individuals' optimal functioning ⁸. In this case, the individual's negative self- concept become internalized, enduring and general⁸. Thus, in such circumstances guilt could not play positive role in development of MID.

However, these results must be considered with the caveat that the data are cross-sectional, and therefore causal inferences cannot be drawn. Future longitudinal designs can be used to provide support for causal mechanisms among the data. Self-report measures used for data collecting, in fact, we are working with respondent perceptions, which may or may not be accurate. Future research should also attempt to move the observed results beyond a strictly student, self-report design.

CONCLUSION

In closing, the present study found initial support for democratic parenting style and empathy influence adolescent moral identity. Another important finding was experiences of guilt is less likely to develop

moral identity. Therefore, one of the ways parents may be able to influence adolescents moral identity is fostering a sense of empathy in their children through democratic parenting. Future work should look at other developmental predictors of moral identity, and test other potential developmental mechanisms.

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Ethical Clearance: This human study has been approved by the appropriate ethics committee and have therefore been performed in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000.

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Tobacco Use among Migrant Adolescents of Udupi District, Karnataka: A Survey of Knowledge, Attitude and Pattern of Use

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ABSTRACT

Introduction: Tobacco consumption in multiple form is a growing threat to the health of Indian adolescents, especially those from low socioeconomic communities.

Objectives: The objective of the study were to assess the knowledge, attitude and pattern of tobacco use among migrant adolescents.

Materials and methods: A descriptive survey was under taken among 180 migrant adolescents of Udupi district, using structured questionnaires

Results: Findings of the study showed that, 27.7% of migrant adolescents were using tobacco. The tobacco use was seen only among the male adolescents. More than half of the male adolescents were using any one form of tobacco, where as it was not seen among female adolescents even occasionally. Out of 180 adolescents 43.9% of them had good knowledge about ill effect of tobacco use.

Conclusion: The study concludes that tobacco use is prevalent among male migrant adolescent. There is a need to initiate community based intervention considering the underprivileged population.

Keywords: Knowledge, Attitude, Tobacco consumption, migrant, adolescents

INTRODUCTION

In today's world, tobacco is the single most preventable cause of mortality and morbidity in the world¹. According to World Health Organization by 2025, there will be an estimate of 1.64 billion smokers in the world². Health related habits develop during adolescence and majority of adolescents start experimenting with tobacco use, thereby get addicted to the habit. In India, the most susceptible age for initiating tobacco is during adolescence and early adulthood³. It is reported in the literature that,

1 in every 10 adolescents of 13-15 years has smoked cigarettes at least once⁴. In India, It is estimated that 5,500 adolescents start consuming tobacco every day⁵. Labour migration has increased considerably in recent decades. The places of destination of these migrant workers are urban areas, particularly the fast developing outskirts of urban areas, where the work potential is very high. As a matter of fact, it is mainly because of economic reasons that the laborers migrate. A large chunk of migrant workers are in the unorganized sector. Udupi District has been witnessing an increasing flow of migrant workers during the last decade.

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AIMS & OBJECTIVES

The objectives of the study to determine the tobacco consumption pattern, the knowledge about health hazards caused by tobacco use and attitude

towards consumption of tobacco among the migrant adolescents.

MATERIALS & METHODS

A descriptive survey was undertaken among 180 migrant adolescents of 10 – 19 years residing in urban area of Udupi District, Karnataka. Convenient sampling technique was used for selection of setting and sample. Convenience was in terms of availability of the adolescents during data collection period and location of the migrant area. The area was within 2 KM from Udupi City and the investigators could reach the area in the evenings for collecting the data.

The administrative permission was obtained from concerned authority and ethical approval from the institutional ethical committee of Kasturba Hospital Manipal. Initially the leader of migrant area was approached and permission was obtained from him after explaining the purpose of the study.

House to house survey was carried out to identify the adolescents. After explaining the purpose of the study, informed assent was obtained from the adolescents. The survey was conducted from January to February 2014. Data was collected from both male and female adolescents who were available during data collection period. Samples were available only during evenings and on Sundays, hence data was collected during evenings and on Sundays. The adolescents were interviewed face to face in the absence of elders or family members.

The data was collected using structured questionnaires: demographic proforma, knowledge questionnaire and attitude questionnaire. The content validity of structured questionnaires was obtained by opinion of subject experts. The English version of the questionnaire was translated to Local language, Kannada and validity of translation was obtained by translating it back to English language. The Kannada Version of questionnaires was pretested on ten adolescents to check the clarity. The internal consistency ($r = 0.83$) of the questionnaire was established to measure the homogeneity of the tool.

RESULTS

The data was analysed using statistical package, SPSS version16.0.

In the present study, out of 180 migrant adolescents who participated in the study, there were 64(35.6%) female and 116(64.4%) male adolescents. Only 29 (16.1%) of the adolescents were illiterate, whereas 151(83.9%) were either studying or had education up to pre degree level (PUC); primary (26.1%), higher primary (26.7%), high school (16.7%), PUC (14.4%). Majority of the adolescents, 166(92.2%) belonged to Hindu religion and 14(7.8%) were belonged to either Christian or Muslim religion. About 109 (60.6%) of adolescents belonged to nuclear families and 71(39.4 %) to joint families.

Of 180 surveyed, 50 (27.7%) migrant adolescent were using tobacco. None of the female migrant adolescent's reported use of tobacco in any form even occasionally, whereas more than half of the male adolescents were using tobacco in the form of smoking or smokeless tobacco. Out of 50 male adolescents using tobacco, eleven of them reported using tobacco in the form of smoking and 39 of them used in the form of smokeless tobacco (chewing pan, gutka).

Out of 180 adolescents, most of them reported about tobacco chewing habit of their parents (36.7% of mothers and 32.8% of fathers); smoking was prevalent in 1.7% of mothers and 31.7% of fathers. More than one third of adolescents' friends had habit of chewing tobacco and 28.3% of adolescents friends were smokers.

It was found that, 79 (43.9%) of the sample had good knowledge, 55 (30.6%) of them had average knowledge and 46 (25.6%) had poor knowledge about tobacco and its ill effects (Fig.1). Out of 180 migrant adolescents, 149 (82.8%) were aware that tobacco use is addictive; 108 (65.6%) were aware that tobacco smoking is harmful to people when they are repeatedly exposed to it.

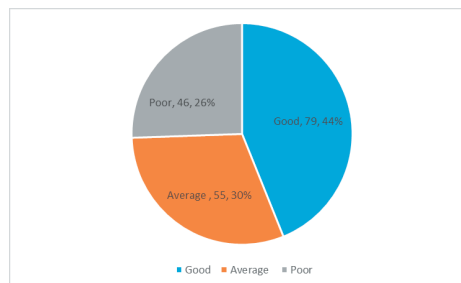


Fig 1. Pie diagram showing percentage distribution of knowledge scores of the adolescents on tobacco consumption

Of the 180 migrant adolescents, 67(37.2%) strongly disagreed that smoking gives social status; 31(17.2%) strongly agreed that adolescents should be discouraged from tobacco use; 64(35.6%) strongly disagreed that, tobacco chewing releases tension. Only 15(8.3%) strongly agreed that tobacco chewing is healthy habit. Out of 180 migrant adolescents, only 21(11.7) strongly agreed that tobacco use at public place should be legally banned and 29(16.1%) strongly agreed that, television and radio advertising on tobacco should be banned.

DISCUSSION

In the present study, 27.7% of the migrant adolescents were using tobacco either in the form of smoke or smokeless tobacco. More than quarter of adolescents had parents or friends with the habit of using tobacco. Habits are formed during the childhood and these adolescents were exposed to the habits of parents from their early childhood might have posed them to develop these habits. The findings are quite similar to Sen et al⁶, Kishore S et al,⁷, Sinha DN⁸. Narayan DD et al⁹, reported the prevalence of tobacco consumption in tribal adolescents Maharashtra as 45.42%, which is quiet higher than the present study.

In the present study none of the female adolescents reported using tobacco in any form. This may be because majority of the females were either literate or were going to school. Contrary to this study report Kishore S et al⁷, Sinha DN et al⁸ and Dongare AR et al¹⁰ reported the use of tobacco by female adolescents. Parents and peers habit strongly shapes the personality of the individuals. Use of tobacco was common among those adolescents whose parents also had the habit of tobacco use. It is evident from this study that habits of parents or other family are easily transmitted to children, which is also seen in other studies, Singh et al¹¹, Sinha DN et al ⁸, Rudatsikira E et al¹².

The limitations of this study are sample of the study were selected conveniently from one migrant population of a district, which could limit its generalization. The study relied only on self-reported data. The actual observation of tobacco use was not done,

CONCLUSIONS

The study demonstrated a relatively high prevalence of tobacco usage among migrant adolescents. The findings of this study have important conclusions for tobacco control among these young generation. In India, most of the tobacco control interventions are aimed at school or college going adolescents and are limited to delivery of knowledge on ill effects of tobacco use in any forms. Findings from this study suggest that intervention should reach out to the community as well as to the underprivileged population. There is a need to stress on the family based interventions so that the entire family behavior can be modified.

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Decoding Acute Leukemias with Flowcytometric Study

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ABSTRACT

Introduction:- Flowcytometric studies facilitate identification of leukemic cells, proper classification of acute leukemias and helps in institution of suitable treatment plans in various types of acute leukemias.

Aim:- Correct diagnosis and classification of Acute Leukemias on the basis of specific C.D markers.

Material and Methods:- This study was conducted in the Department of medicine, Santosh medical college and hospital, GZB from February 2012 to January 2014. Patients suspected as acute leukemias on basis of blasts in peripheral smear were included. The blood samples were run in a 4 colors flow cytometry machine for standardized acute leukemia panel as per the guidelines of international flow cytometric association.

Observation & Results:- A total of 53 patients, suspected of acute leukemias were followed up with flow cytometry. Distribution of HLA DR, was seen in 10 of 15 cases of AML, CD34 was present in 46.7% (7/15) cases of AML and CD117 in 60% (9/15) cases of AML. Expression of myeloid-monocytic markers, MPO, megakaryocyte & NK cell associated antigen-CD61, lymphoid associated antigen & TDT was studied. Various types & subtypes of acute leukemias are classified.

Conclusion:- Flowcytometry is a powerful tool for the investigation of normal and neoplastic cells and their classification. It has a great prognostic and therapeutic implication and hence has a bright future and will be used more and more in near future.

Keywords: FCM- Flow cytometry, AML- Acute Myeloid Leukemia, ALL- Acute leulemoid leukemia.

INTRODUCTION

Acute leukemias are one of the most lethal hematological malignancies. Age adjusted incidence rates for acute leukemias under National Cancer Registry for India is 5.4 per million population while in USA it is 12.9 per million.

Before the FAB era, Acute Leukemias were classified into three major groups i.e myeloid, monocytic and lymphoid. In 1976, French American & British groups (FAB, Benelt & et al) laid down the criteria giving uniformity to the diagnosis world over.

Acute Myeloid Leukemia is classified into seven sub groups (M₁- M₇).

M₀ – Minimally differentiated

M₁- Myeloblastic Leukemia without maturation.

M₂- AML with maturation.

M₃- Hypergranular Promyelocytic Leukemia

M₄- Acute myelo-monocytic Leukemia

M₅- Acute monocytic Leukemia

M₆- Acute erythroleukemia

M₇- Acute Megakaryocytic Leukemia.

Recently (revised 2008), WHO has reclassified Acute Leukemia on basis of flow cytometry and cytogenetics as follows ^[1, 2]:-

1. AML with recurrent genetic abnormalities.
2. AML with multi-lineage dysplasia.
3. AML & myelodysplastic syndrome, therapy related.
4. AML not otherwise categorized.

Flow cytometric analysis of leukemias both for classification and diagnostic utility was first stressed in a study by Kaleem Z et al, 2001^[3].

In 2008, Gujral S et al, brought forward the role of FCM in immunophenotyping in diagnosis and management of haematological malignancies ^[4].

Acute Lymphoblastic leukemia is classified as follows:-

Pre B Cell ALL: L₁ or L₂ - CD19, CD24, HLA-DR cytoplasmic CD22, CD10.

B-cell ALL: L₃ - CD19, 20, 22, 45, T-cell.

T ALL: L₁ or L₂ - CD2, 5, 3, 7, 1.

Application of Flowcytometry:-

In AML, the cornerstone of diagnosis are blast percentage obtained by morphology followed by cytochemistry mainly myeloperoxidase (MPO) & non specific esterase (NSE) stains and lineage (myeloid versus lymphoid) which may be provided by flowcytometry (FCM).

FCM studies are important in those cases of acute leukemia where blasts do not show Auer rods and are negative for MPO and NSE stains. Thus the subtypes like AML M₀, AML M₇ need FCM for definitive diagnosis. Classical cases of AML do not require expensive FCM studies.

ALL is one of the commonest leukemias in children. All acute leukemia cases which do not show presence of Auer rods or are negative with MPO & NSE need FCM for definitive diagnosis.

Acute Leukemias display characteristic pattern of surface antigen expression (CD antigen) which facilitate their identification and proper classification.

FCM uses the principle of light scattering, light excitation and emission of fluorochrome molecules to

generate specific multiparameter data from particles and cells in the size of 0.5 μm to 40 μm. One unique feature is that it measures fluorescence per cell or particle, which is plotted on two parameter histogram on X & Y axis and cell count height on density gradient, this is a topographical map.

MATERIAL & METHOD

The cases for the present study consisted of patients diagnosed as Acute Leukemias on basis of blasts on peripheral smear in the department of medicine at Santosh Medical & Dental College Hospital, Ghaziabad. Clearance was taken from Ethical Committee of Hospital.

Criteria for Selection:-

53 patients irrespective of gender suspected as Acute Leukemias on peripheral smear were followed by flow cytometric blood sampling from bone marrow or peripheral blood.

The blood samples (5 ml of peripheral blood or bone marrow aspirate) were run in a 4 colors flow cytometry machine for a standardized Acute Leukemia Panel as per the guidelines of the International Flow cytometric Association.

Inclusion Criteria:-

All patients above the age of 18 years irrespective of gender, suspected to have Acute Leukemias on peripheral blood film were subjected to the proposed study, willful consent from the patient were obtained.

Exclusion Criteria:-

- Any patient below the age of 18 years
- Any patient with past history of malignancy, MDS or genetic abnormality was excluded.
- All patients with known history of chronic Leukemias or Lymphomas with recent transformation into acute Leukemias.
- Patients with other co-morbid medical condition.

The study was planned with the workup of patient which included detailed case history, any family history of carcinogenesis and genetic disorders along with complete clinical examination was followed by

Flow cytometric blood sampling from bone marrow or peripheral blood.

Bone marrow aspirates or peripheral blood was immediately transported in sodium heparin tubes to the flow cytometry laboratory. Mononuclear cells were isolated using Ficoll-Hypaque and stained with various combinations of fluorescein isothiocyanate (FITC), phycoerythrin (PE) and phycoerythrin cyanine5 labelled monoclonal antibodies.

Peripheral blood smear (films) was prepared using wedge slide technique developed by Maxwell Wintrobe.

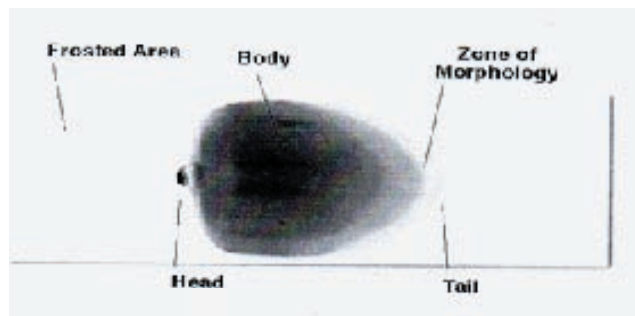


Fig 1 Peripheral blood smear and its parts

Flow cytometry is a technique for counting and sorting cells and microscopic particles. It allows a single cell to be measured for a variety of characteristics by measuring visible (absorb and reflected) and fluorescent light emission.

Flow cytometry uses the principle of light scattering, light excitation and emission of fluorochrome molecules to generate specific multiparameter data from particles and cells in the size range of 5µm to 40µm diameter. It has got three key components:

1. A light source- commonly used are lamps (mercury, xenon); high power water cooled lasers (Argon, Krypton, dye laser); low power air cooled lasers; diode lasers.

2. A liquid flow that carries and aligns cells so that they pass single file through the light for sensing.

A detector and analogue to digital conversion system which generates forward and side scatters which are amplified and processed by a computer.

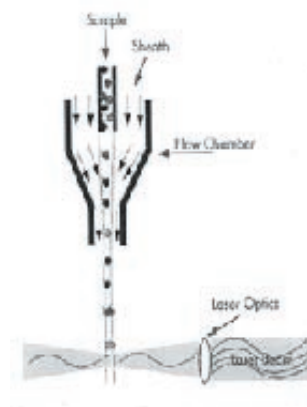
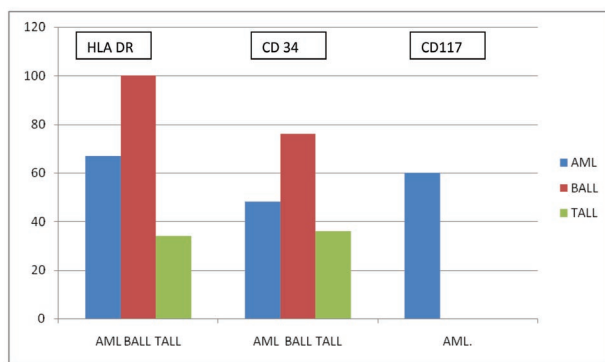


Fig 2 Schematic diagram of flowmeter

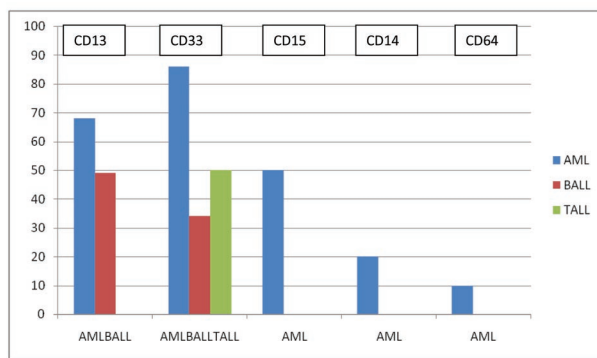
OBSERVATION & RESULTS

A total 53 of patients with leucocytosis and blasts on peripheral smear were followed up with flowcytometry. In these 53 patients, 33 (62.3%) were male while 20 (37.7%) were female. The mean age of patients was 40.35 ±2.02.

In these patients 15.09% had gum bleed, 84.9% had anemia, hepatosplenomegaly was present in 66.03% while fever was present in 73.59%.



Flow Chart 1:- DISTRIBUTION OF HLA DR, CD34 & CD117



Flow Chart 2:- DISTRIBUTION OF CD13, CD33, CD15, CD14 & CD64

MPO expression by flow cytometry showed positive result in all cases of AML M1/M2 while in 50% cases in AML M0.

Megakaryocyte & NK cell associated antigen-CD61. CD61 usually seen in M and was expressed in any other subtype of AML under study.

Lymphoid associated antigens & TDT- CD19, CD10 & CD22 are B cell markers while CD4, CD3 & CD7 are T cell markers.

CD4 & CD3 were present in 66.7 cases of T-ALL while was absent in all cases of B-ALL. CD7 was present in all cases of T-ALL while dimly present in 15.45% cases of B-ALL.

The promiscuous of all T-cell associated antigens was CD7, which was seen in 46.7% cases of AML's.

Glycoprotein A, CD 11 c & CD45- Glycoprotein A was present in 26.7% cases of AML while none of the ALL samples showed Glycoprotein A expression CD 11c was present in 93.3% of all cases of AML while was dimly expressed in only 1 out of 16 cases of ALL.

CD 45 is present on all human leukocytes, it was expressed in all cases of AML & ALL. Out of total 53 cases 31 cases were diagnosed as Acute Leukemia (16 ALL & 15 AML), 8 cases were of CML, 11 cases were CLL, there was one case each with NHL, hairy cell leukemia & one was inconclusive due to clotted samples.

Table 1:-Distribution of cases

Acute Myeloid Leukemia	15
Acute Lymphoblastic Leukemia	16
Non Hodgkins lymphoma with conversion	1
Hairy cell Leukemia	1
Chronic Myeloid Leukemia	8
Chronic Lymphoid Leukemia	11
No Result	1
Total	53

Table 2:- Subtypes of AML

AML M ₀	2
AML M ₁ /M ₂	6
AML M ₃	5
AML M ₄	1
AML M ₅	1
AML M ₆	0
AML M ₇	0

Table 3:- Subtypes of ALL

ALL B cell	8
ALL B CA LLA+	5
ALL T cell	3

DISCUSSION

Immunophenotyping of acute leukemia is one of the most important clinical applications of Flow cytometry. This study was conducted in 53 patients with Leucocytosis and blasts in peripheral smear, who attended the outpatient department in Department of Medicine at Santosh Medical College, Ghaziabad.

In these 53 patients, 33 were male while 20 were female. The mean age of patients was 40.35±2.02 (2SD) with a range of 18-85 years.

According to Leukemia & Lymphoma Society, facts and statistics (June 2009), incidence rates for all kinds of leukemias are higher in males than in females. Males account for about 60% cases of Acute Leukemias.

ALL is the leading cause of death under 15 populations while AML is most common after 5th decade of life. In our study too, male preponderance was present (62.3%) which correspond with the findings of above society.

Expression of HLA-DR, CD 34 & CD 117, Kaleem Z et al found the expression of HLA-DR, CD 34 & CD 117 in 86%, 62% and 80% cases of AML respectively [5]. In our study expression of HLA DR, CD 34 and CD 117 is 66.7%, 46.7% and 60% cases of AML respectively.

Myeloid – monocytic Markers (CD 13, CD 14, CD 15, CD 33 & CD 64), Stelzer GT et al described expression of CD 13 was seen in 67% of all cases diagnosed as AML irrespective of subtypes & CD 33 was seen in 86.17% cases of AML of all subtypes^[6]. In case of T-ALL CD 13 was absent in all cases while in B-ALL in was present in 50% cases only. While CD 33 was present in 33.3% cases of T- ALL & 50% cases of B-ALL. The presence of CD 13/CD 33 was similar to that found by stelzer et al.

Expression of CD14 is usually considered a marker of monocytic origin, in the study conducted by Brunning RD et al, CD14 was visualized in 53% cases of AML^[7]. In our patient population it was expressed in 50% cases of AML M₄ & M₅.

MPO – Kaleem Z et al found MPO expression in 71% cases of AML M₀ & all except 1 of 22 cases of AML M₁/M₂^[5]. Whereas in our study, MPO expression showed positive result in all cases of AML M₁/M₂ while in 50% cases in AML M₀. This parameter met well in the set international guidelines.

Lymphoid Associated Antigens and TdT – MR Khawaja et al^[9] CD4, CD3 and CD7 were present in all cases of T-ALL and uniformly absent in all cases of B-ALL whereas in our study CD4 & CD3 were present in 66.7% cases of T-ALL while was absent in all cases of B-ALL. CD7 was present in all cases of T-ALL while only present in 15.4% cases of B-ALL.

TdT was present in 68.75% cases of ALL while expression of TdT in myeloid leukemias was seen only in AML M₀ & AML M₁/M₂.

Jorgensen JL, Chen SS stated that flowcytometry can be used for posttherapy minimal residual disease assessment in AML and has important prognostic indication^[10].

Thus on comparison the data in our study was in line with those available.

CONCLUSION

The hallmark for the diagnosis of acute leukemia until recent past has been the morphology and cytochemistry. They provide correct diagnosis in about 80% of all cases.

FCM is a powerful tool for the investigation of

normal and neoplastic cells and their classification at every level. Therefore it has great prognostic and therapeutic implication. By this method more than 98% of acute leukemia cases can now be precisely allocated to their respected lineage.

Thus we conclude that flow cytometry has a bright future and will be used more and more for diagnostic purposes in near future and its role in medicine should not be undermined.

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Review of Home Based Post-natal Care in India

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ABSTRACT

Background: lack of awareness among community leads to deficient home based post-natal care in India leading to neonatal mortality and morbidity. Aim: to study the home based post-natal care in India. **Methods:-** Studies related to home based post-natal cares were analyzed. **Results:-** the home deliveries were more common 83.92% as compared to institutional deliveries 16.08%. a new shaving blades were used to cut cord in 63.82% while in the case study of tribal women in Gujarat cord cutting was done with used shaving blades, household knives. Recommendations;- increase awareness about the target group of services under home based post-natal care through mass media, T.V., radio, role play, newspaper , poster etc.

Keywords: home delivery; post-natal care; newborn; breastfeeding; cleanliness

INTRODUCTION

The global burden of neonatal death is estimated to be 5.0 million of which 3.2 million death occur during the first week of life.¹

According to world health organization guidelines for essential newborn care encompasses cleanliness, thermal protection, initiation of breast feeding, immunization, eye care. Management of illness and care of low birth weight infants²

Globally there has been considerable decline in under-five & infant mortality during four decades. Neonatal mortality rates remain unchanged especially in developing countries^{3,4}

It is estimated that each year around four million neonatal death occurs almost exclusively in low income countries⁴

The neonatal period is only 1/60th of first five year of life, but contributes 38% of estimated 10.5 million under five death occurring every year all over the world⁵

In India government bilateral & multilateral agencies have made several efforts in the area of maternal and child health welfare. Implementation of IMNCI etc. has resulted in an increases in institutional deliveries & decrease in infant & child mortality rate.

Even though the primary care of neonatal deaths are to be preterm death 28% , severe infection 26%, birth asphyxia & injuries 23% & diarrhea 3% with low birth weight contributing to large proportion neonatal death.

Material and methods:- studies related to home based post natal care were analyzed.

RESULTS

Place of delivery;- the study finding shown that the home deliveries were more common 83.92% as compared to institutional deliveries 16.08% and home deliveries conducted by untrained birth attendant (19.14%) while in another study institutional delivery of 33 cases , hospital birth accounted for 66%. Home deliveries shown uniform distribution in attendance at birth of trained and untrained attendant.

Cord cutting and cord care;- a new shaving blades were used to cut cord in 63.82% , old blades, scissor and knife were used to cut in 21.28% in the field practice area of urban slum which is attached to department of community medicine Subharti Medical college

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Meerut UP while in the case study of tribal women in Gujarat in home birth the primary birth attendant usually does cord cutting and cord clamping with a spectrum of instruments (cord cutting was done with used shaving blades , households knives while cord clamping was mostly done with used rough cloths.

Airway cleaning and resuscitation;- in a case study of tribal women , Gujarat. Among hospital births , the primary resuscitation practice was followed in all cases but among home deliveries , mucus aspiration was done by dai finger with pinch of salt on it. Also households cloths was used for airway cleaning among most home birth in study area.

In area of urban slum of Meerut UP attached to community medicine department of Subharti medical college the majority of newborn 76.60% were washed with warm water and dried up to clean immediately after birth while in case study of tribal women in Gujarat non-wrapping of neonatal was frequent among home deliveries. The prime reasons of non –wrapping being the newborn care practice of Chatti puja where in the child is not draped until the seven days of his life.

Breast feeding ;- in the case study of tribal women in Gujarat , immediate breast feeding of colostrum was not practiced in almost 63% of cases irrespective of place of delivery

CONCLUSION

It is concluded that the home deliveries were more common 83.92% as compared to institutional deliveries 16.08% and home deliveries conducted by untrained birth attendant (19.14%) while in another study institutional delivery of 33 cases , hospital birth accounted for 66%.

Cord cutting and cord care;- a new shaving blades were used to cut cord in 63.82% , old blades, scissor and knife were used to cut in 21.28% in the field practice area of urban slum which is attached to department

of community medicine Subharti Medical college Meerut UP while in the case study of tribal women in Gujarat in home birth the primary birth attendant usually does cord cutting and cord clamping with a spectrum of instruments (cord cutting was done with used shaving blades , households knives while cord clamping was mostly done with used rough cloths.

RECOMMENDATIONS

Increase awareness about the target group of services under home based post-natal care through mass media , T.V., radio, role play, newspaper , poster etc.

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Epidemiological Profile of Dengue Cases Treated in a Tertiary Health Care Institution in Punjab (India)

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ABSTRACT

Introduction or background: Sri Guru Ram Das Institute of Medical Sciences and Research, Sri-Amritsar (SGRDIMSAR) is a tertiary health care institution. Dengue is a viral disease, transmitted by the infective bite of *Aedes Aegypti* mosquito. Dengue cases and deaths in the country and in Punjab have shown a rising trend since 2009 with fluctuations in intervening years. Studies on suspected cases of dengue conducted in Ludhiana and Amritsar districts in year 2008 showed that most of cases were reported in residents of urban areas but with the start of its spread to a rural area Kumkalan in Ludhiana district. Higher number of suspected cases was found in males. Most of cases were found in adult age groups and the least in infants. Majority of cases were reported in months of October and November. Another study conducted on confirmed cases of dengue reported in years 2009 to 2013, showed a rising trend of dengue except for the year 2012. Other results were similar to studies of suspected cases found in Ludhiana and Amritsar district in year 2008. Medical colleges of Punjab were involved in implementation of National Vector Borne Disease Control Programme in year 2013. The present study was aimed to assess the epidemiological features of the dengue patients treated in SGRDIMSAR. **Material and Methods:** Isolation wards of dengue having beds covered with bed nets were established in SGRDIMSAR in August, 2013 to prevent spread of dengue infection. The epidemiological data of dengue cases were collected, analyzed and the valid conclusions were drawn. The serum samples for confirmation of dengue were tested in Government Medical College, Amritsar. **Findings:** Physicians referred 298 patients to laboratory for dengue tests. Among these 93 patients were found confirmed cases of dengue. There was 1 case of dengue haemorrhagic fever (DHF), no case of dengue shock syndrome (DSS) and death. The maximum numbers of cases were found in the adult age groups and no case in infants and under five year children. Higher number of male cases and rural cases was found. The maximum number of cases was found in month of October followed by November and September. From 4 districts of Punjab, the cases of dengue got treatment from this institute and the maximum number of cases belonged to district Amritsar.

Conclusion: Age wise distribution of dengue patients is similar to the study conducted on dengue cases in district Amritsar from years 2009 to 2013. Higher percentage of male cases found might be due to that less number of females come to hospitals for treatment and males are more exposed to *Aedes* mosquito bites during the day. As this study shows the spread of dengue from urban to rural areas, emphasis on control of dengue in rural areas should also be laid down. All preventive and control measures should be started before the onset of dengue season, NCDC desert coolers should be used to prevent dengue.

Keywords: *Dengue/DHF/DSS/NVBDCP/Aedes aegypti/ Aedes albopictus/Suspected case/Confirmed case*

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INTRODUCTION OR BACKGROUND

Sri Guru Ram Das Institute of Medical Sciences and Research, Sri-Amritsar (SGRDIMSAR) is a tertiary health care institution.

Dengue is a viral disease, transmitted by the

infective bite of *Aedes Aegypti* mosquito. Man develops disease after 5-6 days of being bitten by an infective mosquito. It occurs in two forms: Dengue fever and dengue haemorrhagic fever (DHF). Dengue fever is a severe, flu-like illness and dengue haemorrhagic fever is a more severe form of disease, which may cause death. Signs & symptoms of dengue fever are: Abrupt onset of high fever, severe frontal headache, pain behind the eyes which worsens with eye movement, muscle and joint pains, loss of sense of taste and appetite, measles-like rash over chest and upper limbs, nausea and vomiting. Dengue cases and deaths in the country since 2009 have shown a rising trend with the intervening fluctuations. Total number of cases and deaths in India, in the years 2009 to 2014 is as follows: 2009 (15535 cases and 96 deaths), 2010 (28292 cases and 110 deaths), 2011 (18860 cases and 169 deaths), 2012 (50222 cases and 242 deaths), 2013 (75808 cases and 193 deaths), 2014 (40571 cases and 137 deaths). In the state of Punjab the number of cases and deaths in the years 2009 to 2014 are as follows: 2009 (245 cases and 1 death), 2010 (4012 cases and 15 deaths), 2011(3921cases and 33 deaths), 2012 (770 cases and 9 deaths), 2013 (4117 cases and 25 deaths), 2014(472cases and 8 deaths).¹

A study conducted on the epidemiological features of dengue cases and deaths reported (detected by the presence of Ig G/IgM antibodies in the serum and called the suspected cases) in Ludhiana district showed that the number of cases (2506) and deaths (13) reported in the year 2008 was the highest in the districts of Punjab. There were 2504 dengue cases reported from the urban areas, while only 2 from the rural area Kumkalan. The incidence of cases was higher in males, the highest in 31-50 years age group and the lowest in infants; and it was the highest in the month of October followed by November and September.² The vector *Aedes albopictus* was become known to be more active than *Aedes aegypti* in rural surroundings.³

Another study conducted in the same year in district Amritsar showed the reporting of 196 suspected cases and 1 death. All the cases reported were residing in the urban area only. Maximum number of cases was reported in the age group of 16 to 50 years and there was no case among infants. Higher number of cases in males was reported. Majority of cases 149 (76.02%) were reported in the months of

October and November.⁴ Study on trends of dengue cases in district Amritsar from the year 2009 to 2013 shows that suspected cases of dengue found positive by Ig G and Ig M tests were reported till 2008 and after that confirmed cases of dengue found positive by Ig M Mac Elisa and NS-1 Ag Elisa Kits have been reported from the year 2009 to 2013. A rising trend of dengue was observed in these years except for the year 2012. No dengue case has been reported in infants. Maximum number of cases 161 (28.9%) have been reported in the age group 21-31 years. There were 215 (38.6%) female cases and 342 (61.4%) male cases. The difference of sex wise distribution was insignificant statistically. No case was reported from the month of January to July in all the years. Out of the 557 cases 291(52.2%) were reported in October and 200 (35.9%) in November with the month wise difference highly significant statistically.⁵

Epidemic of dengue was recorded in 1994 in rural areas of West Bengal and dengue virus was isolated from *Aedes aegypti* caught from rural areas.⁶

Cement water tanks, water coolers, plastic containers and tyres are the preferred breeding habitats of *Aedes* mosquitoes. Coconut shells and latex cups are important breeding sites in Kerala and Lakshadweep Island. National Centre for Disease Control (NCDC) has developed a modified cooler with a covered water tank which prevents breeding of mosquitoes. Use of this cooler can be very helpful in preventing vector breeding and thus contribute towards control of dengue as a public health problem particularly in urban areas.⁷

National Research Development Corporation of India found that in India about 60 to 70% of the mosquito breeding occurs in coolers in the urban areas and about 40% in rural areas.⁸

A meeting regarding the involvement of Medical Colleges in implementation of National Vector Borne Disease Control Programme (NVBDCP) was held in Directorate of Health and Family Welfare, Punjab at Chandigarh on 25-07-2013 under the Chairmanship of Director, Health and Family Welfare, Punjab. The representatives of all Medical Colleges in the meeting were told to establish separate dengue wards in view of the transmission season of dengue and install mosquito nets on the beds for the suspected cases

in order to prevent the spread of infection to other patients. All the Medical Colleges were directed to send daily report of dengue so that the information could be forwarded to the district/state concerned to take remedial and preventive measures.⁹

Hence the present study was aimed to assess the epidemiological features of the dengue patients treated in SGRDIMSAR so as to find out the measures for its prevention and control.

MATERIAL & METHODS

Separate wards of dengue as per directions were established in SGRDIMSAR with 5 beds in the Medicine and 3 beds in the Paediatrics departments. These beds were covered with bed nets to prevent the spread of dengue infection from the dengue patients admitted in these wards to other patients, visitors, and staff of the institute by the mosquito bites.⁹ The epidemiological data of the confirmed cases and deaths due to dengue were collected in the Department of Community Medicine, Sri Guru Ram Das Institute of Medical Sciences and Research, Amritsar for the period from 24th of August, 2013 to 31st of December 2013. The study population included the patients having symptoms and signs resembling dengue and their serum samples were got tested for confirmation of dengue by Mac Elisa or NS1 Ag Elisa done in Government Medical College, Amritsar. As per the directions of the Directorate of Health and Family Welfare, Punjab, during this period, the Rapid test for dengue cases was not done. Data collected were analyzed and the valid conclusions were drawn.

FINDINGS

There were 298 patients referred by the physicians to the laboratory for the tests of dengue. Out of the 298 patients referred, 93 patients were found confirmed cases of dengue. Out of the 93 confirmed cases of dengue there was 1 case of dengue haemorrhagic fever (DHF), no case of dengue shock syndrome (DSS) and death.

Table 1 is showing the age wise distribution. No case has been found in the infants and in children less than five years of age. In the 6 to 10 years age group i.e. primary school going children only 3 (3.23%) cases were found. In the age group 11 to 20 years 13 (13.98%)

cases of dengue were found. The maximum number of cases 21(22.58%) was found in the age group 21-30 years. The age wise difference in the number of cases found has been found highly significant statistically.

Table 2 is showing the sex wise distribution. There were 61(65.6%) male and 32 (34.40%) female cases found in the study. The difference of sex wise distribution was found highly significant statistically.

Table 3 is showing the rural and urban area wise distribution. Higher number of rural cases i.e. 56 (60.21%) has been found as compared to urban cases i.e 37 (39.79%). The difference of sex wise distribution was found significant statistically..

Table 4 is showing the month wise distribution. The maximum number of cases, 67 (72.04%) was found in the month of October followed by 18 (19.35%) in November and 8 (8.60%) in September. The difference of month wise distribution was found highly significant statistically.

Table 5 is showing the district wise distribution of dengue cases treated in SGRDIMSAR. There are 22 districts in Punjab. Out of the 22 districts, only from the 4 districts, the cases of dengue got treatment from this institute. The maximum number of dengue cases i.e. 67(72.04%) treated in SGRDIMSAR belonged to district Amritsar. This was followed by 21(22.59%), 2 (2.15%) and 1(1.08%) cases of dengue belonging to district Gurdaspur, Hoshiarpur and Tarn Taran respectively. Two dengue cases treated in SGRDIMSAR belonged to the state of Jammu and Kashmir. These were: 1(1.08) from district Jammu and 1(1.08%) from Samba. The difference of district wise distribution was found highly significant statistically.

Table 1. Age wise distribution of confirmed cases of dengue

Age in years	Confirmed cases	
	No.	%
6-10	3	3.23
11-20	13	13.98
21-30	21	22.58
31-40	14	15.05
41-50	19	20.43
>50	23	24.73
Total	93	100.00

$\chi^2 = 26.61$ $df = 5$ $P \text{ value} < 0.001$

Table 2. Sex wise distribution of confirmed cases of dengue

Sex	Confirmed Cases	
	No.	%
Male	61	65.59
Females	32	34.41
Total	93	100.00

$\chi^2 = 9.04$ $df = 1$ $p \text{ value} < 0.01$

Table 3. Area wise distribution of confirmed cases of dengue

Area	Confirmed Cases	
	No.	%
Urban	37	39.78
Rural	56	60.22
Total	93	100.00

$\chi^2 = 3.88$ $df = 1$ $p \text{ value} < 0.05$

Table 4. Month wise distribution of confirmed cases of dengue

Month	Confirmed Cases	
	No.	%
September	8	8.60
October	67	72.04
November	18	19.36
Total	93	100.00

$\chi^2 = 93.5$ $df = 2$ $p \text{ value} < 0.001$

Table 5. District wise distribution of confirmed cases of dengue

District	Confirmed Cases	
	No.	%
Amritsar	67	72.04
Gurdaspur	21	22.59
Hoshiarpur	2	2.15
Tarn Taran	1	1.08
Jammu	1	1.08
Samba	1	1.08
Total	93	100.00

$\chi^2 = 225.49$ $df = 5$ $p \text{ value} \ll 0.001$

Breeding sites



Figure 1. Ordinary desert cooler

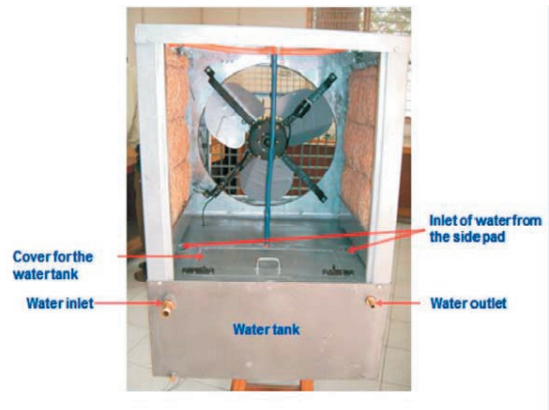


Figure 2. NICD desert cooler

CONCLUSION

The age wise distribution of the dengue patients treated in SGRDIMSAR has shown the results similar to the study conducted on trends of dengue cases in district Amritsar from 2009 to 2013.⁵ In these studies, confirmed cases of dengue were studied. Studies conducted in districts of Ludhiana and Amritsar in year 2008 also showed the similar results even though the cases reported in those studies were suspected.^{2,4}

The sex wise distribution also resembles the previous studies i. e. higher percentage of male cases was found than the female cases.^{2,4,5} This might be due to the reason that the less number of the females come to the hospitals for seeking the treatment or the males are more exposed to the Aedes mosquitoes bites during the day being engaged in their occupations.

The urban rural area wise distribution of cases has shown the changing trend of spread of dengue from the urban to rural areas. District Amritsar in year

2008 reported all the 196 suspected cases of dengue from the urban areas⁴ while in district Ludhiana out of 2988 suspected cases of dengue reported, 2 were reported from the rural area Kumkalan which showed the initiation of the transmission of dengue infection from the urban to rural areas.² In the present study only 39 (39.78%) cases treated were residents of the urban areas and 56 (60.22%) cases were residents of rural areas. This shows the wide spread of dengue from urban to the rural areas. The results of this study resemble to another study conducted in district Ludhiana.^{3, 6} Thus the present study shows to lay more emphasis on prevention and control of dengue in rural areas also in addition to urban areas.

Month wise distribution of dengue cases resembles previous studies showing spread of the disease in months of August to December, with its peak in October.^{2, 4, 5} Thus all preventive and control measures like establishment of separate dengue wards⁹ in hospitals having beds covered with bed nets, availability of equipments, materials and drugs etc. for early diagnosis and management of dengue cases should be taken well before the onset of dengue season.

Campaigns for behavior change communication before onset of dengue season like personal protective measures, environmental sanitation, no water collections in the surroundings and vector control need to be conducted.

Ordinary desert coolers (See figure1) are the known potential source of spread of dengue. NCDC has developed a modified cooler with a covered water tank which prevents breeding of mosquitoes (See figure 2). Use of this cooler can be very helpful in preventing vector breeding and thus contribute towards control of dengue as a public health problem particularly in urban areas,⁷ as the National Research Development Corporation of India in a study found that in India about 60 to 70% of the mosquito breeding occurs in coolers in the urban areas and about 40% in rural areas.⁸

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Conflict of Interest: Nil

Source of Funding: Self

Ethical Clearance: Not needed as the study is based on the records.

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Palsy – Treatment Efficacy by Drugs and Interferential Current Therapy

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ABSTRACT

Bell's palsy also term idiopathic facial palsy has uncertain etiology. Controversy in management issue makes "Bell's palsy" a novel disorder. Although majority of patients regain their normal or near normal facial motor function, certain percentage of sufferers shows incomplete motor function recovery of peripheral VII cranial nerve with or without troublesome synkinesis. At this context, a randomized clinical trial was made to see the efficacy of interferential current along with medical management for therapeutic benefit and to prevent long term sequallae. Some other important issue like natural history, reactivation of HSV – Type 1 viral etiology, medical, surgical and acupuncture treatment were reviewed.

A prospective clinical trial was made among 27 cases (n = 14 male and n -13 female) of various age (8 yrs. to 80 yrs.) with the use of interferential current, prednisolone, acyclovir, neurotropic vitamins. House – Brackmann grading system was used to assess facial nerve function score and cases were enrolled irrespective of their onset of palsy from recent to late or very late, inclusion criteria was to exclude other possible causes, but trigeminal neuralgia, diabetes, hypertension and cardio-vascular diseases were considered to be associated illness. Treatment follow up was made from 1 week to 4 weeks. Results seem to be very encouraging with 25 out of 27 recovered to House – Brackmann grade 1 or 11. Co-existed diabetes took long time to recover and two cases which did not exhibit any response were of very late onset. Although framing of the study was made with a very small number of patients, author considered the approach to be applicable and rational in day to day out patient clinical practice for Bell's palsy.

Keywords: HSV- Herpes Simplex virus, PGS- Peripheral Sensory Ganglia, PCR- Polymer Chain reaction.

INTRODUCTION

Bell's palsy constitutes a major share (60% to 70%) among the cranial nerve neuropathies, presented as unilateral lower motor neuron type of paresis or paralysis of face with abrupt onset resulted from compression of the facial nerve in narrow fallopian canal by edema which is possibly caused by reactivation herpes simplex virus (HSV Type – I) from peripheral sensory ganglia (PGS). Though viral

etiology of HSV Type – I is an enthusiastic talk of recent days, it is very difficult to say why the HSV Type – I get access from the sensory ganglia to motor branch of facial nerve. The original hypothesis of Mc Cormick (1972) was supported later by identification of HSV nucleic acid from the geniculate ganglion by polymer chain reaction technique (PCR). Murakami et al. recently found HSV DNA in endoneural fluid of facial nerve and in auricular muscles of the cases of acute idiopathic facial paralysis. As the etiology became clearer in the recent years, patho physiology associated with the edema within the facial nerve is supposed to be caused by HSV Type – I virus. Conventional steroid treatment to improve the micro-circulation has doubtful benefit, as Adour acyclovir

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trial documented that poor facial recovery (House Brackmann Grade – III or IV) was recorded among 23% cases of Bell's palsy when only prednisolone was used but when acyclovir was added to the regimen, the picture was different, where only 7% of the population of Bell's palsy had poor outcome of incomplete facial motor function recovery. An another study, it showed that either alone or combining methylcobalamine with steroids can shorten the recovery period significantly in Bell's palsy than steroids alone, but the study did not report any cases of poor outcome of facial motor function. Recently Acupuncture treatment is quite commonly used in certain neurological and painful conditions successfully. The phenomenal way of recovery obtained from it some old cases of Bell's palsy cannot be explained by the present day's medical knowledge. Low frequency galvanic or interrupted galvanic current are used in Bell's palsy to stimulate the facial nerve since a long time in PMR, but the result obtained from it is marginal or doubtful.

Trans cranial, Trans mastoid and sometimes combination of both are the surgical techniques of decompression of the facial nerve. Disputes regarding the necessity and the site of decompression with lack of universally accepted nerve function scoring system jeopardize the issue to compare with the other study reports.

The system of facial nerve function scoring is known as House-Brackmann Grading System and was describe by JW House and DE brackmann in 1985. The system described six different grades of facial nerve function as per the behavior of the muscles supplied by the facial nerve and the complications if any. Grade I is normal function of facial muscles, Grade – II signifies mild dysfunction with slight noticeable asymmetry of mouth on voluntary effort. Grade-III has no obvious disfiguring different, but has reduced forehead movements with slight synkinesis, contracture and/or hemi facial spasm. Grade IV has no fore head movement, disfiguring asymmetry improper closure of eye and asymmetric of mouth with maximum effort, Grade V has gross asymmetry with minimum movements. Grade – VI has no movements at all.

Inspire of every effort poor and incomplete return of facial motor function with or without

unwanted complications like asymmetry, palsy induced blepherospasm, troublesome synkinesis, fasciculation are the great topic of discussion and debate. Indeed a comprehensive technique is needed to prevent such complications and to restore normal or near normal return of facial motor function of the cases of Bell's palsy. This study aims to institute and discuss a prospective clinical trial where the efficacy of computerized interferential therapy was observed to prevent unfavorable events and complications of Bell's palsy when it is added to prednisolone and acyclovir regimen.

MATERIAL & METHODS

Indeed the interferential current therapy was used irrespective of severity of illness from mild to severe as per the scale which governs the facial motor function of House Brackmann grading system. Moreover the study included all available cases attended the institution for consultation by themselves or were sent by the other discipline of medical science, with a variable medical history of onset from recent to late or very late.

27 patients clinically diagnosed as Bell's palsy after meeting the entire criteria for enrollment in this study was again verified for any influence of illness towards age, sex and seasonal variation. Out of 27 patients male (n-14) were 51.85% and female (n-13) were 48.15% age was 4 yrs. to 80 yrs. with mean age 37.63, Cases were more, when the season was changing from hot to cold and cold to hot. Time of inclusion for the study was considered as early when patient were found within 0 to 7 days from the onset of illness, late when found within 8 to 14 days and very late when found beyond 15 days from the onset of illness. Case distribution in immediate category was 15 (55.55%), 5(18.72%) in late category and 7 (25.93%) in very late category. When hypertension and cardio-vascular diseases were found in association with Bell's palsy, they were sent to the medical specialist and cardiologist respectively for stabilizing the condition. Similarly, diabetics were send to the diabetologist for assessing the diabetic state and necessary management. There was no any predilection of the disease towards any one of the two facial nerves (right and left facial nerves) was observed in this study. Incidence of associated illness was found to be 59.26% were diabetes constituted 11.11% hypertension constituted 25.93%; CVD

constituted 7.41% and Neuropathy of fifth cranial nerve (Trigeminal neuralgia) constituted 14.81%.

Prednisolone was given 80 mg daily in divided doses for 7 days and tailed off slowly. Prednisolone was not initiated to the patients of labile hypertension and diabetics because of possible risks of adverse reaction. Only one case of 4 yrs. child was found for inclusion in this study during the study period and her dose of prednisolone was calculated to his one mg per kilogram of body weight. All patients were placed on 1000 mg of acyclovir in 5 divided doses for 10 days. Initially, injectable neurotropic vitamins were given alternate daily after skin test for 2 week and later tablet form was given orally daily as maintenance dose till full recovery.

To facilitate the recovery of facial motor function, low frequency current like galvanizing was used in the Bell's palsy cases since a long time. But the result obtained from it was observed to be marginal or doubtful, probably because of low penetrating property of galvanic currents.

Within the period of treatment follow-up majority of patients of Bell's palsy regain their normal facial motor function without any complications within 3 week (H.B.-I) of treatment. But 11.11% Diabetics and 25.93% Hypertensive took whole period of treatment follow-up of 4 weeks, leaving very little asymmetry of face (H-B-II) without any sequellae probably because of old age or metabolic derangement associated with past illness (H.B.-II). They were followed up to next 1 month and found completely recovered within that period (H.B.-I). One young lady patient of very late onset showed partial recovery by gaining the normal motor function of lower part of left side of the face including voluntary closure of left eye. No voluntary power to lift her left eyebrow with moderate synkinesis on voluntary closure of her left eye was observed (H-B-III). Two (2) cases of very late onset did not respond at all, one was a gentlemen aged 65 yrs. and the other one was a lady aged 50 yrs. with severe trigeminal neuralgia found to be associated with the Bell's palsy of the same side.

RESULT

At the time of inclusion ('0' week) patients of Bell's palsy were assessed for their Grade of facial motor function with the help of House-Brackmann

facial motor function reporting system. At '0' week distribution of patients as per the House Brackmann \$ scoring system were H-B VI (n-8), H-B V (n-9), H-B IV (n-8) & H-B III (n-3). To compare the results afterward mean score were calculated out and the score was found to be 4.85 at '0' week. At the end of '1' week patient were reassessed for their House – Brackmann Gradd and mean score which were H-B VI (n-8), H-B V (n-8), H-B IV (n-5), H-B III (n-5), H-B II (n-1), H-B I (n-1*) and mean score was 4.63 respectively. Similarly in '2', '3' and '4' week of treatment follow – up, they were (A) H-B VI (n-2), H-B V (n-3), H-B IV (n-0), H-B III (n-7), H-B II (n-5), H-B I (n-10+1*) and 2.67 (B) H-B VI (n-2), H-B V (n-1), H-B IV (n-0), H-B III (n-0), H-B II (n-8), H-B I (n-14+1*) and 1.96 and (C) H-B VI (n-2), H-B V (n-0), H-B IV (n-0), H-B IV (n-0), H-B III (n-2) H-B II (n-8), H-B I (n-15+1*) and 1.74.

Results showing the improvements

H-B Grade		Week				
Scale	Score	0	1	2	3	4
VI	6	8	8	2	2	2
V	5	9	8	3	1	0
IV	4	8	5	0	0	0
III	3	2+1*	5	7	2	2
II	2	x	1	5	8	8
I	1	x	1*	10+1*	14+1*	
15+1*						

Mean Score	4.85	4.63	2.67
	1.96	1.74	

Fig: 1, showing mean score week wise

At the end of '1' week of treatment follow-up 1 case of H-B V improved as H-B II, 3 cases of H-B IV improved up to H-B III and one case of right Bell's Palsy of H-B III which develops during the treatment of Right Bell's palsy of H-B V was placed on the interferential current immediately over left side on 11 days. She recovered as H-B I at the end of 7 days and are right side also became normal on 18 days. At the end of '2' weeks of treatment 5 cases of H-B VI improve to H-B I and 1 case of H-B VI improve as H-B II. 5 cases of H-B V improve up to H-B I, 5 cases of H-B IV improve up to H-B III and 3 cases of H-B III improve as H-B II at the end of '2' weeks of treatment. No improvement of 3 remaining cases of H-B VI was observed but 2 cases of H-B III improve up to H-B I and 1 case of H-B III improve as H-B at the end of '3'

weeks of treatment. At the end of treatment 1 case of H-B V and 1 case H-B III improve up to H-B V and 1 case H-B III improved up to H-B II, 1 case of H-B III improved as H-B I but the remaining 2 cases of H-B VI did not show any recovery.

\$ H-B: House Brackmann Grade

*Bilateral Bell's palsy

CONCLUSION

This study indicate the use of IFT along with prednisolone, acyclovir and other adjuvant medications has the great potentiality to improve facial motor function and other complications related to immediate, late and very late untreated cases of acute peripheral VII cranial nerve palsy. It is assumed that IFT can probably help to regenerate facial nerve if found immediately or within a very short time form the onset. But the improvement which was observed in the very late cases may consider fact odinherent property nerve fibers which are otherwise not possible by any other means. Although frame of the study was made with a very small number of patient, author considered the approach to be applicable and rational in day to day out patient clinical practice for the Bell's palsy, because the result seem to be very encouraging with 25 out of 27 cases recovered to H-B I or H-B II.

Ethical Clearance: Taken from human ethical committee

Acknowledgement: Nil

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Conflict of Interest: None

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A Study to see the Response of Lipid Profile in Severely Burned Pediatric Patients in North India

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ABSTRACT

Objective: The objective of this study was to know the effect of burn on lipid profile in Pediatric burn patient in NCR, Delhi.

Design: Prospective study

Setting: Burn unit, Department of surgery, LLRM Medical College and SIMS, Hapur.

Material & Methods: In this study a total of 48 pediatric burn patients were taken at SVBP hospital Meerut & SIMS, Hapur between Jan13toDec14. All the data regarding demography, percent of burn in TBSA & lipid profile were analyzed.

Result: Out of 48 patients female were 20 (51.89%) and male were 28 (48.11%). Most of the patients belonged to age less than 4 year (41.67%) and between 12 – 18 years (29.16%). Most of the patient 22(45.84%), 18(37.5%) and 8(16.66%) having 40-60%, 60-80% and more than 80% of burn respectively. There were increase in serum cholesterol and LDL in 1st and 3rd week after burn. HDL remain law in burn patient as compared to control. TG also increase in 1st and 3rd week post burn.

Conclusion: This study gives an idea about the effect of burn on lipid profile in pediatric burns in western U.P.

Keywords: Pediatric burns, lipid profile, suicide, homicide

INTRODUCTION

Severe thermal injuries results in structural & functional change in organs such as liver, skeletal muscles, skin, immune system and cellular membrane transport function^{1, 2}. Burn is associated with hypermetabolic and catabolic state and response is driven by the inflammatory response in the form of hormones, cytokines and acute phase reactants^{3, 4}. This hypermetabolic state results in increased glucose production by glycogenolysis, glucogenolysis, lipolysis and protein catabolism for more than nine months after burns⁵. All these result in release of aminoacids from muscles & lipolysis of adipose triglycerides resulting in release of fatty acids into the plasma⁶. All these changes in metabolism leads to compromise of liver & other vital organs and

ultimately lead to multiple organ failure resulting in increased morbidity & mortality⁷. Apart from this, liver damage is caused by edema formation, hypoperfusion and proinflammatory cytokine such as IL-1, IL-1B, IL-6 tissue necrosis factor (TNF)⁸.

MATERIAL & METHODS

It was a cross sectional study conducted at burn unit of SVBP hospital of LLRM Medical College, Meerut and Saraswathi Institute of medical sciences, Hapur from Jan13 to Dec14. A total of 32 patient of >20% burn up to the age of 19 years were taken along with similar number of control group of same age & gender. Written consent from parents & ethical committee clearances of institute were taken. Blood samples were collected from case and control for lipid

profile which includes cholesterol, TG, LDL & HDL. Blood samples were taken with in 24 hour after burn, two more sample were also taken on 1st & 3rd week of admission. All the data were analyzed by using SPSS software.

RESULTS

In this study, the total number of patients in both the case group & control group were 48. Out of which 28 and 20 were male & female in both group respectively. 20 patient (41.67%) and 14 (29.16%) were in age group of < 4 year and 12-18 year of age respectively. Out of total 48 patient 22(45.84%), 18(37.5%) and 8(16.66%) were having 40-60% burn, 60-80% and >80% of burn respectively. Table IV showed the value of serum cholesterol, TG, LDL and HDL in both group at day1, week I & week III after burn. In this table serum cholesterol level was lower in burn patient than healthy subject but increased at 1st and 3rd week & this increase is statistically significant which is shown in table 5. Regarding HDL level, it was seen that there is decrease in the 1st week in burn patient & remain low in 1st & 3rd week which is statistically significant. Concerning LDL level, it is seen that it decreased in 1st week as compared to control, after that it increased statistically significant in 1st & 3rd week in comparison to day 1. There was no difference between burn patient and control regarding TG level in 1st week but there is statistically significant increase of TG level on comparison between 1st week & 3rd

week in burn patients.

Table I: Gender distribution

Sex	Case(n=48)		Control (n=48)	
	No.	%	No.	%
Male	28	50	28	50
Female	20	50	20	50

Table II: Age distribution

Age	Case		Control
	No.	%	
< 4 years	20	41.67	20
4-8 years	8	16.67	8
8-12 Years	6	12.50	6
12-18 Years	14	29.16	14

Table III: Extent of Burn

% of Burn	No.	%
40-60	22	45.84
60-80	18	37.5
> 80	8	16.66

Table IV: Characteristics of Lipid Profile

Sr. No.	Lipid Profile	Case			Control	Within Group	Between group
		D1	W1	W3	C		
1	Cholesterol	113.76±10.34	123.22±14.1	130.07±18.67	153.09±6.54	D1 Vs W1 , P < 0.001	D1 Vs C , P < 0.001
						D1 Vs W3 , P < 0.001	W1Vs C , P < 0.001
						W1 Vs W3 , P < 0.001	W3Vs D4 , P < 0.001
2	HDL	38.10±3.63	39.48±6.01	34.12±5.38	64.30±2.00	D1 Vs W1 , P > 0.05	D1 Vs C , P < 0.001
						D1 Vs W3 , P < 0.001	W1 Vs C , P < 0.001
						W1 Vs W3 , P < 0.001	W3 Vs C , P < 0.001
3	LDL	111.00±10.20	116±9.30	120±10.80	131±9.00	D1 Vs W1 , P < 0.05	D1 Vs C , P < 0.001
						D1 Vs W3 , P < 0.001	W1 Vs C P < 0.001
						W1 Vs W3 , P > 0.05	W3 Vs C , P < 0.001
4	TG	150±15.54	153±14.03	181±21.21	159±10.11	D1 Vs W1 , P > 0.05	D1 Vs C , P < 0.001
						D1 Vs W3 , P < 0.001	W1 Vs C , P < 0.05
						W1Vs W3 , P < 0.001	W3Vs C , P < 0.001

DISCUSSION

The rate of metabolism in burn is directly related to the severity of thermal injury. Energy requirements in burns increase dramatically & are met by the mobilization of protein, amino acids, fat in effect of increase cortisol, glucagon & catecholamine. These hormones stimulate gluconeogenesis, proteolysis and lipolysis^{9,10}. As a result of peripheral lipolysis, the FFA accumulates in liver¹¹ and plasma. The increased hepatic edema formation also results in liver damage. Liver is the major organ to synthesize & excrete cholesterol, in the presence of liver damage, cholesterol is decreased. Hypercholesterolemia is also seen in patient having severe trauma, multi organ failure¹² surgical interventions & burns¹³. The increased hepatic edema formation also results in liver damage. In our study we also found similar reduction in cholesterol and increase in triglycerides Level which is comparable to other studies^{14,15}. Serum fatty acid levels increased immediately after burn but by 5 days of burn decreased below normal levels⁵. Serum triglycerides levels increased after 10 days after burn and remained high up to 80-120 days⁵. It has been seen in study that increased fatty liver is associated with increased bacterial infiltration, liver failure and endothermic shock¹⁶.

CONCLUSION

This is seen in our study that level of serum cholesterol, TG, LDL & HDL changes in burn patients. Measurement of all these will help in prediction of outcome and survival of burn patients. Apart from this, drugs that improve the function of liver may be beneficial to attenuate the hypermetabolic state that occurs in burns.

Conflict of Interest: None

Source of Funding: None

Ethical Committee Clearance: Taken

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Prosthetic Status and Needs among Geriatric Population of Khora Village, Ghaziabad, Uttar Pradesh

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ABSTRACT

Aim: To assess the prosthetic status and needs among 65-74 years population of Khora Village, Ghaziabad district, Uttar Pradesh.

Materials and Methods: The study population consisted of 153 subjects (65-74 years). Out of 153 subjects, 138 elderly individuals (79 males and 59 females) were examined at their homes under standardized conditions. Their prosthetic status and needs were recorded according to WHO 1997 methodology.

Results: Only 6.52% of study subjects possessed full dentures and 13.76% subject possessed partial denture. At least 9 out of 10 subjects needed some form of prosthetic treatment. Some form of prosthetic treatment needed by male subjects was 89.3% and 94.4% by female subjects was found statistically insignificant ($p < 0.05$).

Conclusion: The results illustrated poor prosthetic status and showed extremely high need for treatment in this population.

Keywords: elderly, prosthetic status, prosthetic needs, Ghaziabad

INTRODUCTION

The ageing phenomenon has transpired as a significant health issue of the twenty-first century. Across the world, declining fertility and increased longevity have collectively resulted in higher numbers and proportions of older persons 60 years and above.^{1,2} India has attained the tag of an ageing nation with the elderly population in 2013 being over 8% and is anticipated to increase to 20% by 2050.³

Eighty percent of the elderly population resides in rural areas. At least 3 out of 4 of the elderly are economically dependent. One in three of the elderly are below the poverty line and only 28% of the elderly population is literate. Two salient features regarding the elderly population of India are that the rate of growth of the elderly population is much quicker than the growth of the total population and the feminization of the elderly population.⁴

The complexity of oral health status and its association with systemic health among older adults make prevention and early intervention critical. If impairments are not addressed at an early stage the likelihood becoming disabled increases manifold.⁵

A number of studies have been conducted in the past on the oral health status of elderly people^{6,7} which revealed that oral health of elderly people were poor. Besides, some of the studies indicated that dental treatment needs greatly exceeded the demand for treatment in both categories i.e. denture and non-denture wearers. Dental caries & periodontal disease are most common oral diseases affecting 50-60%⁸ & 95-100%⁹ adult populations in India respectively. Nearly 19% of the population aged between 65-74 years is edentulous¹⁰. Thus, it is essential to assess the oral health status & treatment needs, among rural population.

Though many studies are done for the same but no baseline data was available pertaining to the prosthetic status and needs of older people in Ghaziabad district. Hence, an attempt was made to assess the prosthetic status and needs of 65-74 years of Khora village, Ghaziabad district, UP.

MATERIALS & METHODS

This cross sectional descriptive study was conducted to assess the prosthetic status and needs among 65-74 years of population residing in Khora village of Ghaziabad district. Permission to conduct this survey was obtained from IEC (Institutional Ethical Committee).

The complete list of the population of Khora village was obtained from last election voting list from village Sarpanch office and all the 153 elderly subjects were considered for the study. With the help of sarpanch, houses were visited & approximately 153 subjects who were residents of that place were examined after taking the verbal consent. Out of 153 study subjects, 15 subjects did not participate: the reasons being refusal, not present at home during examination etc. Clinical examination on the remaining 138 was carried out by a single trained and pre-standardized examiner accompanied by a trained recorder.

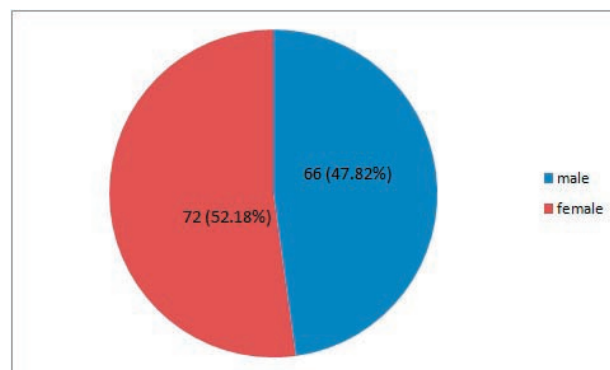
Type III examinations were carried out with mouth mirror and WHO periodontal probe. Prosthetic status and prosthetic treatment needs were recorded by using WHO methodology 1997.¹¹ In general each subject was classified into one of the three categories according to his or her denture status such as no denture, denture wearers (either bridge or partial denture) and full denture.

Prosthetic need applied to one of the three categories according to his or her need: no denture required (No prosthesis needed), partial denture required (either one unit prosthesis or multiunit prosthesis or combination of one and/ or multiunit prosthesis) and full denture required. Recording was done with the help of a recorder who was made to sit near the examiner.

The collected data were processed and analyzed by Statistical Package for Social Science (SPSS) version 18 on Microsoft office Excel 2007. The chi-square test was used to show association between gender of individuals and need for prosthesis.

RESULTS

A total of 138 elderly subjects (Age range = 65-74 years; mean age 68.7 years \pm 1.9 years) were examined of which 66 (47.82%) were males and 72 (52.17%) were females (Graph 1).



Graph 1. Distribution of the subjects by gender

Out of the total population of 138, 9 (6.52%) male subjects had complete dentures prosthesis and 7 (5.07) had single denture (upper or lower jaw).

Out of 66 male subjects only 5 (7.5%) subjects possessed complete denture, whereas 3 (4.54) had single (upper or lower) denture.

Out of 72 females 4 (5.55) subjects possessed complete denture whereas 4 (5.55) had single (upper or lower) denture.

As far as partial dentures were concerned, (13.76) subjects possessed partial dentures. Out of 66 male subjects only 9 (11.3%) and 10 (13.88) out of 72 female subjects possessed partial denture (in one or both jaws). None of the subjects were wearing a bridge in both jaws, whereas 2 (3.03) male subjects and 1 (1.38) female subject had a bridge in a single (upper or lower) jaw (Table 1).

Table 1: Prosthetic status among the study population

Gender	Subjects	Complete denture N (%)		Partial dentures N (%)		Bridge(s) N (%)	
		Upper or Lower	Upper & Lower	Upper or Lower	Upper & Lower	Upper or Lower	Upper & Lower
Male	66	3 (4.54)	5 (7.5)	6 (9.09)	3 (4.54)	2 (3.03)	0
Female	72	4 (5.55)	4 (5.55)	8 (11.1)	2 (2.77)	1 (1.38)	0
Total	138	7 (5.07)	9 (6.52)	14 (10.1)	5 (3.62)	3 (2.17)	0

127 (92.02%) subjects needed some form of prosthetic treatment. Of these, 28.9% of subjects required complete dentures and 15.9 % of subjects needed single (either upper or lower) complete dentures. 4.34% of subjects needed (upper or lower) single partial dentures and 42.75 % of subjects needed both upper and lower partial dentures. (Table 2).

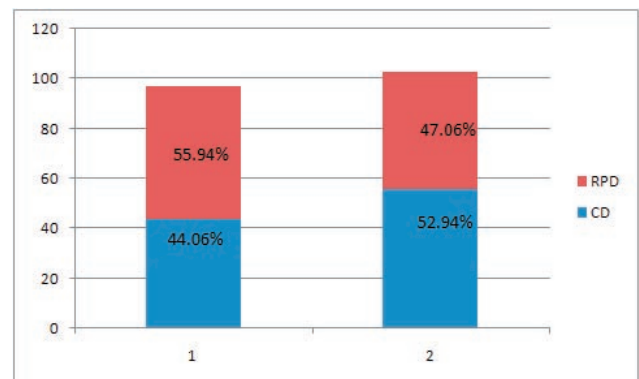
Table 2: Prosthetic treatment need among study population

Gender	Subjects	Requiring Prosthetic Treatments	Complete denture N (%)		Partial dentures N (%)	
			Upper or Lower	Upper & Lower	Upper or Lower	Upper & Lower
Males	66	59 (89.3)	7 (10.6)	19 (28.7)	3 (4.5)	30 (45.4)
Females	72	68 (94.4)	15 (20.8)	21 (29.1)	3 (4.16)	29 (40.2)
Total	138	127 (92.02)	22 (15.9)	40 (28.9)	6 (4.34)	59 (42.75)

94.4% of females were in need prosthetic treatment as compared to 89.3% of males. Among the male subjects, 28.7% needed complete dentures, whereas 10.6% needed single (either upper or lower) complete dentures. Among female subjects 29.1% needed complete dentures, whereas 20.8% needed single (either upper or lower) complete dentures (Table 2).

Among the male subjects, 45.4% needed upper and lower partial dentures, whereas 4.5% needed single (upper or lower) partial dentures. On the other hand, 40.2% of females needed upper and lower partial dentures, whereas 4.16% needed single (upper or lower) partial dentures. There was no statistical significant association found between gender of the subjects and need for prosthesis (Table 2).

Among male subjects 44.06 % needed complete denture and 55.94% partial dentures. While in female group 52.94 % needed complete denture and 47.06 % needed partial dentures (Graph 2).



Graph 2: Distribution of prosthesis need by gender

DISCUSSION

In the present study significantly lower number of subjects had some prosthesis. Only 6.52 % of study subjects possessed complete denture, 13.76% subjects had partial dentures (single or both upper & lower) and 2.17% subject had bridge.

These results are similar to other studies conducted. Goel *et al.*¹² reported that 92.6% of the edentulous subjects were not having any oral

prosthesis in the upper arch and 92.5% in the lower arch. Shrivastav *et al.*¹³ reported 86.3% and 88.0% of the subjects had no prosthesis in the upper and lower arch respectively and only 4.2% had complete dentures. Shenoy *et al.*⁴³ reported 88% of the 133 subjects were fully edentulous, and only 12% had complete dentures. Thukral *et al.*¹⁵ found 78.5% required dentures. Bijjargi and Chowdhary found that less than 50% of edentulous elderly and only 10% of partially edentulous elderly were wearing dentures.¹⁶

The few reasons for such poor prosthetic status might be due to high incidence of caries and periodontal disease among the elderly population, attitudes towards oral health, their care-seeking behaviour, and the limited options of treatment modalities etc.¹⁷

It was observed that there was not much of difference between male subjects (7.5%) and female subjects (5.5%) who possessed complete denture. This reflects that utilization of dental care services varies between genders; being higher among females.¹⁸

92.02% subjects require some form of prosthetic treatment. Out of this, 48.81% required complete denture (single or both upper & lower) and 51.18% required partial dentures. The results are similar to the study conducted by other such similar studies^{6,17,19}

Such a high percentage of prosthetic need might be due to problems related to decrease in physical mobility, dependency on help and general tiredness that make difficult to visit a dental clinic or limit the utilization of dental services.²⁰

In the present study, the prevalence of edentulousness was higher as compared to DCI survey¹⁷, but higher as compared to Shah N⁸ & all South East Asian countries except Sri Lanka as reported by WHO¹⁰.

Few studies have been conducted concerning the oral health conditions, prosthetic status and needs among elderly population in India. To draw any trend analysis from the limited number of studies available will be erroneous, although the available data suggests that the Indian geriatric population has poor oral health and prosthetic status with high unmet needs.

Unfortunately, the provision of oral healthcare

services is very little in rural parts of India where approximately 80% of the elderly reside. India has 306 dental colleges, almost one-third of the world's schools. Annually, more than 26,000 dentists graduate in India each year. There is a total workforce of approximately 200,000 dental practitioners in India at present, which is expected to soon swell to 350,000. However, majority of the dental surgeons (95%) work in private sector in urban and suburban areas. Dentists-to-population ratio in India, which was 1:300,000 in the 1960's, stands at 1:10,000 today. Dentist-to-population ratio is 1:250,000 in rural areas.²¹ Thus, considering the amount of prosthetic need the elderly population must be educated for the maintenance of oral hygiene. Periodic dental screening and domiciliary dental visits need to be developed to improve access to dental service. But all this will be possible once the present generation of dentists coming out of dental colleges move towards the rural area and lend a helping hand towards the elderly.

RECOMMENDATIONS

Formulating national oral health strategy

Healthy geriatric policies need to be formulated once we have the adequate database for elderly population. Limited numbers of studies are available from the community to estimate the burden of oral diseases in elderly population in India. Government of India must ensure that every elderly person receives quality oral care at affordable costs. National oral health policy needs to be implemented with a special emphasis and an objective towards reducing geriatric oral health burden and improving the oral health-related quality of life of the elderly.

Implementing Geriatric Dental Education

Despite demographic pointers indicative of the future volume of geriatric oral healthcare needs, no formal training on this subject has been introduced in the dental curriculum in India by Dental Council of India whereas most of the dental schools in US and Europe support geriatric dentistry. In all the subjects of undergraduate and postgraduate dental curricula in India, geriatric dentistry does not figure anywhere. No training is given for oral care provision to patients in long-term care facilities or for the homebound elderly. Time has come to change the mind-sets of policy-makers, students and academicians and incorporate geriatric dentistry as a subject formally in

the undergraduate dental curriculum and introducing a new speciality of geriatric dentistry for dental care for elderly in this country.

CONCLUSION

The present study clearly indicates that the prosthetic status was very poor with few subjects having prosthesis and prosthetic needs were higher. There is an escalating demand for geriatric oral healthcare in India. Education in geriatric dentistry will enable dental professionals to understand, plan and deliver need-based oral healthcare to elderly population. Viewing the shift in the demographic profile, it becomes the responsibility of the policy framers and the dental profession to ensure that India has an adequate number of dentists with the appropriate knowledge and skills to treat the elderly.

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Malignant Proliferating Trichilemmal Cyst: A Case Report of a Rare Entity

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ABSTRACT

Malignant proliferating trichilemmal cyst is a very rare adnexal tumor, usually arising on the head and neck region of elderly women. We describe a case of a 45-year-old lady presenting with right cervical region swelling since 6 months. Fine needle aspiration cytology and subsequent excisional biopsy was performed. Histopathology revealed lobules of atypical squamoid cells with high mitotic activity, trichilemmal keratinisation and focal invasion. A diagnosis of malignant proliferating trichilemmal cyst was made. It closely mimics squamous cell carcinoma and therefore, pose diagnostic dilemma for the pathologists.

Keywords: Malignant, proliferating, trichilemmal, keratinisation, invasion

INTRODUCTION

Malignant proliferating trichilemmal cyst is a very rare adnexal tumor with an unpredictable biological behavior, usually arising on the head and neck region of elderly women. Histopathological evidence of invasion proves its malignant nature. Herein we describe a case of this rare entity which clinically presented as a benign cystic lesion.

CASE REPORT (FINDINGS)

A 45-year-old lady presented to Victoria hospital, attached to Bangalore medical college and research institute, with the complaint of swelling in right cervical region since 6 months. On local examination, the swelling was 4x3x3cm in size, well-defined, soft to firm, non tender, mobile and absent punctum. There was no regional lymphadenopathy, neither there was any similar swelling elsewhere. A provisional clinical diagnosis of epidermal inclusion cyst was made and FNAC was advised.

FNAC yielded blood tinged pultaceous aspirate which showed nucleate and anucleate squames against a keratinous background and specks of calcification. More importantly, a single loose cluster of atypical cells (fig.1) was present suggesting malignant nature of the lesion. The mass was then excised *in toto* and sent for histopathological examination.

Grossly, it was a skin covered globular tissue mass which on cut surface revealed a well-circumscribed, firm to cystic, lobulated dermal lesion with variegated appearance and variable consistency. (Fig. 2)

Microscopy revealed a dermal neoplasm which comprised of lobules of atypical squamoid cells with high mitotic activity, abrupt keratinisation without the intervening granular layer and focal invasion. The invasive front was towards the epidermis and the resected margin was free of tumor. Areas of necrosis, a dense mononuclear inflammatory infiltrate and calcification were also noted. A diagnosis of malignant proliferating trichilemmal cyst was made. (fig. 3,4,5,6)

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DISCUSSION

Proliferating trichilemmal cyst is a rare benign cutaneous neoplasm with outer root sheath differentiation⁽¹⁾. Malignant transformation in these tumors is a still rarer event. According to recent literature, only 39 well-documented cases of malignant proliferating trichilemmal cyst have been published⁽²⁾.

Saida *et al*⁽³⁾ classified the oncological development of the trichilemmal type of tumor into three stages: 1) trichilemmal cyst, adenomatous stage; 2) proliferating trichilemmal tumor/cyst, epitheliomatous stage; and 3) malignant proliferating trichilemmal tumor/cyst, carcinomatous stage. The commoner trichilemmal cyst forms from a hair follicle⁽⁴⁾ and is seen in 5-10% of the population.⁽⁵⁾

A less common entity in this spectrum of pilar tumors is Proliferating trichilemmal cyst. About 90% of them have a propensity to occur on scalp, usually in middle-aged women, as in our case. It can involve other sites also such as face, trunk, back, wrist and vulva.^(6,7,8) Etiopathogenesis remains unknown but in most cases it appears to develop within the wall of a pre-existing pilar/trichilemmal cyst, following trauma and inflammation⁽⁹⁾. Sometimes, it can occur *de novo*⁽⁴⁾.

Microscopically, proliferating trichilemmal tumors show features of a typical trichilemmal cyst, along with epithelial proliferation. According to Brownstein *et al*, the most characteristic feature of PTTs is trichilemmal keratinization⁽⁹⁾. Trichilemmal keratinization is demonstrated by keratin foci without keratohyaline granules. Such keratinization is normally observed in the isthmus of the anagen hair.^(10,11) However, some cases may include the areas of focal epidermal keratinization⁽¹²⁾. Occasionally, atypical, mitotic figures and scattered dyskeratotic cells may be present, but these should not be considered as signs of malignant transformation⁽¹³⁾.

Malignant proliferating trichilemmal cyst is the rarest of trichilemmal tumors. Mehregan and Lee⁽¹⁴⁾ suggested that the malignant transformation of a proliferating trichilemmal tumor should be considered in longstanding cases that demonstrate rapid increase in size. It is often difficult to establish the diagnosis clinically, and can be misdiagnosed as squamous

cell carcinoma, basal cell carcinoma, melanoma or an inflamed sebaceous cyst.⁽¹⁵⁾ Histologically, they exhibit invasive growth pattern⁽¹⁶⁾ which is absent in its benign counterpart. Focal calcification is a common feature⁽¹⁷⁾ which was also evident in our case. Cytoplasmic clearing of some of the tumor cells is attributed to glycogen accumulation and indicates outer root sheath derivation.

Malignant proliferating trichilemmal cyst often mimics Squamous cell carcinoma clinically and histologically, thereby posing a diagnostic dilemma. The importance in differentiating these two entities lies in the fact that the tumor has tendency to recur and metastasize more frequently than squamous cell carcinoma⁽¹⁸⁾. Unfortunately, distinctive histological or immunohistochemical markers of this malignancy do not exist⁽¹⁹⁾. However, trichilemmal type of keratinisation can be considered as a differentiating point.

Contrary to simple trichilemmal cysts, wide local excision is required in cases of malignant proliferating trichilemmal cyst along with long term follow-up to detect recurrence or metastasis⁽¹²⁾. Takenaka *et al*⁽²⁰⁾ established intra-tumoral ethanol injection as an alternative means of reducing tumor mass. Kim *et al*⁽²¹⁾ demonstrated the utility of imaging studies and Jung *et al*⁽²²⁾ suggested the role of 18F-fluorodeoxyglucose positron emission tomography in malignant proliferating trichilemmal tumor cases to study the metastatic characteristics of this rare entity. Mohs micrographic surgery can be performed to reduce the recurrence and metastasis rate⁽²³⁾.

FIGURES

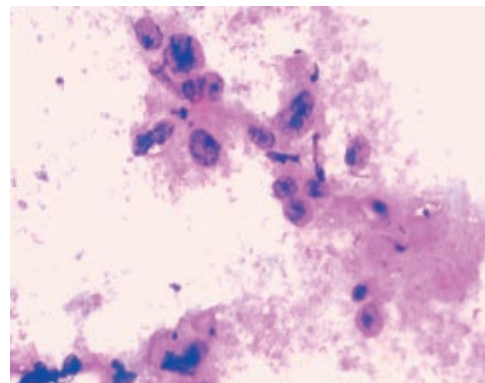


FIG 1 : Loose cluster of highly pleomorphic cells with prominent nucleoli present on the FNAC smears (H & E, 200X)



FIG 2: Cut surface of the specimen

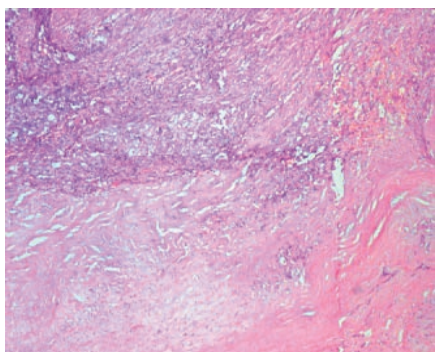


FIG 3: Trichilemmal type of keratinisation (H & E, 40x)

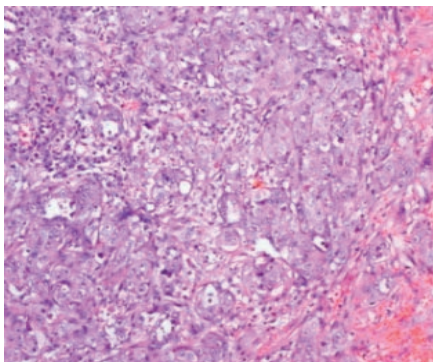


FIG 4: Sheets of atypical squamoid cells (H & E, 100x)

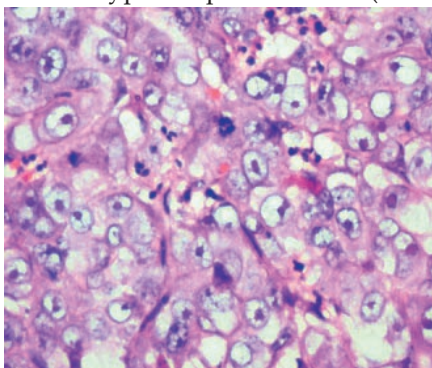


FIG 5: The tumor cells are pleomorphic with vesicular nucleus and conspicuous nucleoli. A mitotic figure is also noted (H & E, 400x)

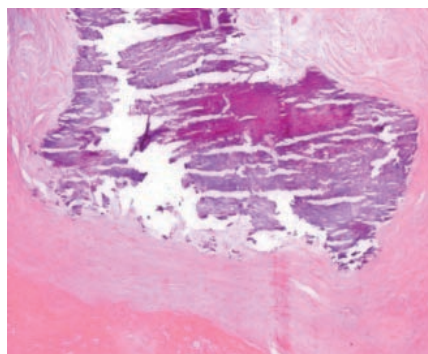


FIG 6 : Area of calcification (H & E, 100x)

CONCLUSION

Due to its unpredictable biological behavior, tendency to recur and metastatic potential, the surgeons as well as the cytopathologists and histopathologists should be aware of this entity. The role of FNAC in such cases also needs to be emphasized so that appropriate therapeutic surgery can be planned.

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Assessment Exposure to Escherichia Coli among Abattoir Workers in Malaysia

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ABSTRACT

Background: Many occupational zoonotic diseases of multiple etiologies are encountered among abattoir workers. Hand washing is one the preventive measures through which dissemination of bacteria can be prevented. **Purpose:** The study aims at assessing the effectiveness of an intervention program in reducing risk of exposure and dissemination of pathogenic bacteria by abattoir workers. **Results:** A total of one hundred and sixty five (156) hand swab samples from workers; one hundred and thirty (130) cattle carcass and fecal samples were collected. The results have shown that no *Escherichia coli* O157:H7 was isolated on the hands of abattoir workers before and after work. However, a total prevalence a prevalence of 9.7% was recorded for all the samples during work. Only two abattoirs were found to have *E.coli* O157:H7 on the hands of abattoir workers while working. For non-O157:H7, total prevalence of 33.3% during work and 13% after work were obtained. Total prevalence of *E.coli* O157:H7 and non-O157:H7 were 11% and 49% respectively in the carcass samples. The occurrence rate for *E.coli* O157:H7 and non-O157:H7 were 10% and 81% respectively in the fecal samples. **Findings:** High risk of exposure to pathogens may occur during animal processing. The effectiveness of hand washing in reducing the exposure after work is low. **Conclusion:** The presence of the bacteria on hands of the workers during animal processing may be the potential source of cross contamination to the cattle carcasses.

Keywords: *Escherichia coli* O157:H7, Occupational Safety, Hygiene, Hand Washing, Public Health, Industrial Health, Food handlers

INTRODUCTION

An abattoir is a premise approved and registered by the controlling authority for hygienic slaughtering and inspection of animals, processing and effective preservation and storage of meat products for human consumption ^[1]. It may become an area or place for propagation and growth of pathogenic microbes. Dissemination of the microbes directly depends on the hygienic and sanitary precautions

taken by the abattoir industry. Culpable microbes which are mostly found to contaminate and cause meat spoilage and its products are bacteria, yeast and moulds. Butchers and work men introduced the organisms directly or indirectly during animal processing. Indirect sources for meat contamination include; water and air in the dressing, cooling, and cutting rooms or tables and even the environment ^[2]. High ambient temperature of the tropical region coupled with insufficiency of portable water and poor handling practices by the butchers predisposes meat and the resulting products to considerable microbial contamination which may lead to rapid deterioration and even poisoning ^[3]. Bacteria such as *Salmonella* spp, *Escherichia coli* and *Clostridium* spp are of public health concern worldwide for their role in

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contamination of meat and its product as well as their role in food-borne disease transmission. Serotypes of these organisms have also been severally reported to be resistant to many antimicrobials. [4][5][6][3][7]

Zoonotic diseases represent about 70% of the number of emerging infectious diseases in recent time [8]. There are over 300 zoonotic diseases of diverse etiologies which cause high morbidity and mortality [9]. Zoonotic diseases occur in both sexes, in all age groups, in all seasons, in all climatic zones and in rural and urban settings [9][10]. High incidences of the diseases are linked with increased demand for meat and meat product by continuous growth of human population and human contact with animals become unprecedented. Movement of animals across international boundaries to complement the local supply can increase the risk of zoonotic diseases especially from endemic zones [11]. Zoonotic infections can be transmitted via various routes [12]. However, direct contact appeared to be the most common route of entry for the pathogen in the employees working in abattoirs [13][14].

Enterohemorrhagic *Escherichia coli* (EHEC) are one of the zoonotic pathogens that can be transmitted to the abattoir workers. It has been identified as a major cause of serious illness and mortality in food borne outbreaks that involved different variety of foods [15]. Generic *E.coli* can be a nonpathogenic or nontoxic member of the normal microflora in humans and other animals. World Health Organization (WHO) reported that illness caused by the consumption of contaminated foods is one of the most frequent health problems in the modern world [16]. Meat falls into the above because of its daily consumption to satisfy the protein need of the human population. Public health burden is increased due to hospitalization and cause decline in human productivity, which invariably could result in substantial decline economically. The most frequently implicated source of *E. coli* O157:H7 outbreaks is still ground beef accounting for 75% of *E.coli* O157:H7 outbreaks [17]. Dairy products and undercooked minced beef can be directly contaminated by cattle feces during either milking or slaughtering processes by the workers [18]. Results from a study of 90 outbreaks that were microbiologically confirmed in the UK, Ireland, Denmark, Norway, Finland, USA, Canada, and Japan, occurring between 1982, and 2006, indicated

that the source of transmission was food in 42.2% of the outbreaks, dairy products in 12.2%, animal contact in 7.8%, water in 6.7%, environmental in 2.2%, and unknown in 28.9% [19]. This research aims at finding potential risk of exposure to zoonotic *E.coli* abattoir workers and possible cross-contamination of slaughtered cattle carcass.

MATERIALS & METHODS

Study Location; Malaysia consists of thirteen (13) States. Six (6) States were randomly selected for the assessment; Pahang, Selangor, Terengganu, Negeri Sembilan, Melaka and Perak.

Sampling

Population; Butchers from government Halal cattle abattoir.

Sampling Frame; all butchers working in government Halal cattle abattoir.

Sample Collection;

Hands Swab

A total of One hundred and sixty five (156) samples were collected. Sterile cotton swab which contained transport medium (MEUS, Italy) were used for sample collection. Samples from hands of abattoir workers were taken before, during and after work. All samples will be kept in cooler box and transported to Applied Microbiology Laboratory Universiti Putra Malaysia.

Carcass and Fecal Samples

A sum of sixty (130) cattle carcass and fecal samples were collected for the research. Sterile swabs sticks were used to collect carcass samples by rubbing the shoulder to the thigh in a zigzag manner as describe by McEvoy [20] with slight modification. For fecal samples, cotton swabs were loaded with each of the samples by dipping the tip end of the cotton swab into the faeces.

Bacteriological Analysis

All samples were subjected to Bacteriological analysis. The samples from hands of abattoir workers were inoculated onto Chromo cult® agar and CT-SMAC (Merck, Germany) agar for isolation of

Escherichia coli O157:H7 and other enterobacteriaceae.

Laboratory Procedures

The swabbed samples were appropriately inoculated onto Chromocult Agar® (Merck, Germany). Colonies with dark blue to violate coloration counted after incubation at 37 °C for 24 h. All isolates that showed dark blue coloration from swabs samples on Chromocult Agar® were characterized biochemically based on methods previously described Cheesebrough [21]. 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 [22]. 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.

Table 1. Prevalence of *E.coli* O157:H7 on Hands of Workers Based on Location

Location	Before work	During work	After work
Sha Alam	0%	0%	0%
Banting	0%	0%	0%
Senawang	0%	0%	0%
Kuala Pilah	0%	67%	0%
Tampin	0%	0%	0%
Jasin	0%	0%	0%
Ipoh	0%	20%	0%
Teluk Intan	0%	0%	0%
Kuantan	0%	0%	0%
Kemaman	0%	0%	0%
Dungun	0%	0%	0%

Total prevalence of *E.coli* O157:H7 on Hands swab, Before work=0%, During Work= 9.7%

After work=0%

Table 2: Prevalence of non-O157:H7 on hands of workers

Location	Before work	During work	After work
Sha Alam	0%	20%	0%
Banting	0%	20%	0%
Senawang	0%	0%	0%
Kuala Pilah	0%	67%	33%
Tampin	0%	100%	0%
Jasin	0%	100%	100%
Ipoh	0%	20%	20%
Teluk Intan	0%	0%	20%
Kuantan	0%	0%	0%
Kemaman	0%	100%	0%
Dungun	0%	0%	0%

Total prevalence of *E.coli* (Non-O157:H7) on Hands swab, Before work=0%, During Work= 35.5%, After work=13%

Table 3. Prevalence of *S.entritidis* on hand swab

Location	Before work	During work	After work
Sha Alam	0%	20%	60%
Banting	0%	40%	0%
Senawang	0%	0%	60%
Kuala Pilah	0%	100%	67%
Tampin	0%	100%	100%
Jasin	0%	100%	100%
Ipoh	0%	20%	0%
Teluk Intan	0%	0%	50%
Kuantan	0%	0%	100%
Kemaman	0%	100%	0%
Dungun	0%	100%	0%

Table 4. Prevalence of C.freundii on hand swab

Location	Before work	During work	After work
Sha Alam	0%	0%	40%
Banting	0%	60%	0%
Senawang	0%	0%	20%
Kuala Pilah	0%	67%	33%
Tampin	0%	0%	0%
Jasin	0%	0%	0%
Ipoh	0%	0%	0%
Teluk Intan	0%	0%	0%
Kuantan	0%	0%	0%
Kemaman	0%	100%	0%
Dungun	0%	100%	0%

Table 5. Prevalence of E.coli O157:H7 and Non-O157:H7 on Cattle Carcass Based On Location

Location	O157:H7	NON-O157:H7
Sha Alam	0%	60%
Banting	0%	67%
Senawang	0%	16%
Kuala Pilah	50%	50%
Tampin	0%	0%
Alor Gajah	-	-
Jasin	0%	67%
Ipoh	25%	0%
Teluk Intan	50%	50%
Kuantan	0%	50%
Kemaman	0%	0%
Dungun	0%	67%

Total prevalence of E.coli O157:H7 and Non-O157:H7 on Carcasses

E.coli O157:H7= 11%

Non-O157:H7= 49%

Table 6. Prevalence of E.Coli O157:H7 and Non-O157:H7 in fecal samples Based On Location

Location	O157:H7	NON-O157:H7
Sha Alam	0%	83%
Banting	0%	70%
Senawang	0%	80%
Kuala Pilah	60%	80%
Tampin	0%	50%
Alor Gajah	-	-
Jasin	0%	70%
Ipoh	20%	83%
Teluk Intan	40%	75%
Kuantan	0%	90%
Kemaman	0%	50%
Dungun	0%	50%

Total prevalence of E.coli O157:H7 and Non-O157:H7 in fecal samples

E.coli O157:H7= 10%

Non-O157:H7= 81%

DISCUSSION

The results have shown that no *Escherichia coli* O157:H7 was isolated on the hands of abattoir workers before and after work. However, a total prevalence a prevalence of 9.7% was recorded for all samples during work. Only two abattoirs were found to have *E.coli* O157:H7 on the hands of abattoir workers while working-Kuala Pilah (67%) and Ipoh (20%) as shown in Table 1. For non-O157:H7, total prevalence of 33.3% during work and 13% after work were obtained. The occurrence of the bacteria during work may be link with contact with the intestinal content or hide of the animals. Perhaps, absence of the bacteria before work may arise from hand washing preformed prior to the animal processing. High prevalence were recorded in sample taken during work from Tampin, Jasin and Kemaman (100% each) while low prevalence were observed in Shah Alam, Banting and Ipoh (20% each). Tan *et al.*, 2013 have reported the prevalence of *E.coli* among food handlers to be 71.76%, 71.76% and 68.24% for hands swabs taken before, during and after work [25]. Though, lower prevalence (24%) was reported by Mayada *et al.*, 2014[24]. Other pathogenic bacteria isolated from the swab samples are *Salmonella enteritidis* and *Citrobacter freundii*. The prevalence of the

bacteria range from 20-100% during working hours while after work was 50-100% as shown in Table 3 and Fig.3.

The total prevalence of *E.coli* O157:H7 (11%) in the carcass samples was lower than that reported by Son *et al.*, 1998 (36%)^[26] from retailed meats in Malaysia. On the other hand, the total prevalence of Non-O157:H7 *E.coli* was higher (49%) compared to that of O157:H7 (11%) but within the range (22.6-80%) reported by Adzitey, 2011^[27]. Other bacteria isolated from the abattoir are shown in table 5. Notable among them were *Salmonella enteritidis* and *Citrobacter freundii*. They are pathogenic and therefore of medical concern. Total prevalence of *Escherichia coli* O157:H7 and non-O157:H7 were 10% and 81% respectively.

Low level of prevalence in the abattoir compared with retail meats can be linked with different forms of contamination that can be encountered during transportation of the beef meat. In addition, meat handlers in the market, due to inadequate knowledge in meat handling may increase the level of contamination. Inanimate objects such as knife, cutting tables and air are some of the potential sources of contamination.

CONCLUSION

Presence of *E.coli* O157:H7 during work will be of public health concern due to cross contamination from hands of workers to the cattle carcass. The possible source of contamination of workers hands and cattle carcass is the fecal matter collected in the abattoirs.

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The Effect of Indomethacin on the Duodenum of Albino Rats: A Histopathological Study

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ABSTRACT

Indomethacin is commonly used as anti-inflammatory, antipyretic and analgesic drug. Inflammation is characterized by redness, swelling, heat and pain. Indomethacin produces anti-inflammatory effects by decreasing the production of prostaglandins. Ingestion of Indomethacin may be associated with peptic ulcer formation. Present study was carried out over a period of twelve months on 16 adult Albino rats of Charles Foster strain (8 males and 8 females). The rats were randomly divided into 4 groups. Group 1st was taken as control and the remaining three were taken as the experimental groups. Each experimental group was subjected to oral administration of Indomethacin for 1, 2 and 3 weeks in Group I, II and III respectively. Rats of each group were dissected at the end of 1st, 2nd and 3rd week intervals after giving ether anesthesia. Duodenum was preserved and stained for histological examination. Height of villi, Numbers of goblet cells columnar cells and mitotic figure/ HPF showed significant changes in experimental group in comparison to control group and were more pronounced in 2nd week. Findings of the study suggest histological changes occur after administration of Indomethacin which may be due to as a response to Indomethacin induced injury in the wall of duodenum of albino rats.

Keywords: *Indomethacin, Albino Rat, Inflammation*

INTRODUCTION

The classic signs of inflammation have long been recognized, the tissue becomes red, swollen, tender or painful, there is local heat and the patient may be febrile¹. Celsus Roman writer of the first century AD, first listed the four cardinal signs of inflammation: rubor, tumor, calor, dolor (redness, swelling, heat and pain). These signs are typically more prominent in acute inflammation than in chronic inflammation². Non steroidal anti-inflammatory drugs (NSAIDs) are among the most widely used of all therapeutic agents. They are frequently prescribed for 'rheumatic' musculoskeletal complaints and are often taken without prescription for minor aches and pains. There are now more than 50 different NSAIDs on the

market and none of these is ideal in controlling or modifying the signs and symptoms of inflammation, particularly in the common inflammatory joint disease³. Indomethacin is a synthetic non-steroidal anti-inflammatory drug with analgesic and antipyretic activities. It is a potent inhibitor of prostaglandin synthesis. The analgesic action of Indomethacin is due to a decrease in the production of prostaglandins that sensitizes nociceptors to inflammatory mediators such as bradykinin and 5-hydroxytryptamine. Indomethacin is readily absorbed from the gastrointestinal tract almost completely after oral ingestion. 90% of it is bound to tissue proteins and are also the mediators of inflammatory response. Indomethacin is used in musculoskeletal disorders such as rheumatoid lesions. It is widely used in the treatment of arthritis (osteo-arthritis and acute gouty arthritis) and ankylosing spondylitis. The oral dose of Indomethacin is 25–50 mg 2-3 times a day and injectable dose is 1–2 mg/Kg/24 hours in two divided doses. The adverse effects of Indomethacin especially on the gastrointestinal tract are due to its systemic

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effects and not due to its local actions. Ingestion of Indomethacin has been shown, in man, to be associated with NSAID gastropathy. Its untoward effects are nausea, vomiting, anorexia, epigastric distress, diarrhoea, gastrointestinal ulcers and perforation. The traditional drugs like Indomethacin are still widely used in the remote areas because of its low cost ⁴⁻⁶. Present study was conducted to assess the histological and morphometric changes in various epithelial cells in the walls duodenum of albino rats after administration of Indomethacin orally and to deduce the comparative safety of Indomethacin in the short and long term therapy.

MATERIAL & METHODS

This study was carried out in the Department of Anatomy, Himalayan Institute of Medical Sciences, Swami Ram Nagar, Dehradun over a period of twelve months. In this study 16 adult Albino rats of Charles Foster strain (8 males and 8 females) weighing 120gms (± 10 gms) obtained from the Central Animal House, HIMs, Dehradun (Uttarakhand) were used as experimental animals after obtaining the approval of IAEC (Institutional Animal Ethical Committee). The rats were housed in cages with a 12hr: 12hr light-dark cycle. They were allowed to access food and water ad libitum. The rats were randomly divided into 4 groups i.e. Group I, II III and IV for the study. Each group was comprised of 4 rats. Group 1st was taken as control and the remaining three were taken as the experimental groups. Each experimental group was subjected to oral administration of Indomethacin (Cap Indocap-25mg manufactured by Jagsonpal), They were fed with the help of a rat-feeding tube. The drugs were administered for 1, 2 and 3 weeks in Group I, II and III respectively. Indomethacin (Cap 25mg) was dissolved in 10 ml of distilled water so that the 1 ml of the solution of the drug had a concentration of 2.5 mg/ml. daily at the interval of

12 hours to the respective groups & subgroups. The controls were administered distilled water according to their weight.

The rats of each group were sacrificed at the end of 1st, 2nd and 3rd week intervals after giving ether anesthesia. They were immediately fixed on a wooden block with the help of paper pins. Dissection was done to open the abdomen for gross observations. The rats were infused with normal saline to wash out the blood. Foregut and Midgut were preserved in neutral buffered formalin. Staining was done with Harris' Hemotoxylin and Eosin. 3-5 μ m thick paraffin sections of duodenum were studied under light microscope and the histological and morphometric changes was studied.

FINDINGS

Microscopic examination was done under low (100x) and high (400X) magnification of the control and experimental groups on the sections prepared from the different parts of the foregut and midgut of albino rats. 10 randomly selected areas were taken from each control and experimental groups to study any particular aspects, the mean and standard deviation were calculated. The measurements were done with the help of an eyepiece micrometer. Features such as epithelial erosion, ulceration, inflammatory cells and necrosis were noted. All numerical data were subjected to students T-test before deriving any conclusion.

In duodenum the shape of the villi, position of villi, loss of the epithelium, intervillous spaces, ulcers and haemorrhages were observed. The number of columnar cells, goblet cells and mitotic figures per crypt per high power field were calculated. The height of the villi was measured by means of an eyepiece micrometer.

Table 1: Comparison of histological features of duodenum in experimental group after administration of Indomethacin and control group

	Control Group (Mean \pm SD)	Experimental Group (Mean \pm SD)		
		Group 1 (1 st wk)	Group 2 (2 nd week)	Group 3 (3 rd week)
Height of villi (μ)	55 \pm 9.7	80.3 \pm 7.9**	104 \pm 8.3**	94.3 \pm 16.7**
No. of goblet cells/ crypt/ HPF	6.5 \pm 1.5	10.4 \pm 1.6**	15 \pm 1.4**	7.1 \pm 2.8**
Number of columnar cells/ crypt/ HPF	32.6 \pm 4.9	48.1 \pm 4.9**	56.9 \pm 6.2**	45.5 \pm 10**
Number of mitotic figure / Crypt/HPF	4.6 \pm 1.1	6.2 \pm 1.1*	5.0 \pm 1.1*	4.8 \pm 1.2*

Data expressed as Mean \pm SD. * $p < 0.05$, ** $p < 0.01$

Table 1 shows that the mucosal blood vessels were congested. There was infiltration of mononuclear cells, especially plasma cells and lymphocytes in the lamina propria. Most of the villi were leaf-shaped, intact and upright but distorted. There was an increase in the height of villi in all the treated subgroups. From $55 \pm 9.7 \mu$ in the control group it increased to $80.3 \pm 7.9 \mu$, $104 \pm 8.3 \mu$, and $94.3 \pm 16.7 \mu$, at the end of the 1st, 2nd and 3rd weeks respectively. The p values were significant in all the treated subgroups. The number of the goblet cells was 6.5 ± 1.5 in control group. It increased to 10.4 ± 1.6 , 15 ± 1.4 , 7.1 ± 2.8 at the end of the 1st, 2nd and 3rd weeks respectively. The p values were significant in all the treated groups. It was observed that the number of columnar cells which were 32.6 ± 4.9 in control group, increased to 48.1 ± 4.9 , 56.9 ± 6.2 , 45.5 ± 10 at the end of the 1st, 2nd and 3rd weeks respectively. The p values were significant in all the treated groups. It was noted that the mean number of mitotic figures in the control groups was 4.6 ± 1.1 . It increased to 6.2 ± 1.1 , 5.0 ± 1.1 , 4.8 ± 1.2 at the end of the 1st, 2nd and 3rd weeks respectively. The p values were significant in all the treated groups.

CONCLUSION

Dhikav V et al described that all NSAIDs act by inhibiting the synthesis of prostaglandins (PGs). Prostaglandins have long been known as mucoprotective and acts as an ulcer healing agent. PGs protect the gastrointestinal mucosa by forming a cytoprotective layer and by increasing the secretion of bicarbonate ions that neutralized the gastric acidity. Indomethacin is a potent non-selective COX inhibitor, which lead to reduction in bicarbonate secretion and reduces mucous production ⁷. There was an increase in the height of villi in all the groups after administration of Indomethacin from $55 \pm 9.7 \mu$ in the control group to $80.3 \pm 7.9 \mu$, $104 \pm 8.3 \mu$, and $94.3 \pm 16.7 \mu$ at the end of the 1st, 2nd and 3rd weeks respectively. The p values were significant in all the treated groups. Most of the villi were leaf-shaped, intact and upright but distorted. A similar effect was noted by Ettarh RR and Carr KE after exposing three groups of C57Bl mice with subcutaneous injection of Indomethacin and found that duodenal villi were distorted with marked intervillous spacing ⁸. On the contrary, Ilahi et al found a decrease in height

of villi of duodenum at the end of 1st week. They studied the histological changes in albino rats after administration of Indomethacin intraperitoneally in a dose of 1 mg/kg of body weight /day for 1, 2 and 3 weeks respectively. The decrease in height of villi was significant, at the end of 1st week whereas at the end of 2nd and 3rd weeks was non-significant ⁹.

In the present study an increase in the height of villi was noticed. It may be due to a consequence of loss of epithelium of villi. The difference in the height of villi may also be due to different routes of administration of the drug and the amount of the drug given. The mean number of the goblet cells was 6.5 ± 1.5 in the control group. It increased to 10.4 ± 1.6 , 15 ± 1.4 , 7.1 ± 2.8 at the end of the 1st, 2nd and 3rd weeks respectively. Following administration of Indomethacin it was observed that the mean number of columnar cells which was 32.6 ± 4.9 in control group, increased to 48.1 ± 4.9 , 56.9 ± 6.2 , 45.5 ± 10 at the end of the 1st, 2nd and 3rd weeks respectively. It was noted that the mean number of mitotic figures in the control group was 4.6 ± 1.1 . It increased to 6.2 ± 1.1 , 5.0 ± 1.1 , 4.8 ± 1.2 at the end of the 1st, 2nd and 3rd weeks respectively. Similar effects were noted by Ilahi et al who observed an increase in the number of columnar, goblet and mitotic cells in crypts of Lieberkuhn after administration of Indomethacin ⁹. Ettarh RR and Carr KE also observed that in the crypts of the duodenum columnar cells and goblet cells showed a statistically significant increase in the number when compared with the value in the control group. However, the mitotic figures were same as that of the control group after administration of Indomethacin. In analyzing the data obtained one important consideration was taken into account. The extent to which conclusions may be drawn on the basis of profile numbers obtained in this study was limited by the fact that estimates (counts) of profiles of discrete entities such as nuclei, visible in a light microscopic section, could be influenced by the size of objects. The increases in the cryptal cell profile numbers could be attributed to the increased mitotic activity ¹⁰. The histological changes seen after administration of Indomethacin may be due to a response to injury caused by Indomethacin on the wall of duodenum of albino rats.

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Ethical Clearance: Procedures followed in the present study were in accordance with the ethical standards of the responsible committee on animal experimentation and were performed after obtaining the approval of IAEC (Institutional Animal Ethical Committee).

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Chronic Fatigue Syndrome - A Study of 70 Cases - Efficacy of Drug and Rehabilitation

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ABSTRACT

Chronic Fatigue Syndrome or CFS is a debilitating and complex disorder characterized by profound fatigue that is not improved by bed rest and that may be worsened by physical or mental activity. Symptoms affect several body systems and may include weakness, muscle pain, impaired memory and/or mental concentration and insomnia, which can result in reduced participation in daily activities. A prospective study was conducted on 70 cases of various age groups. Aim of the study was to assess the role of rehabilitation in general and mobility exercises and aerobics in particular in patients with chronic fatigue syndrome. Result showed that patients feel better with aerobics, fatigue is persistent. Aerobics increase concentration. Patients on exercises feel better as they sleep better.

Keywords – CFS - Chronic Fatigue Syndrome, CDS - center for disease control and prevention, NIH - National institute of Health, FX- Fluoxetine, AROM-Active range of motion, AAROM- Assistive ranged of motion.

INTRODUCTION

Fatigue or 'weariness on labor of body or mind'. Was described by Galen as long ago as the second century AD. Recently pervasive and debilitating fatigue, often without adequate 'quantum of labor; and without objective physical and laboratory anomalies has engaged the attention of physicians world-wide. Fatigue syndromes have been known periodically by many names including post-viral syndrome, chronic EB virus syndrome, abortive poliomyelitis, Icelanders disease and hypochondriasis, to name a few. Chronic fatigue syndrome (CFS), classified by Goldenberg as a subset of Fibromyalgia was conceptualized and named by Holmes as recently as 1988. The disease, predominantly in women has an unknown aetiology though psychological, neurobiological and viral causes have been postulated. Numerous workers

have formulated criteria for diagnosing CFS, of which the Centre for Disease controls case definition remains the most widely used. However of late, a revised case definition has been introduced by the US centers for disease control and prevention (CDS) and the National institute of Health (NIH) which has been described later.

Though debated on whether CFS is an organic or psychiatric illness continues and numerous esoteric management protocols are advocated world-wide. Gantz and Holmes treatment recommendation which includes reassurance, antidepressants, graduated exercise programs, stress reduction and counseling and support system has gained popularity. Treatment strategies involve both pharmacologic and non-pharmacologic approaches. Amongst the latter, cognitive behavior therapy in controlling vicious cycles of fatigue, behavior, beliefs and disability has gained popularity the aim of the study was to assess the role of exercise programs as a non-pharmacologic and adjunct tool.

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METHODOLOGY

Seventy patients presenting primarily with

fatigue more than six months along with myalgia's, arthralgia's, headache and other non-specific symptoms were selected from the Endocrinology OPD and sent to the Rehabilitation OPD for screening. The criteria for selection as per the US (CDS) and NIH revision were as follows:

1. Persistent fatigue for more than 6 months which
 - a- has new onset, b- is not related to exertion,
 - c- Is not relieved by rest, d- reduces activities of daily living
2. Occurrence of at least four of the following symptoms for 6 months consequent to onset of fatigue
 - a. Impaired memory and concentration
 - b. Sore throat
 - c. Painful lymph nodes (less than 2 cms) {cervical or axillary}
 - d. Joint/Muscle pain
 - e. Headache
 - f. Sleep disorders
 - g. Post exertion malaise more than 24 hrs.
3. Exclusion criteria
 - a. Causes of Chronic fatigue - Hypothyroidism, sleep apnoea, post history of Hepatitis B or C
 - b. Major Psychiatric disorders
 - c. Substance abuse (drugs/alcohol)

Investigations carried out on the selected patients (acc to the NIH panel) were as follows: Haemograms: Urine for RE and ME: Bun / Creatinine/Electrolytes: TSH: Blood Glucose: LFT (X-rays, ANA, RA factor and Tuberculin tests were optional and done as required) Patients showing no abnormality in investigations were screened by the Department of Psychiatry for exclusion of major Psychotic and depressive disorders and were subsequently labeled as suffering from CFS. All such patients received 20 mg Fluoxetine and were grouped according to the treatment schedule as discussed later.

THE STUDY Study Pattern: Self assessed parameters discussed below were on ordinal data scale using criterion – Referenced Tests with Test – Retest Reliability and Agreement.

Aim: To assess the role of Rehabilitation in general and mobility exercises and aerobics in particular in patients with CFS

Study Groups: Group A: on Fluoxetine (FX) only.

Group B: on (FX) + Mobility exercises {including AROM / AAROM a n d stretching exercises in appropriate groups}

Group C: on (FX) with graded walking (starting with 5-10 minutes per day at preferred caedence with graduated increments in both time and caedence) Patients were advised to walk at least thrice a week.

Follow up: was done at 6 weeks and 12 weeks. The self-addressed parameters along with the scoring pattern used in the follow up study were as follows: Clinical global impression changes scope (feeling better, as before worse) [0 to 2]

Fatigue, less, as before, more (0 to 2)

Concentration (better, as before, worse) [0 to 2]
 sleep disturbance (improved, as before, worse) [0 to 2].

RESULTS / ANALYSIS

36% (25 out of the 70 patients) screened fulfilled the criteria of C.F.S

36% (9 of the 25 patients selected) were excluded the causes being

: Hypothyroidism 12%

: Major depressive disorders 8%

: Anaemia 8%

: + ve RA factor 4%

: Diabetes Mellitus 4%

16 patients diagnosed with CFS were finally included, of which 11 were women (mean age 39.2 yrs. SD=8.4, range 29-56 yrs.

5 were men (mean age 43.1 yrs. SD = 6.9 range 30-48 yrs.

Patient grouping

Gr A - 6 patients, Gr B - 5 patents, Gr C- 5 patients

Symptoms presentation at onset

: Impaired concentration (100%)

: Sleep disturbance (100%)

: Myalgias (100%)

: Arthralgia's – 75% (12/16)

: Headache – 75% (12/16)

: Sore throat – 63% (10-16)

Drop outs: 3 patients, 2 from Gr A and one from Gr B dropped out of the study.

Analysis of follow up parameters

A. CLINICAL GLOBAL IMPRESSION
CHANGED SCORE

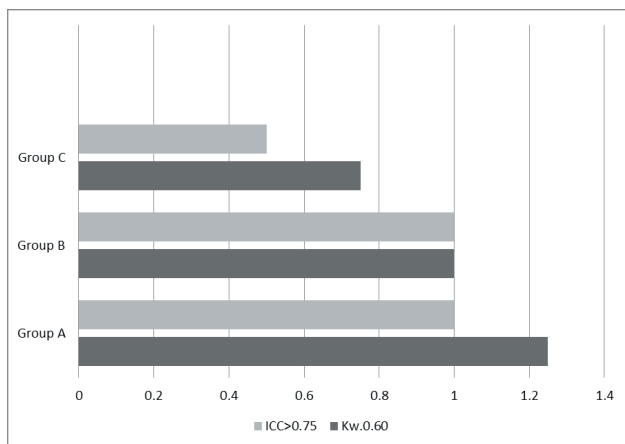


FIGURE 1
PATIENTS FEEL BETTER WITH AEROBICS
B.FATIGUE

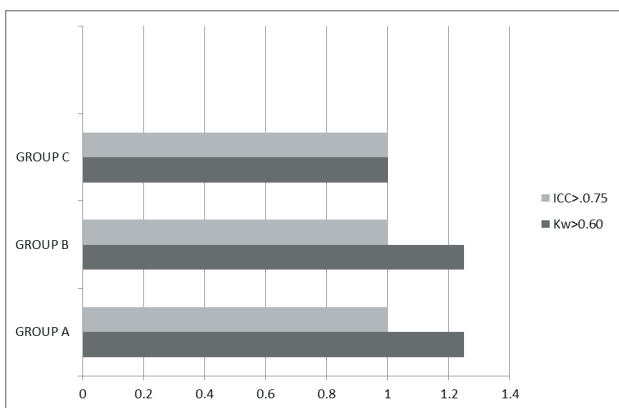


FIGURE 2
FATIGUE IS PERSISTENT C.CONCENTRATION

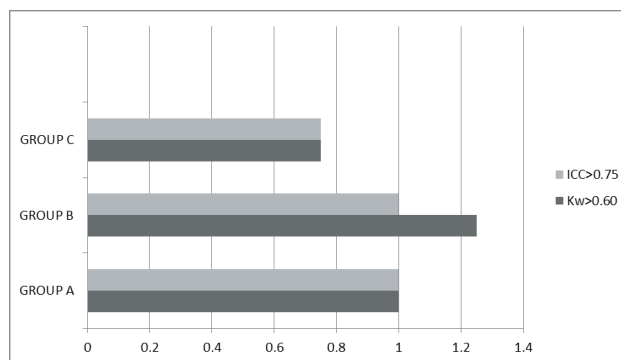


FIGURE 3
AEROBICS INCREASE CONCENTRATION
D.SLEEPDISTURBANCES

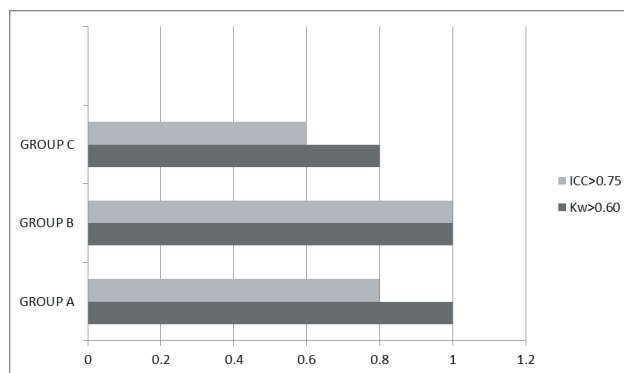


FIGURE 4
PATIENTS ON EXERCISES FEEL BETTER AS
THEY SLEEP BETTER
E.MYALGIAS

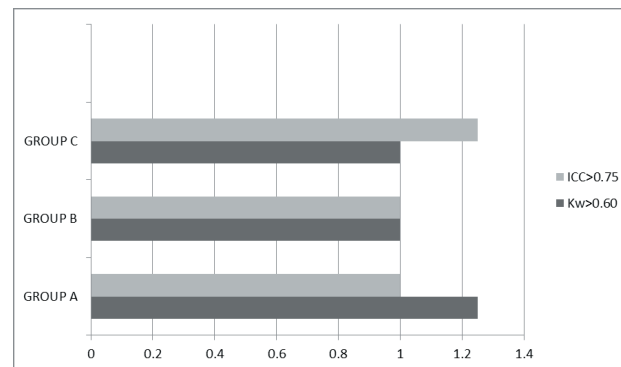


FIGURE 5
EXERCISE INCREASE MYALGIA

DISCUSSION

In any clinical setting, CFS with its constellation of symptoms should be considered along with hypothyroidism. Depressive disorders and diabetes mellitus in patients with prolonged fatigue. Though Fulcher and Wearden have shown that aerobics decrease fatigue, the study shows that fatigue is

persistent as stated by McCully. Though no consensus exists on exercise protocols as stated by Clapp, aerobics make patients feel better. Patients have better concentration and better sleep, a parameter which Wearden attributes to Fluoxetine, Flexibility exercises however hardly benefit patients and significantly increase myalgias and their role seems limited.

CONCLUSION

CFS a robust clinical entity should be considered in the differential diagnosis of fatigue syndromes, especially in women under 40 years. Though flexibility and mobility exercises caused no benefits, graded aerobics made patients feel better, sleep better and think better. Fatigue and myalgia seemed persistent and resistant. The above study may lack statistical significance because of the small sample size, but as researchers delve into the possible elusive aetiology, a thought should be spared about the role graded aerobics may play in the management of the pervasive and often debilitating fatigue in these unfortunate patients.

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Conflict of Interest: None

Acknowledgement: nil

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School Based Intervention Programme on Gingival Health of 10-12 Years Old Government Aided School Children of Basavangudi in Bangalore City – A Randomized Controlled Trial

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ABSTRACT

Objectives: To evaluate the effectiveness of a school based intervention program on gingival health of 10-12 year old government aided school children of Basavangudi in Bangalore city.

Methods (design): A 6 month randomized controlled trial was conducted on 264 subjects, aged 10-12 years to evaluate the effectiveness of school based intervention (oral health education) given in three different forms against a control group which received no intervention. These schools were randomly assigned as group A (control), Group B (class work), Group C (parental) and Group D (both classwork and parental). Intervention was given once every two months and their oral hygiene practices recorded by a questionnaire. The changes were recorded using Silness and Loe Plaque index and Loe and Silness Gingival index at pre and post intervention (2 months after the last intervention). Student's *t* test and one way ANOVA was used to compare the mean differences between pre and post intervention scores, followed by Post hoc test for within group differences.

Results: Reduction observed in plaque and gingival scores following interventions were statistically significant ($p < 0.001$). Within groups comparison revealed significant differences for group C ($p = 0.002$) and group B ($p = 0.021$) for gingival scores, this was not observed in Plaque scores. A Hawthorne effect was also observed in control group. An improvement was also observed in oral hygiene practices.

Conclusion: Parental involvement was found to improve gingival health. Oral health education given once every 2 months was found to reduce plaque and gingival scores.

Keywords: gingival health, adolescent's oral health, dental health education, oral health promotion

INTRODUCTION

During childhood to adolescence, health behaviors consolidate and probably will not change

thereafter¹. School children are considered to be an important target group for various health education activities with the underlying objective of inculcating healthy lifestyle practices to last for a lifetime².

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Family is a key social organization having the primary responsibility for the proper development of both child and parental health³. Research shows that parental oral health-related knowledge, belief and attitudes influence the oral health and oral health

behavior of their children⁴. Parental level of education has been shown to be one of the most important determinants for children's oral health in many countries⁵.

Among a range of suitable settings for targeting defined population groups, school has been the main setting for oral health promotion interventions⁶. Globally, approximately 80% of children attend primary schools⁷. Schools remain "an important setting", offering an efficient and effective way to reach over 1 billion children worldwide and, through them, families and community members"⁸. A school, with its existing structure and system in place, provides an excellent opportunity for health promotion of children⁹.

The present study was undertaken to evaluate the effectiveness of a school based intervention program on gingival health of 10-12 year old government aided school children of Basavangudi in Bangalore city.

MATERIALS & METHODS

The present double blind, parallel, randomized control trial was conducted among representative sample of 10 – 12 years old students of government aided schools of Basavangudi, Bangalore. Schools were the unit of randomization and intervention. School selection was based on following criteria:

1. Children in the age group of 10 – 12 years.
2. Consent of the school authorities.
3. No Dental Health Education programs conducted during the study.
4. Schools that were geographically at a distance from each other to prevent the spill-over effect.

Out of 7 schools fulfilling the above criteria 4 were randomly selected. Within each school the study subjects were selected based on –

Inclusion criteria:

1. Male and female children of 10 – 12 years (with consent from their parents/guardians).
2. Parents' participation (with consent).
3. Sufficient number of students

Exclusion criteria:

1. Presence of oral mucosal lesions.
2. Intake of medication affecting oral health (antibiotics, mouthwashes)

3. Children undergoing orthodontic treatment.
4. Mentally and physically challenged, and
5. Children requiring emergency dental treatment.

A written permission to carry out the study was obtained from the administrative head of the school after explaining the purpose and nature of the study.

The sample size was calculated using the formula, $SS = Z^2 PQ/\Delta^2$, with the confidence interval of 95% and power of the study at 80%. The p value was set at 0.05. The sample size was increased by 10% assuming the drop outs during the study. The final sample size was 66 students per school making a total of 264 students. The ethical clearance was obtained from the institutional ethical board. The study was conducted from January 2012 to August 2012. The concerned authorities were informed regarding the date and timings, and were requested not to inform the students about the same to prevent any bias.

Clinical examinations were carried out by a single trained and calibrated examiner not related to the study ($\kappa=0.9$). The clinical examinations were carried out at baseline and two months after the last session of interventions with a self-administered questionnaire given at baseline. The interventions were of three types, one in class, one via parent and one as a combination of these. The baseline data was collected over a period of two weeks, and followed by intervention. The intervention was implemented in three sessions after a gap of two months each. First intervention was implemented immediately after data collection and randomization of schools, the second and the third interventions were given after every two months. The clinical examinations were in the form of recording pre and post intervention plaque and gingivitis score using plaque index¹⁰ and gingival index¹¹. Examination was done in an open area preferably, or in classroom using artificial light. Sterilization and infection control routine was followed.

Each of the school was then randomly assigned to four intervention groups with one school (group) acting as control. The schools were labeled as Group A, B, C and D respectively. Each school was to receive a specific intervention with one group as control group. To avoid bias, the details of the interventions were not explained to the children (figure 1).

The subjects of Group A belonged to control group (no intervention), underwent clinical examination and completed the questionnaire.

The intervention to Group B was limited to school children only. They were in the form of various illustrative puzzles, oral health messages guiding children to brush their teeth twice daily and maintain oral hygiene. Each session was held for about 45 minutes to 1 hour. The study subjects first read the oral health messages and then solved puzzles which were later explained by the investigator. Additionally, a poster to motivate children to brush their teeth twice daily was hung on the classroom wall during the trial period.

The intervention to group C was provided only to parents at home without giving any additional instructions on oral health at school. A booklet with information on oral health printed both in English and Kannada (local language), a brushing diary, and a cover letter sealed in an envelope addressed to the Head of the family were given. In the cover letter the parent were additionally advised to encourage their child to brush twice daily and to maintain oral hygiene. They were explained how to use a brushing diary. The students were asked to return their brushing diary after every two months during reinforcement of oral health education.

Intervention to group D was carried out both via class work and via parents according to the programs described above.

At the end of the study, a final clinical examination was done by the same examiner to record post intervention plaque and gingivitis scores. Questionnaire was distributed to students to assess any change in their oral health behavior practices.

The data was statistically analyzed using SPSS version 17. Data analysis was performed by an independent statistical consultant who was blind to all the Groups. Plaque and gingival scores were expressed as means and standard deviations (SD). The mean changes from baseline scores to final examination scores after interventions for all four groups were compared using one way ANOVA. Within group comparisons was made using Bonferroni's correction multiple comparison tests.

RESULTS

Out of 264 school children 215 completed the study. Plaque scores in the four groups were almost similar and statistically non-significant at baseline ($p>0.05$) (table 2). After the intervention, there was a reduction in mean plaque scores [1.37, 1.21, 1.19 & 1.1445] which was found to be statistically significant [$p<0.001$]. Within group comparison using Bonferroni's multiple comparison tests did not reveal any significant differences.

The mean scores for gingival bleeding were 1.44, 1.62, 1.71 & 1.53 at baseline ($p>0.05$)(table 2). Post intervention there was a statistically significant reduction in mean gingival scores ($p<0.001$) (table 3). Within group comparison using Bonferroni's multiple comparison tests revealed a statistically significant differences for parental group ($p=0.002$) followed by class work group ($p=0.021$) with mean difference significant at $p<0.05$ (table 4).

DISCUSSION

The present study demonstrates that a school based educational intervention can be effective in improving the gingival health of 10-12 year old students. The study revealed significant differences between pre and post plaque and gingival scores among study subjects; however, within groups differences were only statistically significant for gingival scores. These findings are in agreement with results of Ivanovik and Lekic¹² and Shyamma M¹³ et al. On the contrary Frenken JE et al found no significant reduction in the plaque scores after oral health education by school teachers¹⁴. The reduction in post plaque scores could be partly attributed to change in tooth brushing frequency and adoption of appropriate tooth brushing technique, and may not necessarily be great enough to have an impact on gingival health.

Within group comparisons were significant only for gingival scores (table 4). Among parental group (group C) and class work group (Group B) results were more significant for the former than the latter. So, parents could be viewed as facilitators of oral health for their children. Similar results were found by Saied-Moallemi¹⁵ et al in 2009.

The combination of class work and parental

education (group D) had no significant effect. A reason for notable lack of improvement of oral hygiene may be that these children did not put into practice what they had learnt through oral health education. This suggests that two different modes of oral health education are not accepted by children.

The improvement in gingival health is due to repeated reinforcement over a period of time. Reinforcements resulted in retention of knowledge and practice, and subsequent reduction in plaque and gingival scores. Findings from our study show that reinforcements given by parents or even reminder by parents to brush ones teeth has beneficial effect.

Shenoy and Sequeira¹⁶ reported that schools with more frequent exposures to oral health education scored better than schools with no reinforcement. Our study showed that intervention given once in every two months (8 weeks) is enough for reductions in plaque and gingival scores. However, further controlled trials are required for considering the possibility of extending this intervention to once

every 4-6 months.

Changes were also observed in oral hygiene practices assessed using questionnaire. In Group C, it was observed that at baseline 47% of subjects brushed their teeth once a day and only 7 % of them brushed twice a day. After intervention, 20% of subjects brushed once a day and 32% brushed twice a day. Similarly, statistically significant differences were found for, “the number of times having seen a dentist” and “method of brushing”,. Such improvements in knowledge and oral hygiene practices have also been observed in studies conducted by Redmond¹⁷ et al, Worthington¹⁸ et al and Shenoy and Sequeira¹⁶.

It was noted that improvement in gingival health was also observed in the control group which can be ascribed to Hawthorne effect. However, the marked improvement seen in the intervention groups reveals the true intervention effect of this study. Similar findings have also been observed by Saied-Moallemi¹⁵ et al, Hebbal¹⁹ et al, Howat²⁰ et al, Dalhen²¹ et al Freitas-Fernandes²² et al and Hortono SW²³ et al.

TABLES AND LEGENDS

Table 1: Distribution according to age and gender

Variable		Baseline	Post-intervention
Age	10 years	102	91
	11 years	71	62
	12 years	91 (264)	65 (218)
Gender	Male	115	91
	Female	149 (264)	127 (218)

(only Numbers)

Table 2: Distribution of mean plaque and gingival scores

Plaque scores		Group I	Group II	Group III	Group IV	P-value
Pre	Mean	1.6	1.9	1.7	1.8	p>0.05
	SD†	0.4	0.3	0.2	0.3	
Post	Mean	1.3	1.21	1.19	1.14	p<0.001*
	SD	0.4	0.3	0.3	0.2	
Gingival Scores						
Pre	Mean	1.4	1.6	1.7	1.5	p>0.05
	SD	0.22	0.23	0.22	0.24	
Post	Mean	0.69	0.9	0.95	0.82	p<0.001*
	SD	0.41	0.39	0.41	0.29	

Mean difference is significant at 0.001* using ANOVA , SD – Standard Deviation†

Table 3: Comparison of pre and post intervention plaque and gingival scores

	Plaque Scores				Gingival Scores			
	Pre	Post	t	P Value	Pre	Post	t	P value
Group I	1.6 ± 0.4	1.3 ± 0.4	3.484	<0.001*	1.4 ± 0.22	0.69 ± 0.41	11.315	<0.001*
Group II	1.9 ± 0.3	1.21 ± 0.3	11.17	<0.001*	1.6 ± 0.23	0.9 ± 0.39	14.781	<0.001*
Group III	1.7 ± 0.2	1.19 ± 0.3	14.923	<0.001*	1.7 ± 0.22	0.95 ± 0.41	14.852	<0.001*
Group IV	1.8 ± 0.3	1.14 ± 0.2	16.209	<0.001*	1.5 ± 0.24	0.82 ± 0.29	19.667	<0.001*

Mean difference is significant at 0.001, using paired t-test*

Table 4: Within group comparison scores for Gingival scores

		Mean Difference	Significance
Group I	Group II	-.20500*	.021*
	Group III	-.25273*	.002*
	Group IV	-.12645	1.000
Group II	Group I	.20500*	.021*
	Group III	-.04773	1.000
	Group IV	.07855	1.000
Group III	Group I	.25273*	.002*
	Group II	.04773	1.000
	Group IV	.12627	1.000
Group IV	Group I	.12645	1.000
	Group II	-.07855	1.000
	Group III	-.12627	1.000

Mean difference is significant at 0.05 level*

CONCLUSION

In conclusion, the results of the present study suggest that, school based interventions are effective in promoting gingival health. The influence of parents also plays an important role in maintaining the gingival health of school children. Finally, it can also be suggested that oral health education can be taught

as a specific subject or as a part of other subjects, since supervision dependent behavior may fade with declining supervision.

After the completion of the study, the control group was also provided with oral health education. This was done on ethical grounds so that none of the study subjects were devoid of adequate oral health.

Few of the limitations in the present study are;

the intervention was reinforced on all study groups every two months, which can be considered short. The sustainability of the findings therefore remains unknown. Long term values of the improvements seen need to be confirmed by further studies, because improved oral hygiene in children may exist only during the program or for a short period of time. It is also important to involve school teachers and personnel, since they may remind the subjects of the oral health education after the discontinuation of program. In the present study intervention was targeted at students and parents and not on complete health promotion scenario, as no changes in environment was advocated. Also this study did not include school staff as an influential group.

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Conflict of Interest: None

Source of Funding: None

Ethical Clearance : Institutional Ethical Board of V. S. Dental College

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Awareness and Utilization of the Megha Health Insurance Scheme in Secondary Care Hospitals in East Khasi Hills District, Meghalaya, India

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ABSTRACT

The Megha Health Insurance Scheme (MHIS) is an health insurance scheme, an initiative by the government of Meghalaya, aimed at providing universal health insurance. A hospital based cross sectional study was carried out to explore out the awareness and knowledge of the MHIS among those seeking health care services at four secondary care hospitals of East Khasi Hills, Meghalaya, North Eastern India. A total number of 1250 respondents (female 64.6%; male 35.4%) were non-randomly selected through purposive sampling and were interviewed using a pretested semi structured questionnaire. Roughly 57.52% of the respondents had the knowledge about health insurance, 63.44% were aware of the health insurance and 76.4% came to know the Megha Health Insurance Scheme from the awareness campaigns. Subsequently 38.03% of the beneficiaries reported to have utilized the health insurance for more than 3 times .

Keywords: Megha Health Insurance Scheme, Awareness, Knowledge, Utilization

INTRODUCTION

There has been growing realization of a requirement for universal health care financing by most countries. The ILO (International Labor Organization) framework for extending social protection in health has emphasized the importance of an explicit societal guarantee for access to health care services, which should be in accordance to the country context as a key instrument for social protection in health⁽¹⁾. The health care services provided by the government sector are not sufficient to cater for the majority of the population. In addition to this about 6 % of the Indian population avoid seeking health care owing to the high cost and dependence on the private sector for health care services which led to high out of pocket expenses (OOP) of 78% of the total cost of health care⁽²⁾. The fact that about 70 million Indians being pushed to poverty due to their health care expenses is of serious concern⁽³⁾. Empanelling hospitals from the private sector to increase coverage, by implementing several central and state sponsored

universal health insurance schemes. In the forefront of all these is the RSBY (Rashtriya Swasthya Bima Yojna), which means National Health Insurance Scheme, with close to 37 million enrollees across 439 districts across the country, and 39 districts are in the process of doing so⁽⁴⁾⁽⁵⁾. The MHIS initiated by the state of Meghalaya in the far north east of India, which covers the entire population of the state under the scheme, except government employees is also an attempt at universal health care financing like the National health Insurance scheme by the central government of India. The present study was directed at exploring the knowledge and utilization of the scheme from a cross section of respondents, who visited the hospitals selected for the study.

MATERIAL & METHODS

East Khasi Hills is a District in Meghalaya, which has a literacy rate of 84%. The population of this district is 8, 24, 059 and the total population of Meghalaya is 1, 492, 668⁽⁶⁾. Of this a total of

1, 99, 000 households were enrolled in the MHIS in the district where the study was carried out, and during the study period that is the month of March and April 2014. The households had to pay a premium of Rs 478 for a coverage of Rs 1,60,000 per family. A facility based cross sectional study was carried out at four secondary care hospitals of East Khasi Hills district. A purposive sampling was followed since patients and patients' visitors in the hospitals were non-randomly selected for the study, over a period of two months. Data was collected from a total of 1250 respondents; a semi-structured questionnaire was used. The questionnaire had 30 items which were divided into the following sections: Socio-demographic information; awareness of the scheme; knowledge of the scheme and utilization of the scheme. The questionnaire was pretested at a different facility and changes incorporated accordingly. One of the authors could converse in the local language, which eased data collection and the questionnaire was administered to the respondents in the local language, although English is the official language of the state. The total respondents interviewed were, out-patients (36.34%), in-patients (36.56%) and the patients' relatives (26.8%). Those employed in the government sector were excluded from the study. On an average, 20 respondents were interviewed per day with their informed consent. The data was then organized, entered and analyzed with the help of Statistical Package for the Social Sciences (SPSS 16.00).

FINDINGS

Characteristics of the respondents

The majority of the respondents were females (64.6%) compared to males (35.4%) of the total respondents. Among the respondents, the age group of 18-33 years of age constituted 58.56 % followed by 34-47 years of age (27.20%). The respondents were predominantly from the rural areas (62.1). About 56.2 % of the respondents were formally employed and 52.6 % of the respondents had a family size of 4-6 members. The majority of the respondents had a monthly family income of Rs. 15000 and below and 92.2 % of the respondents reportedly paid their medical expenses with their savings.

Awareness, knowledge and Utilization of the MHIS

Of the total 1250 respondents, 63.44% were aware of the health insurance scheme (Table 2). Only 61.92% of the respondents were covered by the scheme and 57.52% of the respondents possess the knowledge about the utilization of the scheme, whereas 42.48 % of the respondents still did not know the details about the scheme. The study also found that 90.05 % of the beneficiaries among the respondents had utilized the facilities of the MHIS

Frequency of Utilization

About 62% of the respondents had utilized the services for at least 1-3 times and the rest had utilized it more than 3 times as depicted in table 3

Source of awareness

Table 4 shows the source of information and awareness of the Megha Health Insurance Scheme. 76.42 per cent of the respondents who were aware of the health insurance scheme came to know about it through the awareness camps organized by the officials of the MHIS followed by from media (9.46%), internet/doctors/health professionals (4.92%), friends (4.67%) and family members (4.54%).

A small percentage of the total respondents (6.4%) reported barriers and problems with the Megha Health Insurance Scheme. These barriers included primarily the premium expenses and inadequate information about the scheme.

DISCUSSION

In the present study, although a few of the respondents were aware of the scheme which they might have heard from the media or friends or family members, yet they did not really understand or possess knowledge of what the MHIS is about. As the results show that 57.62% of the respondents possess the knowledge of the scheme and leaving out 42.48% of the respondent do not possess the knowledge of the scheme due to insufficient publicity of information about the Scheme. The present study has also found out that 63.44% of the respondents were aware of the Scheme. The awareness level in similar studies varied from around 15% to 73 %, which holds good for this study too. ⁽⁷⁾⁽⁸⁾⁽⁹⁾. Awareness campaigns have played an important role in increasing the awareness of the scheme in the East Khasi Hills District. Although the

awareness and beneficiaries covered by the scheme is close to 60%, the utilization rate is only 55%, this is much higher compared to studies carried out on RSBY, which was around 15%.⁽¹⁰⁾⁽¹¹⁾. The study found out that only 38.03% of the total respondents have utilized the scheme for more than three times during in a year. A study on the utilization of the Comprehensive Health Insurance Scheme in Kerala found that 30.4% of the people utilized the services, which was rather similar to this study ⁽¹¹⁾. Studies on RSBY have found out that monthly health care expenditure for inpatient treatment has reduced, but utilization of the schemes was around 15% only. ⁽¹⁰⁾.

Although some of the respondents from the rural region possess the MHIS, they have not used it efficiently during hospitalization. Accordingly, the study also found out some of the respondents tends not to utilize the scheme as tradition, faith and superstitious beliefs supersedes the benefits and facilities they can utilize. During the period of conducting the study, a few respondents had few barriers with regards to accessing the facilities of the scheme, like delays at various point of contacts and also paying the premium expenses. Inadequate information about the scheme were also observed to be one of the reasons for non-utilization of the scheme, slow communication system and inappropriate internet services in hospitals resulting in the delay of processing claims. A study carried out on the RSBY in Karnataka, also corroborates the fact that access to information, bureaucratic delays and complex eligibility rules have often come in the process of utilizing the benefits of such schemes, the study suggests to have more inclusive schemes for the socially deprived ⁽¹²⁾⁽¹³⁾. The perception of the majority of the respondents (98.1%) concludes that the introduction of the scheme in Meghalaya has been an attempt to include below poverty line families, and a step in saving the population from catastrophic expenses during hospitalization. This was evident in the high percentage of utilization of the scheme among the beneficiaries. Therefore there should be more hospitals empanelled under the scheme so as to extend the benefits of the scheme across the state. This kind of health insurance is a step forward to include the private sector to contribute to public health, since even the poorest in the both urban and rural sector spend twice the amount of

treatment depending on private practitioners which caters to for 80% of outpatient and 60% of inpatient care, rather than the public sector.⁽¹⁴⁾⁽¹⁵⁾

Table 1: Socio-demographic characteristics of the respondents

Characteristics of the Respondents		Number (%)
Gender	Male	443(35.4)
	Female	807(64.6)
Age	18-32	732(58.6)
	33-47	340(27.2)
	48-62	131(10.5)
	63-78	47(3.8)
Marital Status	Single	492(39.4)
	Married	744(59.5)
	Separated	11(0.9)
	Widow	3(0.2)
Area	Urban	474(37.9)
	Rural	776(62.1)
Employment status	Employed	703(56.2)
	Unemployed	547(43.8)
Family size	1-3	193(15.4)
	4-6	650(52.0)
	7-9	386(30.9)
	>10	21(1.7)
Monthly Income	<3000	3(0.2)
	3001-6000	30(2.4)
	6001-15000	370(29.6)
	>15000	847(67.8)
Health care expenses	Savings	1153(92.2)
	Loans	1(0.1)
	Health insurance	75(6.0)
	Others	21

Table 2: Awareness, Coverage, Knowledge and utilization (N=1250)

Parameters	Yes (%)	No(%)
Awareness	793(63.44)	457(36.56)
Covered by MHIS	774(61.92)	476(38.08)
Knowledge about MHIS	720(57.62)	530(42.24)
Utilization	697(55.76)	553(44.24)

Table 3: Frequency of utilization (N=697)

Utilization	Number (%)
1-3 Times	432(61.98)
>3 Times	265(38.02)

Table 4: Source of information about the MHIS among the respondents (N=793)

Source of information	Number (%)
Friends	37(4.67)
Family members	36(4.54)
Awareness camps	606(76.42)
Media	75(9.46)
Others	39(4.92)

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Conflict of Interest: Nil

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Study of Adenosine Deaminase Activity in Tuberculous Pleural Effusion and other Respiratory Diseases

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ABSTRACT

Introduction: Pleural effusion frequently presents a diagnostic problem to establish the aetiology in spite of good history taking, through clinical, radiological, full examination of aspirated fluid and pleural biopsy. Increased level of Adenosine deaminase activity has been found to be associated with tubercular pleural effusion. **Aim and Objective:** To suggest estimating the activity of ADA as a diagnostic tool in cases of pleural effusion and compare its activity between tubercular and non tubercular origin. **Method:** Biochemical, cytological and microbiology studies was done by obtaining pleural fluid by thoracentesis in 100 patients after excluding pleural effusion cases of malignancy, transudative effusion. 84 cases were tubercular and had high level of ADA in comparison to rest of 16 nontubercular cases. At level of 50 IU/L of ADA activity test had sensitivity of 97.6%, specificity 87.5%, positive predictive value 97.6%, negative predictive value 87.5%. **Conclusion:** ADA level > 50IU/L in pleural effusion fluid can be important investigation in diagnosis of tubercular pleural effusion cases.

Keywords: Tuberculosis, Pleural effusion, Adenosine deaminase.

INTRODUCTION

Tuberculosis, one of the oldest disease known to mankind remains a worldwide public health problem despite the fact that causative organism *Mycobacterium tuberculosis* was discovered more than hundred years ago and highly effective drugs and vaccines are available making tuberculosis a preventable and curable. If properly treated tuberculosis caused by drug susceptible strains is curable and if left untreated, can be fatal within five years in 50-60% of cases.

Tubercular Pleural effusion is a common in primary tuberculosis fluid accumulate in pleural space as a result of the delayed hypersensitivity reaction to tubercular protein. Pleural effusion frequently represents a diagnostic problem and definite diagnosis of tubercular effusion can be difficult because of low sensitivity and/or specificity of non invasive traditional diagnostic tools. The diagnosis of pulmonary tuberculosis is

confirmed mainly by sputum examination for acid fast bacilli. For etiological confirmation of pleural diseases various investigation like pleural aspiration, fluid biochemistry, cytology and culture, mantoux test, pleural biopsy and histopathology, adenosine deaminase and various techniques such as polymerase chain reaction (PCR), lysozymes have been studied previously. There is need of simple, rapid and reliable techniques to diagnose tuberculosis quickly as well as accurately.

Adenine deaminase (ADA) is an enzyme involved in purine metabolism and is essential for proliferation and differentiation of lymphoid especially T cells. The rise of ADA in pleural fluid of tubercular pleurisy is of unknown origin. The determination of ADA activity was first proposed as serological marker for lung cancer in 1970¹. Later Piras et al in 1978 reported the usefulness of ADA in Diagnosing tubercular pleurisy². ADA estimation in pleural fluid has emerged as a reliable biomarker in recent years specially when

there is suspicion of tuberculosis in endemic areas . This study was conducted to assess the diagnostic value of adenine deaminase level in pleural fluid in pulmonary tuberculosis and compare activity of ADA pleural effusion between of tubercular and non tubercular origin.

MATERIALS & METHODS

The present hospital based case control study was undertaken in the Department of Biochemistry Katihar Medical College and Hospital, Katihar , Bihar and conducted during the period from December 2007 to April 2009 after approval by institutional ethical committee. The subjects were admitted patients suffering from pleural effusion and selected by simple random method. Patients were informed about risks and benefits of study and written consent was taken before study.

Out of two hundred and fifty cases of pleural effusion hundred patients were included in study by simple random method and along with through clinical history, examination were investigated for following –

- Haematological examination Haemoglobin , Total Leucocyte count , Differential leucocyte count , Erythrocyte sediment rate

- Chest X ray , P.A. view
- Mantoux test
- Sputum for AFB

- Pleural fluid examination for activity of Adenosine deaminase by using commercial kit , Z N stain for AFB , protein concentration .

To obtain pleural fluid diagnostic thoracocentesis was performed . Chest radiographs were done to localise the pleural effusion. Physical examination such as diminished breath sound at the base of affected lung and decreased percussion note were performed to define the place . Patient were asked to take upright and sitting position with arms up and forward . Puncture site was marked with pen in mid-scapular line two rib interspaces down from upper end of effusion . Skin was cleaned with antiseptic solution over an area of 4 inches in all direction . Skin was anaesthetized by injecting

2% lidocaine site was punctured with 18 guaze needle attached to 50 – 60 ml syringe containing heparin 1 ml , advanced until feeling a slight give was obtained.

Estimation of Adenosine Deaminase activity in pleural fluid was done by method described by Guisti and Galanti³. Only fresh collection were used . Berthelot reaction is the basis of calorimetric method in which ammonia and inosine produced due to ADA reaction on adenosine . Blue indophenol complex is produced due to reaction between ammonia, phenol and hypochlorite in alkaline medium.

Diagnosis of tubercular pleural effusion was made on the basis of first or more than one of following criteria in addition to already proved diagnosed cases of TB

1. Identification of Mycobacterium tuberculosis in pleural fluid or in sputum
2. Clinical and radiological evidence of TB
3. Clinically presenting with signs and symptoms consistent with TB exclusion of other clinical entity
4. Definite clinical and radiological improvement in 6 to 8 weeks after administration of antitubercular treatment

Transudative pleural effusion cases were excluded by using Light's criteria⁴ (pleural fluid protein / serum protein > 0.5 ; pleural effusion fluid LDH / serum LDH > 0.6). Cases of pleural effusion associated with malignancy / presence of cytological or histological evidence of malignancy were reviewed and included as non tubercular cases .

Method analysis : Data were presented as frequency, percentage and mean \pm 2SD. Student t test was applied to determine the significance of biochemical parameters between two groups . Pearson coefficient correlation were calculated for relationship between measured parameters , p value of < 0.05 considered as significant . Data was analysed using statistical package program SPSS 15.0 .

RESULTS

In present study total 100 cases were included by simple random method of pleural effusion during one and half year of study period. 84 cases of tubercular origin diagnosed by history, sputum results, pleural fluid results and rest were cases of non tubercular causes comprising of malignancy, collagen vascular disorders etc.

Out of 100 cases 62 were males and 38 were females (table 1). Number of cases of both tubercular and non tubercular in age groups <5, 5-15, > 15 years were 3, 41, and 56 respectively (table 2).

Table 3 shows that Sputum smear was positive for 30 cases out of 84 cases of tuberculosis and all the non tubercular were negative for it. Sensitivity and specificity for Sputum smear for pleural effusion was 35.71% and 100 % respectively (table 3). Positive predictive value and negative predictive value were 100% and 22.86% for same.

Adenosine deaminase level >50 IU/L were taken as a cut off point and all the 84 cases of tuberculosis had level >50 IU/L. 2 cases out of 16 cases of non tubercular pleural effusion had level of ADA >50IU/L. Sensitivity and specificity were 100% and 87.5 % respectively for this test with positive predictive value of 97.7% and negative predictive value 100% (table 5).

DISCUSSION

Tuberculosis is common cause of pleural effusion especially in developing countries like ⁴with trend of increasing incidence world wide ⁵. It is difficult to establish the etiological diagnosis because of low sensitivity of the various diagnostic tools ⁶. Culture for acid-fast bacilli are positive in 20 to 30% of pleural fluid samples and in 50 to 80 % of pleural biopsy specimens ^{7,8}. The sensitivity of polymerase chain reaction for active disease is 78%⁹. The cutaneous response to putrefied protein derivative may also be negative in one third of the patients¹⁰. Thus inspite of good history thorough clinical and radiological examination of patients and full examination of aspirated fluid and pleural

biopsy, there is need of simple rapid and reliable diagnostic test to establish the aetiology of pleural effusion. Considering this, a prospective study was designed to find out how much pleural fluid ADA level could be helpful in establishing the diagnosis of pleural effusion.

Age wise distribution showed that number of cases of pleural effusion was more in > 15 years of age group (table 1) and prevalence was more in male (table 2).

The common diagnostic tools that are used for diagnosis of tuberculosis are sputum for AFB and Mantoux test but the sensitivity of these tests was found to be low with high level of specificity (table 3 and 4). Several previous studies scrutinized that about one third of patients with tuberculous pleural effusion can have negative tuberculin skin test¹¹. Jay S.J. ⁸ after their study concluded that a negative tuberculin test does not excludes the diagnosis and it may be negative in one third of tuberculosis patients. There may be several false positive and negative result of sputum smear microscopy due to various problems in collecting, processing or interpreting sputum smears or because of administrative errors.

Adenosine deaminase level in tubercular pleural effusion ranged from 47.5- 59.4 IU/L with a mean level of 52.9IU/L while in non tubercular group it ranged from 14.6 – 25.9IU/L with a mean level of 18.6 IU/L (p = 0.000) which was highly significant (table 6). This result was in accordance with previous studies ^{4,12}.

In comparison to other diagnostic tools like sputum smear or AFB staining, sensitivity and specificity of ADA activity for diagnosing tubercular pleural effusion was 100 % and 87.5% with positive and negative predictive value 97.7 % and 100 % respectively. Previous studies have also shown sensitivity and specificity of 90% and 100% for value of ADA in pleural fluid using different cut off levels ^{13,14,15}.

Table 1 : Distribution of Cases of Pleural effusion according to Gender

	Tubercular	Non tubercular	Total
Male	49	13	62
Female	35	3	38
Total	84	16	100

Table 2 : Distribution of Cases suffering from Pleural effusion according to Age

Age Group (years)	Tubercular (% of cases n=84)	Non tubercular (% of cases n=16)	Total
<5	3(3.5)	0(0)	3
5- 15	34(40.4)	7(43.8)	41
>15	47(55.9)	9(56.2)	56
Total	84	16	100

Table 3 : Sensitivity and Specificity of Sputum smear for Pleural effusion

Sputum smear	Tubercular	Non Tubercular	Total
Positive	30	0	30
Negative	54	16	70
Total	84	16	100

Sensitivity = 35.71 % , Specificity = 100 % , Positive predictive value = 100 % ,

Negative predictive value = 22.86 %

Table 4 : Sensitivity and Specificity of Mantoux test for tubercular pleural effusion

Mantoux test	Tubercular	Non Tubercular	Total
Positive	45	1	46
Negative	39	15	54
Total	84	16	100

Sensitivity =53.57 % , Specificity = 93.75 % , Positive predictive value =97.83 % ,

Negative predictive value = 27.78 %

Table 5 : Sensitivity and Specificity of Adenosine deaminase test for tubercular pleural effusion

ADA test	Tubercular	Non Tubercular	Total
Positive	84	2	86
Negative	0	14	14
Total	84	16	100

Sensitivity =100 % , Specificity = 87.5 % , Positive predictive value =97.7% ,

Negative predictive value = 100%

Table 6 : Comparison of mean of ADA activity in Pleural fluid in different groups

	ADA activity in pleural fluids	p value
Sputum positive patients	54.48±7.81236	0.066
Sputum negative patients	52.51±7.37326	
Mantoux positive	53.4077±7.30686	0.894
Mantoux negative	53.5487±10.9141	
Cases of pleural effusion of tubercular origin	52.9000±8.0169	<0.0001
Cases of pleural effusion of non-tubercular origin	18.6015±8.0169	

CONCLUSION

In present study it has been clearly shown that ADA level in most tubercular patients is between 47-60 IU/L. This test has 100% sensitivity and 87.5 specificity for diagnosing tubercular etiology . The method of ADA estimation is simple, cheap, does not require expensive equipment or elaborate laboratory arrangement except a simple colorimeter and takes only 2 hours. Present study

shows that highly sensitive and specific test like ADA estimation should be employed routinely to differentiate between tubercular and non tubercular etiology on the patients of pleural effusion.

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Conflict of Interest Statement: We certify that there is no conflict of interest.

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Ethical Clearance: The study was approved by ethical committee of Katihar Medical College, Katihar, Bihar.

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Effectiveness of Package for Behaviour Change of Mothers in Prevention of Diarrhoea in Children less than 2 Years of Age in a Resettlement Colony

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ABSTRACT

Diarrhea is a major health issue in developing countries with high morbidity and mortality rate among children below 2 years of age. Hygiene practices of mothers are associated with occurrence of diarrhea in children. We carried out an intervention to assess the effectiveness of behaviour change package on the prevention of diarrhoea in children ≤ 2 years of age. The sample was taken by stratified systemic random sampling technique. A total of 101 mothers, 50 in intervention group and 51 in control group were enrolled for study. In the intervention group mothers were educated on hygienic practices by using flash cards. In the subsequent 5 visits, mothers were reinforced about the hygiene and sanitation practices. These visits were also used to observe practices of mothers and recording diarrheal episodes among children. In the control group, after three months behavioural practices of mothers were observed and diarrheal episodes among children were recorded. Implementation using a package brought a significant improvement in mothers' practices related to hygiene and sanitation. Diarrhea was 4.3 times higher in control group as compared to intervention group. Behaviour change practices related to hygiene and sanitation of mothers is effective in prevention of acute diarrheal diseases among children below 2 years of age.

Keywords: Behaviour change practices, Diarrhea, Health education, Slums, Migrants

INTRODUCTION

Diarrhea remains a leading cause of mortality among young children in low and middle-income countries.¹ Out of 1.7 billion deaths among children below 5 years of age in low and middle income countries, 760,000 were due to diarrhoea. 'The medical causes of diarrhea are viral infections or bacterial infections, side effects of antibiotics, and infections not related to the gastrointestinal (GI) system that make diarrheal diseases major killer.^{2,3&4} Rotavirus infections are quite common causes for under 2 child deaths.⁵

Diarrhea in children has significant association

with type of housing, garbage disposal from the dwelling, source of water, sanitation, drainage and mothers' personal hygiene.⁶ As mothers are the primary care takers, they are responsible for care of children and maintenance of clean home environment. Interventions on hygiene practices to the care takers has broken the cycle of transmission of micro-organisms to children and reduced diarrhea cases.⁷ Hygiene and sanitation practices of mothers play a very important role in reduction of diarrhea because under 2 children are dependent on mother and the contact is almost 24x7 in most of the communities in India.⁸ Therefore, an intervention package for behaviour change practices of mothers to prevent diarrheal episodes in children below 2 years of age was carried in a small low income community.

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MATERIALS & METHODS

An intervention study was carried from July

to November, 2014 in a resettlement colony. It is situated in northwest of Chandigarh. The colony has 3003 houses and population of 18,000.⁹ Most of the residents in this colony are migrants from different states of India and from the neighbouring country like Nepal.

Sample was drawn using stratified systematic sampling. Using the two proportion formula the sample size (n) computed was 91. Houses of the colony were divided into 6 equal strata; 3 strata were randomly allocated to intervention and 3 to control group. From each stratum every 5th house was visited and mothers having children below 2 years were enrolled. Total of 101 mothers were enrolled for the study.

Ethical approval was taken from the institute ethics committee, PGIMER, Chandigarh. Tools and package were prepared and validated by experts in the field of nursing, community medicine and paediatrics. Tools include survey proforma to identify mothers, interview schedule and assessment proforma containing checklist for observing mothers behaviour regarding hygiene and sanitation practices. About 62 items were used in the checklist to measure the behaviour score of mother's on hygiene and sanitation practices. Each desirable behavioural practice of mother was given 1 score. Higher the score, favourable the mothers behaviour.

Package included pamphlet for mothers regarding hygiene & sanitation practices like hand washing, personal hygiene of mother and child, clean storage of drinking water, food hygiene and sanitation. Feasibility was established through pilot test of the package. At baseline, mothers in intervention and control group were interviewed and observed with the help of checklist and number of episodes of diarrhea among children was recorded. Thereafter, in the intervention group, intervention package for behaviour change related to hygiene and sanitation was used. Flip book was used for educating the mothers and pamphlet related to hygiene and sanitation practices was given to them for future reference. On the subsequent 5 visits i.e. on 2nd, 3rd, 5th, 8th and 12th week of first visit, reinforcement to the mothers on hygiene and sanitation practices was maintained. On each such visit, observations were recorded on observation checklist and number of

diarrhea episodes among children were recorded.

End line survey in both groups was carried after 3 months to record mothers' behaviour and number of episodes of diarrhea among children.

To assess the effect of package on change in hygiene and sanitation practices to prevent diarrhea among children scores were compared in intervention and control group and also in pre and post intervention period. The data collected was analyzed using the descriptive and inferential statistics.

RESULTS

The children of the participatory mothers were between the age range of 1-21 months with mean age 10.72±6.17 months in the intervention group and 10.76±5.98 months among control group. More than 40% children in both the groups were in the age group of ≤8 months. The male to female ratio was 60% and 40% respectively. Most of the families were Hindu in both the groups. About 50% of the families in both the groups were nuclear and more than one-third have family size of 6 members. Per capita income ranged from Rs. 500-6666/- with an average of Rs. 2755/ in intervention group and Rs.500-8000/- with an average of Rs.2953/ in the control group. Both the groups were found to be homogenous in nature as for all the socio demographic variables (P >0.05 as per χ^2 test).

Hand washing practices: Pre and post intervention assessment

Hand washing practices of mothers in intervention and control group during pre and post intervention assessment (Table 1). Behaviour change package for mothers had a positive effect on change in some of the variables of hand washing practices. In intervention group, 72% of mothers were practicing rubbing their hands together for 15-30 seconds in pre intervention assessment but after implementation of package in post intervention assessment, all the mothers started practicing rubbing their hands together for 15-30 seconds which shows a significant improvement in their behaviour (P value =0.003 as per χ^2 test). Mothers in intervention group had started paying attention to hidden areas of hands during hand washing i.e. between fingers, fingertips, thumbs and under nails. This indicates that mothers' in the intervention group have improved their practices

related to hand washing.

In the food and water storage hygiene practices in intervention group there was significant improvement in the practices of mothers like use of separate kitchen towel for cleaning the hands and wiping the kitchen counters, clean place of water storage and use of long handled utensil for pouring water from container during post intervention than the control group. Mothers have improved their behaviour regarding kitchen hygiene practices like clean kitchen floor, counters and gas stove, sink/ washbasin free from stains, clean kitchen doors and windows. Home hygiene practices of mothers' i.e regarding hygiene of rooms, toilet, bathroom and disposal of home waste were also observed. In intervention group there was significant change in the practice of mothers regarding bathroom hygiene and toilet cleaning like absence of blocked sink/washbasin, absence of bad odor in toilet area, toilet seat without stains and free from flies, use of separate toilet cleaning brush and clean doors and windows. Dustbin was covered by 88% of mothers in intervention group as compared to 30% during pre intervention period. Dustbins were not overfilled and no littering of waste was around the dustbin. There was no significant change in the home hygiene practices of mother in control group when pre and post intervention assessment was compared.

In intervention group there was significant improvement in behaviour of mothers regarding personal hygiene like 52% of the mothers give bath to child in pre intervention period while in post intervention period, 78% give it. Other variables like clean clothes of child, child's hair combed and cleaning of finger nails showed significant improvement in practices of mothers in intervention group after implementation of behaviour change package. There was no significant change in the practices of mother in control group when pre and post intervention assessment was compared.

Behaviour scores of mothers between pre intervention and subsequent post intervention assessments:

The impact of behaviour change package on behavioural scores of mothers in intervention group between pre intervention assessment to subsequent post intervention assessment i.e. in visit 2, 3 4, 5, and

visit 6 (Table 2). The behavioural change package showed a positive effect on change in mother's behaviour as there was statistically significant improvement in the scores of mothers regarding hygiene from pre intervention assessment to post intervention assessment in intervention group after each subsequent visit (P value <0.01 as per Wilcoxon test).

Behaviour change package on scores of mothers before and after intervention

In intervention group, the median behaviour score of mothers related to hygiene and sanitation practices in pre intervention assessment was 47(44.0-51.0) while after intervention it increased to 51(46.0-52.0). In control group, the score was 48(43.0-50.0) in pre intervention assessment and it was almost same during post intervention assessment (Table 3). Pre intervention assessment score was almost similar in both groups (P value = 0.086 as per Mann Whitney test). After implementing the package the behavior score in intervention group increased significantly (P value <0.05 as per Wilcoxon signed rank test) as compared to control group.

Impact of behaviour change package on episodes of diarrhea in children

In intervention group, episodes of diarrhea reduced significantly from 90% to 52%, in control group decline was from 88.7% to 83.2% only. Post intervention prevalence of diarrhea was 4.3 times higher in control group as compared to intervention group (non-adjusted odds ratio). After controlling the confounding variables the prevalence of diarrhea was 3.9 times higher in control group as compared to intervention group (adjusted odds ratio).

DISCUSSION

A high rate of morbidity and mortality in children below 2 years is caused by diarrhea which is related to hygiene practices of mothers as they are the primary care givers. The association of mothers' practices like hand washing, food hygiene including breast feeding, safe drinking water, personal and child hygiene, sanitation and waste disposal in the prevention of diarrhea in children.¹⁰ The implementation of behaviour change package for mothers related to hygiene and sanitation showed improvement

in behaviour of mothers related to hygiene and sanitation which lead to decrease in episodes of diarrhea among children below 2 years of age.

In a community setting, there are variations in the hygiene practices. These hygiene practices are influenced by their place of residence e.g. rural, urban, slums and their religion, caste, income, occupation and education level. The hygiene practices of mothers which lead to frequent occurrence of episodes of diarrhea has been studied in a low income colony of Chandigarh.

The study strengthens that to change the behaviour reinforcement and motivation is important.^{11,12} Change in practices could be brought through demonstration. Pamphlets were given to mothers for future reference and clarifying any doubts. After implementation of package, subsequent 5 visits were made at 2nd, 3rd, 5th, 8th and 12th week of first visit for reinforcement. They were visited subsequently as any behaviour once developed is not easy to change and maintain within a short period of time without motivation. They were motivated and reinforced to adapt hygiene practices.

Educational intervention for altering the behaviour of caregivers have been useful in other settings; hygiene, sanitation, water treatment,

and home treatment behaviours provide the first line of defence against childhood diarrhea.¹³ After implementation of behaviour change package for mothers an improvement in all aspects of hygiene practices like personal hygiene, hand washing, food and water hygiene, kitchen hygiene and home hygiene including cleanliness of rooms, bathroom and toilet and disposal of home waste was observed.

Interventions on hygiene break the cycle of transmission of micro-organisms and are effective in reducing diarrhea cases. Each aspect of hygiene has different impact on the prevalence of diarrhea. Reduction in diarrheal episode with different interventions e.g. hand washing with soap reduces (44%), use of safe water (39%), sanitation (32%), and hygiene education (28%), water supply (25%) and source water treatment (11%).⁷ Effect of hand hygiene i.e. hand washing with soap had been observed and it resulted in reduction of diarrheal incidence by 42-47%.¹¹ Hygiene interventions lower prevalence of diarrhea in children.¹⁴

The important evidence from this study is that community health workers can change the behaviours to reduce childhood mortality. Policy and programme for prevention of diarrhea among children need to consider evidence based health education interventions.

Table 1: Comparison of hand washing practices during pre and post intervention N-101

S.no	Variables	Intervention group (n ₁ -50)			Control group (n ₂ -51)		
		Pre intervention assessment n ₁ (%)	Post intervention assessment n ₁ (%)	χ ² (df) P value	Pre intervention assessment n ₂ (%)	Post intervention assessment n ₂ (%)	χ ² (df) P value
Hand washing observation							
1	Wet hands under running water	50 (100.0)	50 (100.0)	--	51 (100.0)	51 (100.0)	--
2	Apply soap/ sanitizer	31 (62.0)	50 (100.0)	2.420(1) 0.119	37 (72.5)	38 (74.5)	46.11(1) 1.000
3	Rubs hands together for 15-30 seconds	36 (72.0)	50 (100.0)	8.820(1) 0.003	42 (82.3)	42 (82.3)	51.0(1) 1.000

Cont... Table 1: Comparison of hand washing practices during pre and post intervention N-101

Areas covered during hand washing							
4	Palms	50 (100.0)	50 (100.0)	--	51 (100.0)	51 (100.0)	--
5	Between fingers	33 (66.0)	50 (100.0)	4.500(1) 0.033	35 (68.6)	34 (66.6)	51.0(1) 1.000
6	Fingertips	15 (30.0)	49 (98.0)	0.437(1) <0.001	16 (31.3)	17 (33.3)	47.152(1) 1.000
7	Thumbs	8 (16.0)	25 (50.0)	0.347(1) 0.248	7 (13.7)	8 (15.6)	51.0(1) 1.000
8	Backside of hands	50 (100.0)	50 (100.0)	--	51 (100.0)	51 (100.0)	--
9	Under nails	12 (11.8)	40 (80.0)	3.947(1) <0.001	9 (17.6)	10 (19.6)	44.807(1) 1.000
10	Wash hands under running water	50 (49.0)	50 (100.0)	--	51 (100.0)	51 (100.0)	--
11	Dried hands using a clean cloth or towel	27 (26.5)	46 (92.0)	5.104(1) <0.001	44 (86.2)	40 (78.4)	51.0(1) 1.000

*McNemar P value

Table 2: Impact of behaviour change package on behavioural scores of mothers between pre intervention assessment and subsequent post intervention assessment n₁-50

Assessment	Med(IQR)	Z score#, P value
Pre intervention assessment (Visit 1)		
Post Visit 2	50 (46-52)	-2.94, 0.003
Intervention Visit 3	53 (50-55)	-5.21, <0.001
Assessment Visit 4	54(50-56)	-4.81, <0.001
Visit 5	52(47-54)	-3.81, <0.001
Visit 6	51(46-52)	-2.83, 0.005
Post intervention assessment (Visit 2)		
Post Visit 3	53 (50-55)	-3.96, <0.001
Intervention Visit 4	54(50-56)	-4.69, <0.001
Assessment Visit 5	52(47-54)	-2.66, 0.008
Visit 6	51(46-52)	-0.33,0.742
Post intervention assessment (Visit 3)		
Post Visit 4	54(50-56)	-1.17, 0.239
Intervention Visit 5	52(47-54)	-1.61, 0.107
Assessment Visit 6	51(46-52)	-3.424,0.001
Post intervention assessment (Visit 4)		
Post Visit 5	52(47-54)	-6.39,<0.001
Intervention Visit 6	51(46-52)	-6.27,<0.001
Assessment		
Post intervention assessment (Visit 5)		
Post intervention assessment Visit 6	51(46-52)	-6.04,<0.001

15. #Wilcoxon Test is applied

Max. Attainable score-62

Table 3: Behavioural change scores of mothers before and after intervention N-101

Period of assessment	Intervention group (n ₁ -50) Median score (IQR)	Control group (n ₂ -51) Median score (IQR)	Mann –Whitney P value
Pre intervention assessment	47.0(44.0-51.0)	48.0(43.0-51.0)	0.086
Post intervention assessment	51.0(46.0-52.0)	48.0(43.0-50.0)	<0.001
Wilcoxon signed rank test (P value)	0.05	0.065	

*Inter quartile range

Max. Attainable score-62

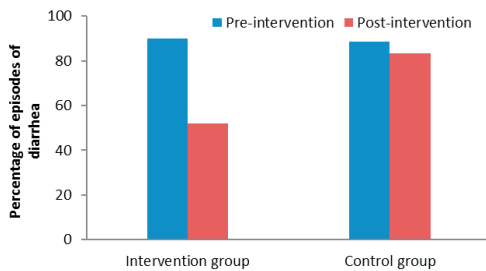


Figure 1:- Impact of behaviour change package on episodes of diarrhea among children: Pre and post intervention period

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Assessment of the Lifestyle Related Risk Factors for Cardiovascular Diseases among Adolescents

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ABSTRACT

A study to assess the lifestyle related risk factors for cardiovascular diseases among adolescents' in selected schools, Kochi. **Objectives of the Study:** (1) Identify the presence of lifestyle related risk factors for cardiovascular diseases among adolescents (2) Assess selected anthropometric (height, weight and Body Mass Index) and physiological (Blood Pressure) parameters of adolescent children (3) Associate Body Mass Index and Blood Pressure with lifestyle related risk factors for cardiovascular diseases among adolescents. (4) Associate the existing lifestyle related risk factors with selected demographic variables. **Methodology & Design:** Design was descriptive survey design. Multi staged sampling technique was used in this study. Tool developed for the study was a rating scale, checklist and a physical proforma documentation chart. Consent was obtained from parents and children. **Results:** Among 280 subjects 70.4 % of the subjects have normal systolic blood pressure and 16.4 % have pre-hypertension and 13.2 % have hypertension. Among 280 subjects 67.9 % of the subjects have normal diastolic blood pressure and 23.9 % have pre-hypertension and 8.2 % have hypertension. Out of 280 subjects 12.1% were underweight, 58.2% were belongs to normal weight, 23.2% were overweight and 6.4% were obese children. There is an association between family history of death due to heart disease with lifestyle related risk factors ($p=0.024$). The result shows that among 280 subjects, about 8.6% are at mild risk and 91.4% are at moderate risk for developing cardiovascular diseases in future. **Conclusion:** Identifying at-risk children and adolescents is the first step in modifying or preventing lifestyle related risk factors.

Keywords: life style, risk factors, hypertension, multistage sampling, coronary heart disease(CHD), systolic blood pressure (SBP), diastolic blood pressure(DBP)

INTRODUCTION

In the modern world, prevalence of non-communicable diseases increases day by day and cardiovascular diseases have a major share among them. Non communicable diseases like cardiovascular diseases like CHD and atherosclerosis are common in adults but it originates from the period of adolescents.

Researchers have found certain factors that play an important role in developing heart disease. These are called risk factors. Some risk factors can be changed, treated, or modified, and some cannot. Most of the risk factors that affect children can be controlled early in life, which lowers the risk for heart disease later in life.

Children and teens can lower their risk of getting heart disease by changing or controlling the risk factors that can lead to heart disease later in life. The major faulty lifestyle related cardiovascular risk factors are physical inactivity, substance abuse, consumption of alcohol, excessive time spending in front of television and computers, increased dependency of computer games and indoor games, lack of sports activity, tobacco use, fast food intake, lack of exercises, smoking, food high in cholesterol, stress, familial history which leads to cardiovascular diseases like hypertension, obesity, hypercholestremia, atherosclerosis, coronary Heart Diseases.

A study conducted in London showed that showed that the natural progression of coronary

heart disease is probably the consequence of gradually increasing atherosclerosis during adolescence and early adulthood.¹

Children with more body fat and less endurance have stiffer arteries at a very young age. Children with a greater body mass index, more body fat and less endurance had stiffer central arteries compared to leaner and fitter children. Identifying these children early could hasten preventive measures.²

Therefore, trying to detect the presence of risk factors early in adolescents enables the planning and implementation of preventive intervention programmes targeted at reducing the likelihood of manifestation of cardiovascular disease in adulthood.

Research approach: quantitative approach

Research design: descriptive design.

Research setting

The settings selected for the study were three schools at Kochi (confidential).

Population: Population of the study was adolescent children from three selected schools.

Target population: Target population of the study was adolescent children studying in all schools in Kochi.

Accessible population: Accessible population of the study was Adolescent children from three selected schools of Kochi.

Sample and sample size: The study was done on adolescent children studying in 8th, 9th, 10th, plus one and plus two standards in selected schools. The sample size was taken as 280 adolescent children.

Sampling technique

Multi staged sampling techniques were used in the present study.

- Convenience sampling was used for selecting three schools in Kochi

- Simple random sampling for selecting 8th, 9th, 10th, plus one and plus two divisions from the three selected schools by using lottery method to select the

divisions.

- Subjects were selected from each division by total enumeration method.

Sample selection criteria

Inclusion criteria

- Children who are in the age group between 13 to 18years from selected schools
- Adolescents' who are present at the time of data collection.

Exclusion criteria

- Adolescents' who are already a known case of cardio vascular disease.
- Adolescents' who are suffering from asthma.
- Adolescents' who are taking steroid drugs.

Data collection instruments

The study instrument consist of two parts

Part 1 has two sections,

- *Section A* to be completed by the parents which includes parental consent and questionnaire on socio-demographic details.

- *Section B* includes an assent and a three point risk assessment rating scale and a checklist for assessing the lifestyle related risk factors for cardiovascular diseases in adolescent children

Risk assessment rating scale

It has 20 statements includes seven positive lifestyle statements which reduces the cardiovascular risk and 13 negative lifestyle statements which increases the risk for developing cardiovascular diseases which is based on 4 lifestyle includes eating habits, physical activity, sleep and tension recommended by Global Based Student Health Survey (GSHS) questionnaire³ developed by WHO and CDC standards⁴ and Metropolitan Leeds University Lifestyle questionnaire. **So the total score** will be, as the score increase the severity of risk also increases.

Table 1: Scoring criteria for risk status

Score	Risk status
28-40	Severe risk for developing cardiovascular diseases
14-27	Moderate risk for developing cardiovascular diseases
0-13	Mild risk for developing cardiovascular diseases

Checklist: Checklist consists of five closed ended statements regarding tobacco use, alcoholism and drugs to assess the bad habits of adolescents. It has no scoring system.

Part 2 consist of a Physical Pro forma for documenting height, weight, blood pressure and Body Mass Index (BMI).

Biophysiological instruments

- Height is measured with White cow inch tape.
- Weight is measured by calibrated weighing scale, Venus BS 927.
- Blood pressure is checked with calibrated Mercurial Sphygmomanometer, Elko Deluxe 300 CM/L 0983369 (Serial No. 335830). Standardized blood pressure value has been given by National Heart Lung and Blood Institute⁵, NHLBI and standardized BMI value has taken on the basis of World Health Organization and Centre for Disease Control standards⁶. Both BP and BMI is calculated on the basis of percentile which is calculated on the basis of an electronic software Medcal 3000 developed by NHLBI and WHO, CDC respectively.

Table 2: Blood Pressure of adolescent children based on the height and weight according to NHLBI, US task force, U.S Department of Health and Human Services

Percentile Distribution	BP classification
Percentile < 90:	Normal Systolic Blood Pressure
Percentile >= 90 and < 95:	Pre hypertensive Systolic Blood Pressure
Percentile >= 95:	Hypertensive Systolic Blood Pressure

Table 3: Body Mass Index of adolescent children based on the height and weight according to CDC standards

Weight Status Category	Percentile Range
Underweight	Less than the 5th percentile
Healthy weight	5th percentile to less than the 85th percentile
Overweight	85th to less than the 95th percentile
Obese	Equal to or greater than the 95th percentile

Content validity

It has been done by five nursing experts from Department of Child Health Nursing and two doctors from Department of Paediatric Cardiology. Content Validity Index (CVI) is 0.9.

Reliability of the tool

Test -retest method used for checking the reliability of the tool. The reliability has found out by correlation

coefficient and it was 0.8.

Ethical consideration

Approvals were obtained from the Research Committee of Amrita College of Nursing, Thesis Review Committee, Amrita Institute of Medical Sciences, Kochi and authorities of all three selected schools. Informed consent and assent were obtained from parents and children respectively prior to the data collection.

Pilot study: Pilot study was conducted in 25 subjects before doing the actual study.

Procedure for data collection

The duration of data collection was 4 weeks. Socio-demographic data and consent were sent to parents through their children. After receiving the signed consent from parents, assent was obtained from each child and risk assessment rating scale and checklist were administered to children. On the other hand BP, height, weight and BMI were assessed.

RESULTS

Socio demographic data

- The mean age of the adolescents is 15.5 with the range between 13 to 18 years.
- Majority of the children are non vegetarians (88.2 %).
- Out of 280 families, 42 have the disease of hypertension among the family members, and 39 have the history of heart diseases and 11 deaths have been identified due to heart diseases.

Risk assessment

Eating habits among adolescents

- Majority of the children take fruits i.e. 80%, one to four days in a week and only 15.7% of the subjects eat fruits everyday in a week. Around 30.7% of the subjects take more than one cup of tea everyday and 29.6 % subjects take coffee one to four days in a week and remaining 39.6 % never have the habit of taking coffee.
- 63.9 % of subjects take carbonated and sweetened beverages one to four days in a week and

only 5 % of children have the habit of drinking soft drinks/carbonates drinks. And 34.3 % of children never have the habit of drinking beverages.

- 77.1 % of the adolescent children take fried food items from fast food centers and bakeries for one to four days in a week. And surprisingly 19.3 % of children take fast foods daily and 3.6 % of children never have the habit of taking food from fast food centers and bakeries.

- About 5.7 % of students have the habit of taking ice creams, pastries and milk shakes daily. But most of the days in a week, around 84.3 % take ice creams from one to four days. 25.4 % of the students use salted food items in their diet daily and 61.8% uses one to four days in a week. Around 60.4 % consume cholesterol rich foods like prawn, shrimp etc one to four days in a week whereas 8.2 % consume daily.

- Omega three fatty acid rich fish consumption can be seen among 24.6 % of the adolescent children daily and 47.5 % of consumption can be notified among children in one to four days in a week and 27.9 % never take fishes rich in omega 3 fatty acids in a week. .

- Among 280 subjects 63.2 % take fatty foods like ghee, butter, cheese, milk maid, yoghurt one to four days in a week. Thirty six percentages of subjects have the habit of taking fatty foods daily and 44.3 % subjects never have the habit of taking fatty foods.

Physical activities

- Around 38.6 % of the subject do aerobic exercises like running, walking dancing, playing football, volleyball, cricket, basketball and swimming 60 minutes daily: 47.1 % are moderately active in doing aerobic exercises one to four days in a week and 14.3 % never have the habit of doing daily exercises.

Bad habits

- Bad habit of taking snacks while watching television can be identified among 39.3 % children more days in a week and 46.4 % do it one to four days in a week.
- Majority of students 53.6 % have the habit of watching television more than one hour daily and 30.4 % watch television more than one hour one

to four days in a week. Again 15.7 % children use computer daily more than one hour and 38.9 % watch and use computer sometimes in a week i.e. one to four days in a week

- Only 5 % subjects have the habit of smoking and chewing tobacco. Percentage of victims of passive smoking was 6.1% and that of alcoholism was 5.7 %. None of them were having the habit of using any illicit drugs.

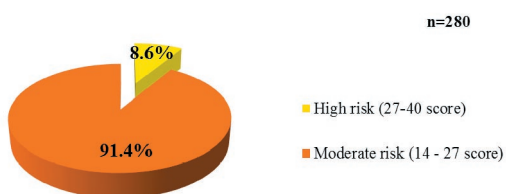


Figure 1: Level of risk for developing cardiovascular diseases among adolescent children

Figure 1 depicts that among 280 subjects, about 8.6% (24) are at mild risk to develop cardiovascular diseases in future and remaining 91.4% (256) are at moderate risk for developing cardiovascular diseases in future as per the estimated score.

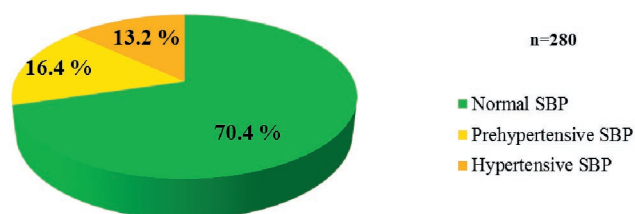


Figure 2: Distribution of systolic blood pressure (SBP) among adolescent children

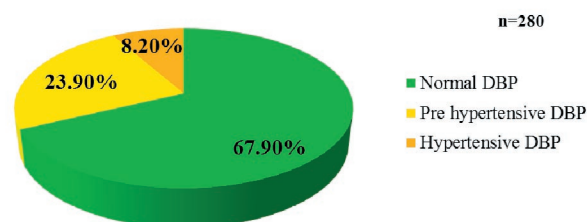


Figure 3: Distribution of diastolic blood pressure (DBP) among adolescent children

Figure 2 and 3 depicts that among 280 subjects 70.4% of the subjects have normal systolic BP and 16.4% have pre hypertension and 13.2% have hypertension. Among 280 subjects 67.9% of the subjects have normal diastolic BP and 23.9 % have pre hypertension and 8.2% have hypertension. Out of 280 subjects 12.1% are underweight, 58.2 % belongs to normal weight, 23.2 % are overweight and 6.4 % are obese.

Table 4: Association of family history of death due to heart disease with lifestyle related risk factors
n=280

Level of risk	History of death due to heart disease in family				χ^2	df
	Have death		Not have death			
	f	%	f	%		
High risk	3	1.1	21	7.5	5.110*	1
Moderate risk	8	2.8	248	88.6		
Total	11	3.9	269	96.1		

Table value =3.8, $p \leq 0.05$ *significant at 0.05 level

The data presented in the table 1 shows that chi square value calculated (5.110) is greater than table value (3.814); therefore there is a significant association between familial death due to heart disease and lifestyle related risk factors ($p=0.024$).

CONCLUSION

Physical inactivity, improper nutrition, bad habits like alcoholism and smoking in adolescence

may contribute to the development of cardiovascular disease in later adulthood. Identifying at-risk children and adolescents is the first step in modifying or preventing these risk factors. Intervention is most effectively accomplished with an integrated family-oriented approach.

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Conflicts of Interest : I hereby declare that, we do not want to disclose the name of the schools used in this study and keep the names are confidential. And i certify that no funding has been received for the conduct of this study or preparation of this manuscript. And, there are no other conflicts.

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Prevalence of Lymphatic Filariasis and Economic Impact of Chronic Forms of the Disease in a Group of Weavers in the Godavari Districts of Andhra Pradesh

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ABSTRACT

A case-control study was conducted during July–December 2012 to know the prevalence of Lymphatic Filariasis (LF) and economic impact of chronic forms of LF in a group of weavers above 18 years of age from six endemic villages in Godavari districts of Andhra Pradesh, India. There was a high disease rate of 6.8 percent with a very low 0.3 per cent microfilaria rate (mf rate) in the weaver community of East Godavari district. An opposite finding was observed in West Godavari district with a relatively low disease rate of 2.8 % and high mf rate of 2.5 %. The limitation of this finding is that it cannot be applied to the general population as the subjects comprised of only adults above 18 years of age. Nevertheless, high mf rate in West Godavari district even in adults does not auger well with proper implementation of Mass Drug Administration (MDA) in the district where 9 rounds of MDA have already been administered. It was found that on an average, a person suffering from filariasis earned 75-78% less than healthy persons towards weaving. Mostly patients could not do demanding work like weaving and preferred to do light tasks, such as spinning, starching, dyeing etc. Even for such light work, a person suffering from chronic LF earned 40% less than healthy persons. Patients suffering from stage 3 lymphedema (Elephantiasis) were not doing any weaving work and therefore they had no income from weaving. The study implied that LF posed considerable economic burden on the patient and his family.

Keywords: *Lymphatic Filariasis, Lymphedema, Weavers, Endemicity, Microfilaria, MDA,*

INTRODUCTION

Lymphatic filariasis is the world's second leading cause of long-term disability. The current estimate reveals that 120 million people in 83 countries of the world are infected with LF parasites and more than 20% of the world's population is at risk of acquiring infection. In India, it is estimated that 554.2 million people are at risk of LF infection in 243 districts¹. According to the World Health Organization,

over 40 million people are severely disfigured and disabled by filariasis and it has been estimated that approximately 5 million Disability Adjusted Life Years (DALYs) are lost annually. Lymphatic filariasis is a major impediment to socioeconomic development and cause and effect of poverty. In order to achieve the goal of Elimination of Lymphatic Filariasis (ELF) in India by 2015, National Filaria Day is being observed every year starting from 2004 in the endemic districts. Control or Elimination of Lymphatic Filariasis using an annual mass drug administration (MDA) is one of the cheapest and the most beneficial disease control strategy in the annals of public-health history¹.

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Data on socio-economic loss because of the disease is necessary to accord appropriate priority to its control. Although research has demonstrated

that LF causes a considerable economic burden^{2,3,4,5}, information on the impact of the disease on the ability to work and quality of work is very scanty. To prioritize the LF elimination programme, all endemic communities should know the loss because of the disease, and policy makers and programmers should also be aware of the magnitude of the loss caused by LF. Hence, the present study was aimed at studying the prevalence of LF and economic impact of chronic forms of LF on a group of weavers from six endemic villages in Godavari districts of Andhra Pradesh, India.

MATERIALS AND METHOD

This was a case-control study carried out over a period of 6 months from July to December 2012 with 33 patients (19 male + 14 female) above 18 years of age (Usual age for weaving work) selected from a group of weavers in six randomly selected weaver community dominated villages; 3 each in East and West Godavari districts in Andhra Pradesh. An equal number of corresponding age- and sex-matched controls were carefully selected from the same villages comprising of persons with no history of either acute or chronic filariasis. The study population comprised of weavers who were dependant on hand looms only and not power looms.

To identify the aforementioned cases and controls, it was decided to find out the filarial endemicity in the study population through a survey. For this, peripheral blood from all the available 677 persons (376 male + 301 female) above 18 years of age in the 6 study villages was drawn on clear glass slides by finger prick method in the night. Slides were brought to laboratory, numbered, dried, de-haemoglobinised, fixed and stained in Giemsa stain. The stained slides were examined under microscope for the presence of microfilaria. Simultaneous with blood smear

collection, these villagers were examined for the presence of filarial disease manifestations. All those (33) who were having chronic disease manifestations were included in the study because all of them fulfilled the inclusion criterion of using hand looms only and not power looms,

Data on socio-demographic and weaving activities were collected from both patients and controls. For analysis, only weaving-related activities such as spinning, starching, dyeing, sizing and weaving were considered as weaving work. The details of various activities of weaving and impact of the disease were obtained through informal discussions, as well as by observation. These data were then manually analyzed.

RESULTS AND DISCUSSION

The weaver community in the villages works under the aegis of a co-operative society. One co-operative society caters to the need of 5 to 10 weaver villages. The co-operative society pays labor charges to the families depending on the quality of the sari they weave. Raw materials are provided to the families by the co-operative societies. Economically, most of the families fall under below poverty line. It was revealed that almost 50 percent of the community had left the profession in both Godavari districts due to poor income and are presently engaged as Agricultural laborers. A weaver from East Godavari District suffering from stage 3 lymphedema (Elephantiasis) in lower limb said that he was unable to do any weaving work using spindle of thread as he could not move his body freely sitting on the loom. Those suffering from stage 1 and 2 were also restricting themselves due to the problem. Families of most of the respondents were of nuclear type and all the respondents lived in electrified houses.

Table 1. Characteristics of patients:

Characteristics	East Godavari	West Godavari	Total
Population surveyed	354	323	677
Persons with disease	24	9	33
Disease rate (%)	6.8	2.8	4.9
mf rate (%)	0.3	2.5	1.4
Endemicity rate	7.1	5.3	6.3
Manifestations (<i>Lymphedema</i>):			
Lower limb stage 1	20	7	27
Lower limb stage 2	2	1	3
Lower limb stage 3	1	1	2
Scrotal	1	0	1

Out of 33 patients in both the districts, 19 were males and 14 females. The control group comprised of an equal 19 males and 14 females. The age range of patients was 21 to 56 (Median: 44) and that of control was 20 to 57 (Median: 43). It may be seen from the table 1 that there was a high disease rate of 6.8 percent with a very low 0.3 per cent mf rate in the weaver community of East Godavari district. An opposite finding was observed in West Godavari district with a relatively low disease rate of 2.8 % and high mf rate of 2.5 %. The limitation of this finding is that it cannot be applied to the general population as the subjects were only adults above 18 years of age. Nevertheless, high mf rate in West Godavari district even in adults does not auger well with proper implementation of MDA in the district where 9 rounds of MDA have already been administered. Amongst clinical manifestations, majority had lymphedema of the lower limbs in stage 1. Only one person had scrotal manifestation in East Godavari district.

Table 2. Impact on work:

District	Respondent	Persons required to weave one sari / days required			Income / sari (Rs)			Loss of income (Rs) / Loss of man days			
		S	M	O	S	M	O	S	M	O	O
East Godavari	Control	3/18	2/15	2/10	2700	1300	775				
	Patients	-	-	2/12	-	-	775	2700	1300	0	/ 2days
West Godavari	Control			2/8			800				
	Patients			2/10	-		800				/ 2days

S: superior quality of sari

M: medium Quality

O: ordinary sari

The details of weaving work among patients and controls are shown in Table 2. It may be seen that in East Godavari district, for normal weavers in the control group, 3 persons were required to weave one superior quality of sari in 18 days whilst 2 persons were required to weave one medium quality

in 15 days and 2 persons could weave one ordinary sari in 10 days. The weavers were paid Rs.2700 for one superior quality of sari, Rs.1300 for a medium quality and Rs.775 for an ordinary sari. For a whole year, each family was allotted about 8 saris each from the 3 different categories of saris by the cooperative

societies for weaving. On the other hand, saris of ordinary variety only were woven by the patients for which, 2 persons took 12 days to weave one sari. Thus there was a loss of 2 man days per sari when compared with control group. The patients did not weave the superior and medium quality of saris and thus their income was seriously hampered. Patients suffering from stage 3 lymphedema (Elephantiasis) in both the districts were not doing any weaving work and therefore they had no income from weaving. On an average, a weaver from the control group earned between Rs. 8000 to 9000 per month for weaving all the 3 categories of sari where as a patient earned between Rs.1900 to 2000 towards weaving of only ordinary sari. Thus, the patients suffering from LF in East Godavari district earned 75 - 78% less than healthy persons towards weaving. In West Godavari district, superior and medium quality of sari were not woven in any of the 3 study villages and only 6 saris of ordinary variety were given for weaving to both healthy weavers and patients. Two persons from the control group of healthy weavers took 8 days to weave one ordinary sari where as 2 patients took 10 days to weave one sari. Thus there was a loss of 2 man days when compared with the control group. For one ordinary sari, Rs.800 was paid towards weaving in the district.

With regard to quality of productive work, mostly patients found it difficult to do demanding work like weaving and preferred to do light tasks, such as spinning, starching, dyeing etc. For such accessory work, a healthy person earned Rs.50 per day where as a filarial patient Rs.30 a day. Thus, even for light work, a person suffering from LF earned 40% less than healthy persons. Thus, the study implied that chronic LF posed considerable economic burden on the patient and his family.

Ramu *et al.* (1996) reported that, in Tamil Nadu, weavers' productivity dropped by approximately 27%, in terms of quantity of production. They had found that each chronic patient was losing 0.66 productive hours per day corresponding to 29 days of work in a year. In another study³, it was found that majority of chronic LF patients suffered from episodic lymphangitis. These lymphangitis episodes also caused total absenteeism from work and shorter work time than the healthy people. In yet another study by Babu *et al* 2006; in an endemic village in

East Godavari district it was found that most cases could not weave, which is physically demanding, and preferred less strenuous tasks such as spinning, starching, dyeing or sizing. As income also depended on the type of work, cases earned less. This is in concordance with the findings of our present study.

CONCLUSION

A high mf rate of 2.5% in the adult population of West Godavari district reflected adversely on proper implementation of MDA in the district where 9 rounds of MDA have already been administered. There is a need to review and streamline future MDA activities in West Godavari district with a view to achieve effective interruption of LF transmission.

It was found that on an average, a person suffering from LF earned 75-78% less than healthy persons towards weaving. Mostly patients could not do demanding work like weaving and preferred to do light tasks, such as spinning, starching, dyeing etc. Even for such light work, a person suffering from LF earned 40% less than healthy persons. Patients suffering from stage 3 lymphedema (Elephantiasis) in both the districts were not doing any weaving work and therefore they had no income from weaving. The study implied that chronic LF posed considerable economic burden on the patient and his family. As mentioned elsewhere, almost 50 percent of the community have left the profession in both Godavari districts due to poor income and are presently engaged as Agricultural laborers. There is a need to study in depth the problems faced by this particular occupational group and extend appropriate social security measures which will inspire them to keep this traditional art alive and thriving.

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Ethical Clearance: was obtained from the Institutional ethical committee.

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Breastfeeding Practices, Technique and Advantages: Knowledge among Female Medical Students of Ayurvedic College of Rural Setting in Haryana

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ABSTRACT

Breast milk is an appropriate source of infant nutrition. It is the ideal food for the healthy growth and development of infant. It provides health, immunological, social, psychological and economic benefits to infants and their mothers. So promotion of breastfeeding is justified on firm scientific grounds. There has been a decline in the practice of breastfeeding. The training and sensitization of health care professionals play a vital role in the support and promotion of breastfeeding.

Objective: To assess knowledge about practices, techniques and advantages of breastfeeding among medical students.

Methodology:

Study design: cross-sectional, descriptive

Settings: MSM Ayurvedic College for Women KhanpurKalanSonapat

Study participants: 128 female Ayurvedic medical students

Study tool: pretested, self-administered questionnaire

Study analysis: percentages and proportions

Results: Mean age of study participants was 20.42 ± 1.698 . Breastfeeding should be started immediately after birth in case of normal delivery was answered by 58 (45.3%) study participants. Mother's first milk should be given just after birth was answered by 120 (93.8%) study participants while 8 (6.2%) students replied "Ghutti and others". Knowledge regarding frequency of breastfeeding in 24 hours, only 14 (10.9%) medical students answered it "on demand". 22 (17.2%) medical students had correct knowledge about all signs of good attachment while 102 (79.6%) participants answered it partially correct.

Conclusion: The results highlight a need to reinforce the advantages and importance of breastfeeding to medical graduates so that they can utilize this knowledge to promote and support breastfeeding in the community.

Keywords: advantages, technique, Ayurvedic medical students.

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INTRODUCTION

Breastfeeding is the first fundamental right of the child¹. World Health Organization (WHO) recommends that children should be exclusively breastfed during the first 6 months of life as breast milk alone is sufficient to meet the nutritional

requirements of children till that age². Breastfeeding is an unequalled way of providing ideal food for the healthy growth and development of infant and has a unique biological and emotional influence in the health of both mother and child. So promotion of breastfeeding is justified on firm scientific grounds³. Infant mortality rate in developing countries is 5-10 times more among children who have not been breastfed or who have been breastfed for less than 6 months⁴. Promotion of breastfeeding alone contributes to an 11.6% reduction in IMR according to Lancet series of 2008⁵.

Benefits of breastfeeding are not just restricted to children; it protects the mother from developing ovarian and premenopausal breast cancers. It also reduces the risk of postpartum bleeding and osteoporosis. Hence Breast-feeding indirectly promotes improved maternal and child health by providing immunological protection and lengthening birth intervals^{6,7}.

Various studies reported that health care workers are the most important source of dispersal of information about breastfeeding to the mothers⁸. The health workers had a positive attitude towards breastfeeding but their knowledge was inadequate as per the studies conducted in many developing countries^{10, 11, 12 and 13}. Ayurvedic female medical students would be the future doctors who will serve the community. Hence their awareness about breastfeeding practices and technique would be beneficial for motivating the mothers to adopt healthy practices. No study has been found in literature discussing the knowledge about breastfeeding among Ayurvedic medical students. A few studies about

breastfeeding have been reported among allopathic medical students though many studies have been found amongst mothers.

Aims and objective: To assess knowledge about practices, techniques and advantages of breastfeeding among Ayurvedic medical students.

MATERIAL & METHODS

A cross sectional study was conducted during “breastfeeding week celebration 2014” in MSM Ayurvedic College for Women Khanpur Kalan Sonapat. A pretested self-administered questionnaire was used to assess the knowledge of 128 female medical students. This questionnaire consisted of 12 questions about breastfeeding technique, practices and advantages.

Written permission was taken from Principal of Ayurvedic medical college for conducting this study. Well informed written consent was taken from the study subjects. The participants who were not willing to participate were excluded from the study.

Data analysis: The data collected was entered in Microsoft excel software 2010 and analyzed using statistical package SPSS Chicago version 16.0. Analysis was done using percentages and proportions.

FINDINGS

This cross-sectional study was carried out among 128 female medical students belonging to Ayurvedic stream. Mean age of study participants was 20.42 ± 1.698. 122 study subjects were unmarried whereas six were married.

Table-1: Knowledge regarding breastfeeding practices among study participants (n=128)

Variable	Study participants N (%)	
When should breastfeeding be started after normal delivery?	Immediately after birth	58 (45.3)
	After one hour	60 (46.9)
	Don't know	10 (7.8)
When should breastfeeding be started after caesarean section?	As early as possible	64 (50)
	After one hour	10 (7.8)
	After 4 hours	26 (20.4)
	After one week	14 (10.9)
	Don't know	14 (10.9)

Cont... Table-1: Knowledge regarding breastfeeding practices among study participants (n=128)

What should be given just after birth?	Mother's first milk (Colostrum)	120 (93.8)
	Ghutti and others	8 (6.2)
What should be the frequency of breastfeeding in 24 hrs?	On demand	14 (10.9)
	At least 8 times	52 (40.6)
	More than 8 times	44 (34.4)
	Don't know	18 (14.1)
Should anything from outside be given in first 6 months?	Yes	10 (7.8)
	No	118 (92.2)
IQ would be more in	Only breastfed babies	122 (95.3)
	No difference and others	6 (4.7)
Should breastfeed be continued in sick infants?	Yes	120 (93.8)
	No	8 (6.2)

Table-2: Perception of study participants regarding 'causes of bad attachment to breast' among mothers (N=128)

Variable	Study participants N (%)
Feeding from bottle	20 (15.7)
Lack of awareness among mother	10 (7.8)
Lack of support and motivation to mother	14 (10.9)
All of the above	84 (65.6)

Table-3: Knowledge regarding signs of good attachment to breast (N=128)

Variable	Study participants N (%)
Chin touching the breast and mouth wide open	40 (31.2)
Mouth wide open and lower lip turned outward	8 (6.2)
Lower lip turned outward and more areola visible on upper side	54 (42.2)
All of the above	22 (17.2)
Don't know	4 (3.1)
Total	128 (100.0)

Discussion: This study assessed knowledge about practices, techniques and advantages of breastfeeding among medical students of Ayurvedic College of a rural area. It was observed that 58(45.3%) participants responded correctly that breastfeeding should be started immediately after birth in case of normal delivery and 64 (50%) answered correctly that breastfeeding should be started as early as possible after caesarean section. In a study carried in Egypt, 77% of medical students agreed that breastfeeding

should be started immediately after birth in case of normal delivery and 16.8% answered correctly that breastfeeding should be started as early as possible after caesarean section. 61.1 % medical students in King Faisal University, Saudi Arabia answered that breastfeeding should start immediately after delivery^{11, 12}. In this study, 93.8% participants answered correctly that colostrum should be given. These findings are in coherence with the previous studies conducted in Egypt (74.0%), Saudi Arabia

(46.5%) and Pakistan (14% thought it should be discarded)^{11, 12, 14}. Frequency of breastfeeding in 24 hours was correctly answered by only 14 (10.9%) Ayurvedic medical students where as in a study carried out among medical students in Saudi Arabia (57.1%) correctly knew about “on demand” feeding¹². Only three nurses knew the recommendations for demanded breastfeeding in a study carried out in Tanzania¹⁵. It was found that level of awareness was high regarding exclusive breastfeeding (92.2%). Similar observations were made in studies carried out in Egypt (51.5%) and Manipur in India (81.2%)^{11, 13}. That IQ is more among breastfed babies was answered correctly by 122 (95.3%) participants. A meta-analysis of 20 studies showed that scores of cognitive function on an average was 3.2 points higher among children who were breastfed compared with those who were formula fed¹⁶. Breastfeeding should continue in sick infants was answered correctly by 120 (93.8%) medical students whereas in a study conducted in Egyptian Female medical students only 51.5% & 36.5% knew that breastfeeding should be continued if baby develops diarrhea and respiratory infection respectively¹¹ (table-1).

In this study, perception of study participants regarding ‘causes of bad attachment to breast among mothers’ was found correct among 84 (65.6%) participants however rest of the participants (34.4%) were partially correct (table-2). In a study carried out in Manipur, India only 1/10th of medical students knew correctly about all the signs of good attachment¹³. Only 5.2% of health care providers were able to demonstrate the correct positioning and attachment of the baby to the breast in a study carried out by Okolo and Ogbonna¹⁷.

Knowledge regarding technique of breastfeeding was found correct among 17.2% medical students only. Similar observations were made in studies carried out among medical students in Manipur in India (16%) and Nigeria (5.2%)^{13, 17}.

Conclusion: These findings reveal a certain knowledge gap about breastfeeding among medical students. These results highlight a need to reinforce the correct technique, advantages and importance of breastfeeding to medical graduates so that they can utilize this knowledge to promote and support breastfeeding in the community. A study module

on breastfeeding should be included in medical curriculum. Regular refresher courses will help in updating the knowledge about breastfeeding.

Limitations: This is a single study carried out in female medical students of an Ayurvedic medical college located in a rural area of Haryana. These results may not be applicable to other medical students located in different areas of India.

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Association between Obesity and Academic Achievement in School going Children

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ABSTRACT

Background: Childhood obesity has a significant affect on physical, social and emotional health of children. In addition, it is also associated with negative self image and low self esteem. Objective: The purpose of the present study was to examine the relationship between obesity and academic achievement in school children. **Materials & Method:** A total of 212, school children studying between 6th and 10th standard aged between 11 to 15 years were studied from two affluent schools of Allahabad city- Maharshi Patanjali Vidya Mandir and Tagore Public School. Children with body mass index above 95 percentile were considered as obese. 106 identified obese children as cases and 106 normal weight children as controls were selected. While selecting controls, it was kept in mind to maintain the similarity of age, gender and standard between case and control. Cumulative Grade Point Average (CGPA), Math and English grades were recorded from the school register to evaluate academic achievement of children. Chi square test was used for statistical analysis. **Results:** Findings of the study reveal that obese girls (15.8% and 36.9%) significantly ($p=0.04$ and 0.01) secured "poor" grade compared to normal weight girls (2.4% and 23.3%) in both CGPA and math respectively. Conclusion: Obesity is found negatively associated with girls' academic achievement whereas in boys no such association was observed.

Keywords: Obesity, Academic Achievement, School children

INTRODUCTION

Obesity is defined as the presence of excess adipose tissue in the body to such a degree that it may lead to health hazard (1,2). Obesity in childhood is associated with adverse health consequences, including atherosclerosis, hypertension, type 2 diabetes, fatty liver disease and metabolic syndrome (3,4). Moreover, it is also linked with sleep deprivation and disrupted sleep due to obesity related disordered breathing (5,6). Poor sleep may reduce the ability to concentrate in school (7). Further, health problems may cause obese children to miss school more often (8).

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Obesity has been described as being "one of the most stigmatizing and least socially acceptable condition" in childhood (9). Obese children are more likely to be teased and degree of teasing is associated with higher weight concern, more loneliness, poor self perception of physical appearance, higher preference for sedentary and isolated activities and lower preference for social activities (10). In addition, also leads to mental and emotional problems like anxiety and depression (11). These social and mental problems contribute to low self esteem, low self confidence and a negative image in children that may affect academic performance (12). Good academic achievement is directly related to good scoring in various entrance examination and job opportunities therefore it has been always a matter of concern for both parents as well as students (13) .

There is converging interest among public health scientist and school policy makers in the health status of adolescents and its impact on their

academic achievement (14). Majority of the studies that examined the relationship between obesity and academic achievement have been conducted in western countries and a very few studies have been conducted in India. Recently, a study conducted in Allahabad by Neha et al., 2015 reported high prevalence of obesity (10.4%) among affluent school children. Thus, there is a need to conduct further study to understand the relation between obesity and academic achievement.

To our knowledge, relevant study in this area, has not been done in Allahabad. Therefore, the present study was carried out to assess the association between obesity and academic achievement in children

MATERIALS & METHOD

Study subject: The children belonging to 11-15 years of age and studying between 6th to 10th standard from two affluent schools (Maharshi Patanjali Vidya Mandir and Tagore Public School) of Allahabad city were selected for the study.

Procedure: The present study is continuation of our previous findings published as Neha et al., 2015 (15). In this study 106 identified obese children as cases and 106 normal weight children as controls were selected. Children with body mass index above 95 percentile were considered as obese. While

selecting controls, it was kept in mind to maintain the similarity of age, gender and standard between case and control.

Cumulative Grade Point Average (CGPA) along with Math and English grades were used to assess the academic achievement of children. Grades were categorized as A1 = Excellent, A2 = Very Good, B1= Good, B2 = Average, C1 or below C1 =Poor. Information on academic achievement was collected from the school records.

Statistical analysis: The collected data was analyzed by Chi square test. $P < 0.05$ was considered as statistically significant.

RESULTS

Total numbers of 212 children in the aged between 11 to 15 years from 6th to 10th standard were studied. Out of them 64.2% (136) were boys and 35.8% (76) were girls.

It was observed that in CGPA higher proportion of normal weight girls (26.3% and 31.6%) achieved 'Excellent' and 'V Good' grade than obese girls (10.5% and 18.4%) respectively whereas higher proportion of obese girls (15.8%) achieved 'Poor' grade compared to normal weight girls (2.4%). The difference was found significant ($p=0.04$). However, in boys no significant difference was observed (Table 1).

Table 1: Distribution of obese and normal weight boys and girls according to grades secured in CGPA

Category	Excellent (%)	Very Good (%)	Good (%)	Average (%)	Poor (%)	X ²	P value
Obese boys (68)	6 (8.8)	11 (16.3)	19 (27.9)	13 (19.1)	19 (27.9)		
Normal weight boys (68)	6 (8.8)	13 (19.1)	19 (27.9)	19 (27.9)	11 (16.3)		
Normal weight girls (38)	10 (26.3)	12 (31.6)	8 (21.1)	7 (18.4)	1 (2.4)	9.67	0.04
Obese girls (38)	4 (10.5)	7 (18.4)	15 (39.5)	6 (15.8)	6 (15.8)		

Similarly in Math, higher percentage of normal weight girls (23.3%) achieved 'Excellent' grade compared to obese girls (2.7%) whereas higher proportion of obese girls (23.3% and 36.9%) achieved 'Average' and 'Poor' grade than normal weight girls

(6.8% and 23.3%) and the difference was found significant ($p=0.01$). Although in boys no significant difference was observed (Table 2). In English, no significant difference was observed in both boys and girls (Table 3).

Table 2: Distribution of obese and normal weight boys and girls according to grades secured in Math

Category	Excellent (%)	Very Good (%)	Good (%)	Average (%)	Poor (%)	X ²	P value
Obese boys (68)	7 (10.3)	7 (10.3)	14 (20.6)	15(22.1)	25 (36.8)	3.20	0.52
Normal weight boys (68)	6 (8.8)	12 (17.6)	17 (25.0)	9 (13.2)	24 (35.3)		
Normal weight girls (38)	9 (23.3)	9 (23.3)	9 (23.3)	2 (6.8)	9 (23.3)	12.6	0.01
Obese girls (38)	1 (2.7)	8 (21.2)	6 (15.9)	9 (23.3)	14 (36.9)		

Table3: Distribution of obese and normal weight boys and girls according to grades secured in English

Category	Excellent (%)	Very Good (%)	Good (%)	Average (%)	Poor (%)	X ²	P value
Obese boys (68)	2 (2.9)	16 (23.5)	19 (27.9)	15 (22.1)	16 (23.5)	4.61	0.33
Normal weight boys (68)	5 (7.4)	17 (25.0)	10 (14.7)	19 (27.9)	17(25.0)		
Normal weight girls (38)	6 (15.8)	13(34.1)	9 (23.7)	5 (13.2)	5 (13.2)	4.10	0.39
Obese girls (38)	5 (13.2)	7(18.4)	12 (31.6)	10 (26.3)	4 (10.5)		

On the comparison between normal weight boys and girls 'academic achievement it was observed that higher proportion of normal weight girls (26.3%, 23.3% and 15.8%) achieved 'Excellent' grade compared to normal weight boys (8.8%, 8.8% and 7.4%) on the other hand higher proportion of normal weight boys (16.3%, 35.3% and 25.0%) achieved 'Poor' grade than normal weight girls (2.4%, 23.3% and 13.2%) in CGPA, Math and English respectively. Although the difference was found significant (p=0.01) only in CGPA.

DISCUSSION

The findings of the present study showed that obese girls had significantly achieved 'poor' grade in both CGPA and Math compared to normal weight girls whereas in obese boys no such effect was observed. This clearly indicates that obesity is

negatively related to girls' academic achievement. Our results is consistent with the previous studies (16,17). However, there are studies that reported negative relationship between obesity and school performance in both boys and girls (18,19,20).

There are various methods used to assess children's school performance such as IQ tests, standardized test scores, grade rank, grade point average and absenteeism rate. Earlier studies (14,21) used average grade point in core academic subjects including mathematics and English (foreign language) as a true proxy for school performance. In the present study CGPA, Math and English were used to assess academic achievement of children.

Academic achievement of obese girls are poorly affected may be due to the following reasons. Firstly heavy girls are more aware of their weight as girls

mature earlier than boys (22). Secondly degree of stigmatization such as teasing and verbal & physical bullying is higher among girls than obese boys (23,24). In addition obese females as adolescents are found to be at increased risk for development of depression or anxiety disorders (25). Miller et al (26) reported a larger negative impact of obesity on self esteem for women than men.

In this study it was observed that higher proportion of normal weight boys had achieved 'Average' and 'Poor' grade whereas normal weight girls achieved 'excellent' and 'v Good' grade in all the three indices of academic achievement i.e. CGPA, Math and English. This clearly shows that normal weight girls achieved higher grades than normal weight boys. Rashmi and Sushma (18) also reported that normal weight boys' academic performance was significantly lower than normal weight girls. Various psycho and social reason for 'underachievement of boys' and conversely 'why girls do better than boys in education?' were discussed by Mitsos and Browne (27).

CONCLUSION

Obesity was found negatively associated with girls' academic achievement whereas in boys no such association was observed. Interestingly, it was observed that normal weight girls achieved higher grades than normal weight boys. Thus, girls need to be more alert in order to control gain in body weight as this may help in improving their academic performance.

Acknowledgement: I sincerely express my gratitude to the Principal of Maharshi Patanjali Vidya Mandir and Tagore Public School for providing academic record of children and thanks to Dr. R.P.Ojha for his suggestions during the preparation of this manuscript.

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Periodontally Accelerated Osteogenic Orthodontics (PAOO)- A Case Report

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ABSTRACT

This case report depicts corticotomy-assisted rapid orthodontic procedure known as periodontally accelerated osteogenic orthodontics (PAOO) without the use of bone grafts. A 28-year-old man, with class I malocclusion, congenitally missing upper laterals and severe spacing of maxillary anterior teeth, was treated with the PAOO procedure. Labial and palatal mucoperiosteal flaps were reflected, and selected vertical corticotomy cuts upto 0.5mm in depth interdentially and horizontal cuts was performed around the roots in the maxillary arches. Orthodontic tooth movement was started immediately and adjusted every 3 weeks. Six months after corticotomy surgery, active orthodontic treatment was completed. No root resorption or detrimental periodontal effects were seen. The alveolar ridges of the maxilla maintained its original thickness. It was thus concluded that PAOO is an excellent treatment approach in adults to accelerate the rate of tooth movement and shorten treatment time. This technique has recently gained popularity as an alternative treatment option for adults in whom the jaws are fully mature. Case selection is very important in PAOO and the orthodontist, oral surgeon and periodontist should teamup for achieving excellent results. More clinical studies with increased number of patients and long-term follow-up are needed to determine the effectiveness and stability of the results of these cases.

Keywords: corticotomy, decortication, Regional Acceleratory phenomenon.

INTRODUCTION

PAOO is the brain work of Dr. William Wilcko, Orthodontist and Dr. Thomas Wilcko, Periodontist. Corticotomy-assisted orthodontic treatment involves selective alveolar decortication in the form of decortication lines and dots which are performed around the teeth that are to be moved¹. This is mainly based on the bone healing pattern known as the Regional Acceleratory Phenomenon (RAP). It is done to induce a state of increased tissue turnover and a transient osteopenia. This is later followed by a faster

rate of orthodontic tooth movement. This technique has several advantages, including quicker tooth movement, shorter treatment time, stable expansion of constricted arches, increased post-orthodontic treatment stability and extended envelope of tooth movement. PAOO also maintains alveolar bone width and decreases the amount of apical root resorption. It is an excellent treatment option in adults in whom orthodontic tooth movement is slow and time consuming. This is because the maxilla and mandible are fully mineralized. A Corticotomy is a minor surgical procedure whereby only the cortical bone is cut, perforated or mechanically altered in contrast to Osteotomy where a surgical cut is made through both cortical and medullary bone.^{2,3}

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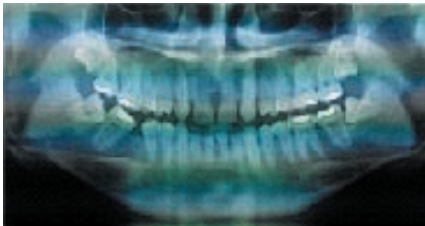
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CASE REPORT

This case report shows the use of corticotomy-assisted rapid orthodontic procedure- PAOO with full thickness flaps raised labially and lingually. A 28yr old male with class I malocclusion and congenitally missing upper lateral incisors came to our setup with a chief complaint of severe spacing in the maxillary anterior teeth(Picture 1-3).orthodontic treatment was initiated but the tooth movement was very slow. He wanted orthodontic treatment within 6 months. So we chose PAOO with our conventional orthodontic treatment for faster treatment with excellent results.



Picture 1 & 2 - Pretreatment-Intraoral



Picture 3 - Pretreatment OPG

TREATMENT OBJECTIVES

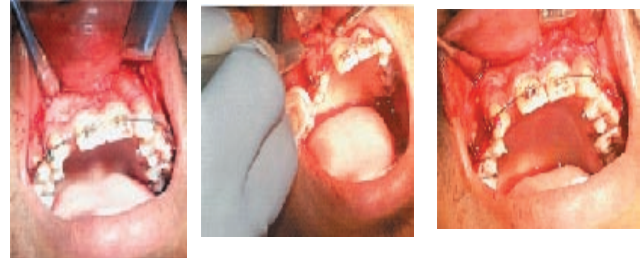
- First create space for the congenitally missing maxillary lateral incisors
- Prosthetic rehabilitation for optimum esthetics.

TREATMENT PLAN

- 0.022 x 0.028 pre adjusted edgewise appliance
- The midline diastema between the maxillary central incisors was closed in accordance to the facial midline.
- The maxillary canines to be retracted to create space for the missing maxillary lateral incisors.
- Finishing and detailing of occlusion.
- Prosthetic rehabilitation with ceramic crowns on the maxillary anteriors for optimum esthetics.

SURGICAL TECHNIQUE

Full thickness labial and palatal mucoperiosteal flaps were reflected. Selected vertical decortication cuts upto 0.5mm in depth interdentially and horizontal corticotomy cuts was performed around the roots in the maxillary arch (Picture 4-7) connecting the vertical cuts. No graft was placed as patient had very good bone thickness. Orthodontic movement was initiated immediately after the surgical intervention (Picture 8-9) and adjusted every three weeks.



Picture 4, 5, 6 & 7 - surgical procedure-Intraoral



Picture 8 & 9- Immediate postsurgical-Intraoral

POST OPERATIVE

6 months after corticotomy surgery, active orthodontic treatment was completed. The maxillary central incisors were approximated and the maxillary canines were retracted to create space for the maxillary lateral incisors (Picture 10-12). No detrimental periodontal effects or root resorption was observed (Picture 13). The alveolar ridges of the maxilla maintained the original thickness and configuration. The patient was next sent to the Department of Prosthodontics for prosthetic rehabilitation (Picture14-16).



Picture 10, 11 & 12- Post orthodontic treatment-Intraoral



Picture 13-Post treatment OPG



Picture 14, 15 & 16 - Prosthetic rehabilitation- Intraoral

DISCUSSION

PAOO is an excellent treatment approach in adults to decrease treatment time. On the basis of case reports, surgical complications appear to be minimal with this technique^{1,4}. In this study, ideal esthetic and functional results were achieved in 6 months (one-third the average treatment time). According to Hajji,⁵ an average treatment time for the PAOO procedure was one-third to one-fourth of traditional orthodontic treatment. Wilcko et al² reported an average of 6.1 months of treatment time for the PAOO procedure. The authors' case result agreed with these observations.

This case study is the first to report the use of PAOO procedure without bone grafts.

Selected corticotomy limited to the buccal and labial aspects also significantly reduces treatment time. Frequency of other possible complications such as ankylosis and devitalization is not known and complications have not been reported¹. Other studies suggest that PAOO can effectively and with increased efficiency, facilitate orthodontic treatment of patients especially adults with decreased tooth movement. A key component to this increased efficiency and decreased treatment time is the successful coordination of Orthodontists, Periodontists and Oral and Maxillofacial surgeons. Without this

coordination of the treatment plan, chances for a successful treatment outcome are decreased. PAOO effectively increases a patient's access to orthodontic treatment by reducing or eradicating a major obstacle to treatment which is time. Decrease in length of treatment would probably increase likelihood that patients especially adults would pursue orthodontic treatment. Conversely introduction of a surgical procedure to orthodontics may prevent a patient from considering PAOO as a treatment option. This method's effects and mechanism were confirmed by recent well designed histological studies. Further randomized testing in humans is needed to confirm the claimed advantages of this technique and to evaluate the long term effects^{1,6,7}

CONCLUSION

- As this study included only one patient, the conclusions reached are very limited. It is recommended that more clinical studies be performed with increased number of patients and long-term follow-up.

- This case suggests the following:
 - PAOO is an excellent treatment approach in adults to shorten treatment time and reduce the risk of root resorption.
 - PAOO procedure can be done without bone grafts in patients with excellent bone thickness.
 - More clinical research is needed to determine the optimal advantages of this technique

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Ethical Clearance Committee – Taken from Institutional Ethical committee

Conflict of Interest – Nil

Source of Funding – Self

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Clinico-social Profile of Mothers with Pregnancy Induced Hypertension (PIH) Admitted to Hospitals Attached to JJM Medical College, Davangere, Karnataka

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ABSTRACT

Introduction: Hypertension is one of the common complications met with in pregnancy and contributes significantly to maternal and perinatal mortality and morbidities such as eclampsia, accidental haemorrhage, preterm labour, postpartum haemorrhage, shock, fetal hazards like intrauterine death, intrauterine growth retardation, asphyxia and prematurity.

PIH is classified into I) Gestational hypertension II) Pre-eclampsia III) Eclampsia IV) Chronic hypertension. Incidence of Pre-eclampsia in hospital practices is 5- 15% and the etiology is unknown.

The identification of this clinical entity by regular antenatal checkups and effective management plays significant role in outcome of pregnancy, both for mother and baby.

Objectives

- 1) To study the socio-demographic profile of mothers with PIH
- 2) To study the prevalence of different types of PIH(gestational hypertension, pre-eclampsia, eclampsia)
- 3) To study the maternal and fetal outcomes

Methods and Materials: A longitudinal study was conducted among mothers with PIH admitted to 3 hospitals attached to J.J.M.Medical College, Davangere (Bapuji, Women and Child hospital and C.G.Hospital) for 6months from 1-5-2012 to 30-10-2012 using a pretested, semi-structured questionnaire and clinical examination. Data was analysed using SPSS with frequency distribution, chi-square.

Results: Out of 163 cases studied, 51.5% were in age group of 21-25yrs, 74.2% belonged to rural areas, 77.9% housewives, 63.1% lived in joint families and 41% were in SE class III.

13.5% were Gestational hypertension, 77.3% pre-eclampsia and 9.2% eclampsia. 17.8% preterm deliveries, 15.9% IUGR, 13.5% perinatal mortality and 26.3% NICU admissions.

Conclusions: 75.8% were in the gestational age of 33-36weeks among whom around 78% were pre-eclamptics. Irrespective of the type of PIH 60% went for normal delivery. 56% of the babies were born preterm in case of eclamptic mothers and in eclamptics around 69% were primigravida. Maximum perinatal morbidity and mortality was seen in eclampsia followed by pre-eclampsia.

Keywords: preeclampsia, eclampsia, gestational hypertension, perinatal, mortality, morbidity.

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INTRODUCTION

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METHODS & MATERIALS

A longitudinal study was conducted among mothers with PIH admitted to 3 hospitals attached to J.J.M.Medical College, Davangere (Bapuji Hospital, Women and Children hospital and Chigateri General Hospital) for 6months from 1-5-2012 to 30-10-2012 using a pretested, semi-structured questionnaire and clinical examination. Data was analysed using SPSS with frequency distribution, chi-square.

Inclusion criteria:

Cases of hypertensive disorders of pregnancy (gestational hypertension, pre-eclampsia, eclampsia)

Gestational age between 28-42 weeks

Exclusion criteria:

Gestational age < 28weeks

Gestational age > 42weeks

Patients with essential hypertension

At the time of delivery, fetal conditions were noted- birth weight and babies admitted to NICU were followed up.

Ethical Clearance : The study was approved by ethical committee of JJM Medical College Davangere

RESULTS

Table 1: Distribution of mothers according to the sociodemographic profile.

	Pregnancy induced hypertension Number (%)
Age	
<20yrs	36 (21.2%)
21-30yrs	122 (71.8%)
>30yrs	12 (7%)
Total	170
Place of residence	
Rural	125 (73.5%)
Urban	45 (26.5%)
Total	170
Religion	
Hindu	131 (77%)
Muslim	33 (19.5%)
Christian	6 (3.5%)
Total	170
Type of family	
Nuclear	57 (33.5%)
Joint	100 (59%)
3 generation	13 (7.5%)
Total	170
SE Status	
Class I	10 (5.9%)
Class II	24 (14.1%)
Class III	48 (28.2%)
Class IV	61 (35.9%)
Class V	27 (15.9%)
Total	170
Education	
Literate	141 (82.9%)
Illiterate	29 (17%)
Total	170
Occupation	
Housewives	136 (80%)
Working	34 (20%)
Total	170

Table 1 shows around 70% of women belonged to age group 21-30yrs, from rural area among whom 80% were pre-eclamptics, belonging to Hindu (77%), joint family(59%), III and IV SES(64%).

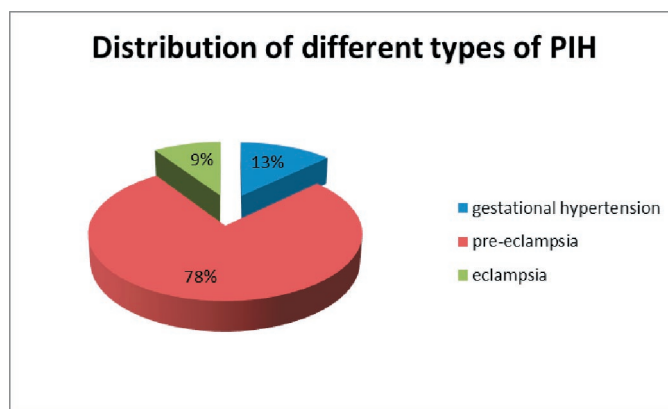


Fig 1: Distribution of cases according to types of PIH

Table 2: Distribution of cases according to gestational age and types of PIH.

Gestational age	Gestational hypertension	Pre-eclampsia	Eclampsia	Total
28-32weeks	0	22 (73.3%)	8 (26.7%)	30 (100%)
33-36weeks	21 (16.3%)	100 (77.5%)	8 (6.2%)	129 (100%)
37-42weeks	1 (9.1%)	10 (90.9%)	0	11 (100%)
Total	22	132	16	170

$\chi^2=17.38$, $df=4$, $p=0.002$, $p<0.01$ significant

75.8% were in the gestational age of 33-36weeks among whom around 78% were pre-eclampsics.

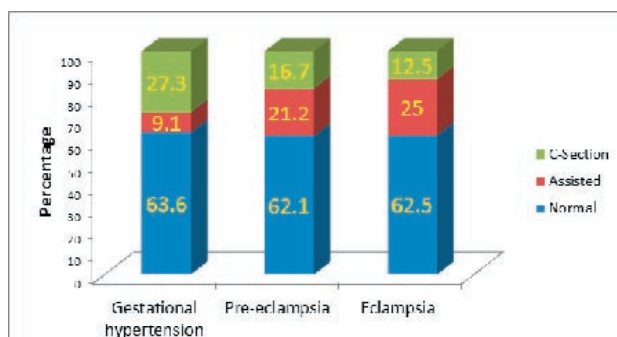


Fig 2: Distribution of cases according to mode of delivery and types of PIH.

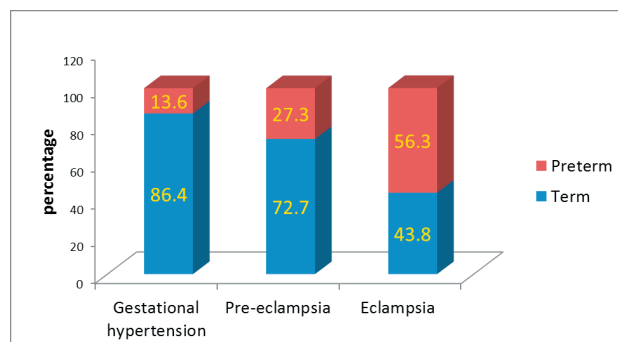


Fig 3: Distribution of cases according to maturity of babies and types of PIH.

$\chi^2=8.57$, $df=2$, $p=0.014$, $p<0.05$ significant

Table 3: Association of cases according to types of PIH and various factors.

Gravid status of women	Gestational hypertension	Pre-eclampsia	Eclampsia	Total
Primigravida	13(59.1%)	65(49.2%)	11(68.75%)	89(52.3%)
Multigravida	9(40.9%)	67(50.8%)	5(31.25%)	81(47.7%)
Total	22(100%)	132(100%)	16(100%)	170(100%)

$\chi^2=2.64$, $df=2$, $p=0.27$, not significant

Antenatal checkups	Gestational hypertension	Pre-eclampsia	Eclampsia	Total
Registered	22(100%)	130(98.5%)	14(87.5%)	166(97.7%)
Unregistered	0	2(1.5%)	2(12.5%)	4(2.3%)
Total	22(100%)	132(100%)	16(100%)	170(100%)

$\chi^2=8.1$, $df=2$, $p=0.017$, $p<0.05$ significant

Cont...

No. of antenatal visits	Gestational hypertension	Pre-eclampsia	Eclampsia	Total
No antenatal visits	0	2(1.5%)	2(12.5%)	4(2.4%)
<3 visits	0	3(2.3%)	2(12.5%)	5(2.9%)
3-6 visits	14(63.6%)	88(66.6%)	8(50%)	110(64.7%)
>6visits	8(36.4%)	39(29.5%)	4(25%)	51(30%)
Total	22(100%)	132(100%)	16(100%)	170(100%)
X ² =14.78, df=6, not significant				

Table 3 shows in eclamptics around 69% were primigravida, there is significant association between antenatal checkups and types of PIH, irrespective of the no. of antenatal visits, 25% developed eclampsia, 30% developed pre eclampsia and 36% developed gestational hypertension.

Table 4: Distribution of cases according to maternal outcome and types of PIH.

Maternal outcome	Gestational hypertension	Pre-eclampsia	Eclampsia	Total
No complications	22(100%)	130(98.4%)	16(100%)	168(98.8%)
Shock	0	2(1.6%)	0	2(1.2%)
Total	22(100%)	132(100%)	16(100%)	170(100%)

Table 4 shows there was no maternal mortality, maximum perinatal morbidity and mortality was seen in eclampsia followed by pre-eclampsia.

Table 5: Distribution of cases according to fetal outcome and types of PIH.

Fetal outcome (mortality+morbidity)	Gestational hypertension	Pre-eclampsia	Eclampsia	Total
Perinatal mortality	1(4.5%)	15(11.4%)	5(31.25%)	21(12.4%)
IUGR	1(4.5%)	28(21.2%)	6(37.5%)	35(20.6%)
Prematurity	3(13.6%)	36(27.3%)	9(56.25%)	48(28.2%)
LBW	10(45.5%)	78(59%)	14(87.5%)	102(60%)
Birth Asphyxia	0	5(3.8%)	2(12.5%)	7(4.1%)
No complications	20(90.9%)	84(63.6%)	3(18.75%)	107(62.9%)

Table 5 shows perinatal mortality was 12.4%, and maximum fetal morbidity was due to LBW (60%) followed by prematurity (28.2%)

Table 6: Distribution of cases according to NICU admissions and types of PIH.

NICU admissions	Gestational hypertension	Pre-eclampsia	Eclampsia	Total
Yes	2(9.1%)	56(42.4%)	10(62.5%)	51(40%)
No	20(90.9%)	76(57.6%)	6(37.5%)	102(60%)
Total	22(100%)	132(100%)	16(100%)	170(100%)
X ² =14.86, df=4, p=0.005, p<0.01 significant				

Table 6 shows NICU admission was 40%

Table 7: Distribution of cases according to birth weight and types of PIH.

Birth wt	Gestational hypertension	Pre-eclampsia	Eclampsia	Total
<1kg	0	7(5.3%)	2(12.5%)	9(5.3%)
1-1.5kgs	1(4.5%)	24(18.2%)	5(31.25%)	30(17.6%)
1.6-2kgs	4(18.2%)	26(19.7%)	4(25%)	34(20%)
2.1-2.5kgs	8(36.4%)	35(26.5%)	3(18.75%)	46(27%)
>2.5kgs	9(40.9%)	40(30.3%)	2(12.5%)	51(30%)
Total	22(100%)	132(100%)	16(100%)	170(100%)
X ² =10.5, df=8, p<0.05 significant				

DISCUSSION

Out of 170 cases studied, 71.8% were in age group of 21-30yrs compared to 52.4% in a study conducted by Ananth CV etal², 76% in a study done by Ganesh KS³ and 73.9% in the age group of 15-25 in a study conducted by Samanta K⁴, 13% were Gestational hypertension compared to 27.4% in a study conducted by Samanta K⁴, 78% pre-eclampsia compared to 61.6% in a study conducted by Samanta K⁴ and 50.4% in a study conducted by Nadkarni J⁵ and 9% eclampsia compared to 11.1% in a study conducted by Samanta K⁴ and 10.3% in a study conducted by Nadkarni J⁵. 97.7% were registered cases compared to 27.2% in a study conducted by Nadkarni J⁵.

28.2 % preterm deliveries compared to 27.1% in a study conducted by Ferrazzani etal⁶, 23% in a study conducted by Nadkarni J⁵. and 34.7% in a study conducted by Samanta K⁴, 20.6% IUGR compared to 21.3% in a study conducted by Nadkarni J⁵ and 33.4% in a study conducted by Samanta K⁴, and 40% NICU admissions compared to 31.1% in a study conducted by Nadkarni J⁵ and 42.3% in a study conducted by Samanta K⁴, 12.4% perinatal mortality compared to 15.9% in a study conducted by Nadkarni J⁵ and 23% in a study conducted by Samanta K⁴. 52.3% cases occurred in primigravida compared to 49.1% in a study conducted by Ananth CV etal², 48.3% in a study conducted by Samanta K⁴. 60% low birth weight babies compared to 51.7% in a study conducted by Nadkarni J⁵ and 4.1% of the babies had birth asphyxia compared to 14% in a study conducted by Nadkarni J⁵.

CONCLUSIONS

Hypertension is a common complication of pregnancy and adverse outcomes are increased among hypertensive women and their babies. Around 70% of women belonged to age group 21-30yrs from rural area among whom 80% were pre-eclampsics, belonging to Hindu (77%), joint family(59%), III and IV SES(64%). 75.8% were in the gestational age of 33-36weeks among whom around 78% were pre-eclampsics. Irrespective of the type of PIH 60% went for normal delivery. 56% of the babies were born preterm in case of eclamptic mothers and in eclampsics around 69% were primigravida. Irrespective of the no. of antenatal visits, 25% developed eclampsia, 30% developed pre eclampsia and 36% developed gestational hypertension. There was no maternal mortality. Maximum perinatal morbidity and mortality was seen in eclampsia followed by pre-eclampsia. PNM was 12.4%, NICU admission was 30% and IUGR babies were 20.6%. Adverse perinatal outcomes are increased among babies compared to maternal outcome in my study.

Recommendations: Regular ANC checkups and early use of antihypertensive and anticonvulsants drugs, optimum timing of delivery will help to achieve successful outcome.

Limitations: Though PIH is Hypertension that develops as a direct result of the gravid state after 20th week,

in my study I have taken the cases of gestational

age between 28weeks to 42weeks

Source of Support: Nil

Conflict of Interest: Nil

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Breast Feeding Practices: A Qualitative Exploration by Focused Group Discussion

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ABSTRACT

Background: According to World Health Organization (WHO) Breastfeeding is the key to a child's survival, health, growth and development. A great asset in India is that an average Indian mother although poor in nutritional status, has a remarkable ability to breast feed her infant for prolonged periods. However, some inappropriate breast feeding practices do exist in India. The study was undertaken to explore breastfeeding practices in Rural, Urban and urban slum mothers

Methods: 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 Breast feeding practices was discussed. Data was analyzed by Content Based analysis and Ethnography.

Results: Exclusive breast feeding was practiced by all the mothers Mothers were able to explain its importance and health benefits to her baby and herself. Started soon after delivery and is delayed only when there was perceived lack of milk. Misconceptions regarding the colostrum were made out which made mother to discard the colostrums. Majority of the mothers encouraged feeding their baby with colostrum, some had strong misconceptions deep rooted in their minds regarding colostrum.

Conclusion: There was no difference of opinion on practice of infant breast feeding as all mothers practiced exclusive breast feeding. Adherence to cultural and traditional practices which influence the child feeding was followed by mothers belonging to rural and slum areas.

Keywords: breast feeding, infant, colostrum, mothers

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. Breast feeding also provides many nutritional, immunological and psychological benefits, including protection of infants against infectious diseases, improved child spacing due to lactational amenorrhea and enhance maternal-infant bonding¹.

Globally less than 40% of infants under the age of six months are exclusively breastfed². A great asset in India is that an average Indian mother although poor in nutritional status, has a remarkable ability to breast feed her infant for prolonged periods. However, some inappropriate breast feeding practices do exist in India.³

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Early and exclusive breastfeeding is now

recognized as one of the most effective interventions for child survival particularly to address morbidity and mortality related to three major conditions, e.g., neonatal infections, diarrhea, and pneumonia, only breast milk, no other liquids or solids, not even water, with the exception of oral rehydration solution [ORS], or drops/syrups of vitamins, minerals or medicines up to 6 months of age, then partially breastfed thereafter as part of a comprehensive complementary feeding strategy up to 2 years of age⁴. Malnutrition causes 35 % of disease burden on children under the age of five. In fact, the best practices in the areas of breastfeeding and complementary feeding are important degree with the ability to save the lives of 1.5 million children under the age of five every year⁵.

A mother needs knowledge regarding these in order to practice them and that depends on the mother's education, her socioeconomic status, her access to information regarding breast feeding, feeding taboos, and so on. Rural mothers are generally not well-educated; do not have better socioeconomic status and difficulty in accessing information regarding breast feeding as compared to their urban counter parts³. Though the ideal time to educate the women about the merits of breast feeding, is prepregnancy or during antenatal period, few receive counseling during pregnancy and most of them after failed lactation⁶. The present study was undertaken to explore breastfeeding practices in Rural, Urban and urban slum mothers.

METHODS

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 July 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 Breast-feeding

RESULTS

Focus group discussions were carried under six major topics 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.

Breast-feeding

Exclusive breast feeding was practiced by all the mothers. Mothers were able to explain its importance and health benefits to her baby and herself. Breast feeding is started as soon as possible once the baby is handed over to mother after delivery at hospital. It is delayed only when there was perceived lack of milk. Misconceptions regarding the colostrum were made out which made mother to discard the colostrum. Information regarding the duration and number of times of breast feeding sessions was vague, confounding the estimates of breast milk intake. Mothers were unaware about the quantity of breast milk consumed by the baby during breast-feeding. Mothers agreed that breast feeding is initiated by "as and when required" basis, sometimes to stop crying which was the sign of hunger. In case of working women as labourer, feeding was done at the time of interval of their work. Though the majority of the mothers encouraged feeding their baby with colostrum, some had strong misconceptions deep rooted in their minds regarding colostrum. (Table 1)

Comparison: Urban participants had no misconception regarding introduction of breast feeding and difference was present among rural and urban slum counterparts regarding colostrum. Rural mothers fed their baby most of time at the interval between their work and there was no strict time table for feeding baby among remaining categories. Among all, maximum number of participants from slum discouraged practice of colostrum (Table 2).

DISCUSSION

In the present study, practices of infant feeding such as initiating the breast feeding as soon as possible, exclusive breast feeding, rare practice of bottle feeding and weaning practices were appropriate among almost all mothers. Breast feeding was initiated as soon as possible. However some practices such as discard of colostrums were unscientific, incorrect and misconceptions existed among the same.

In study Breastfeeding knowledge of the participants was assessed and 100% mothers had the knowledge of breastfeeding the infants. However, only 70.29 % mother initiated breastfeeding within 1 hr. of baby birth and 40.21% of mother had knowledge on the importance of colostrum feeding but 74.8% of

the mothers gave colostrum which is close to 81.6% colostrum acceptance⁷.

However in the study most had initiated breastfeeding (78.8%) within 24 hours of delivery. About 15.4% of the infants did not receive colostrum and 22.8% of the infants were not exclusively breastfed. **Ghutti** (water mixed with honey and herbs), boiled water, tea, and animal milk were commonly used pre-lacteal feeds. About 47.2% of the mothers were not aware of the benefits of exclusive breastfeeding. About one quarter of the mothers started complementary feeding before the child was six months old⁸. 40.1% of mothers gave pre-lacteal feeding to their newborn. The problem of pre-lacteal feeding is still prevalent in rural India. Age, caste, and place of delivery were associated with the problem⁹. Mothers who were assisted by traditional attendants during childbirth, delivered by caesarean section, from ethnically disadvantaged families and had delivered low birth weight infants, were less likely to initiate breastfeeding early whereas the mothers who were from the poorest families and did not introduce pre-lacteal feeds to their infants were more likely to initiate breastfeeding within the first hour¹⁰.

In the report by NFHS3 only 59 percent of children below 6 months were exclusively breastfed. In addition, only 75 percent were put to the breast within the first day of life, including 36 percent who started breastfeeding in the first hour of life, which means that many infants were deprived of the highly nutritious first milk (colostrum) and the antibodies it contains. Mothers in Karnataka state breastfeed for an average of 21 months, which was shorter than the minimum of 24 months recommended by WHO for most children¹¹. Differentials in discarding the first milk were not found to be important among various socioeconomic groups and the phenomenon appeared more general than specific. Poor nutritional status and inadequate feeding practices in this study population reinforce the importance of exclusive breast-feeding during the first 6 months of life¹²

The study revealed that feeding practices had significant negative correlation with physical illness ($r = -0.340$, $p < 0.001$) in the children. No significant correlation was found between anthropometric measurements of the children and feeding practices of mothers ($r = 0.056$, $p > 0.05$). Children with good

feeding practices had less physical illness as compared to children with average or poor feeding practices¹⁴.

Table 1: Breast-feeding

Category	Content analysis	Ethnography
Exclusive breast feeding	All the mothers agreed for exclusive breast feeding their baby for 6 months so as to give them natural immunity and good health.	<i>"Mothers' breast milk is the greatest boon for the baby"</i>
Introduction of breast feeding	Breast feeding is introduced as soon as the baby is given to mothers after delivery in hospital (72.2%). Breast feeding is delayed when there is perceived lack of breast milk and misconception about colostrum (27.7%)	<i>"Baby becomes hungry as soon as it comes out of mother's womb"</i>
Implementation and duration of breast feeding	There was no strict time table for breast feeding the baby by all mothers. Baby is breast fed as and when required and when it is inconvincible crying for prolonged time (72.2%). As some go for work as daily laborer baby is fed in between their work interval (44.4%)	<i>"Whenever the mouth comes in contact with the breast"</i> <i>"Baby cries when it is hungry"</i>
Opinion about colostrums	Most of the mothers 83.3% had positive opinion and attitude regarding colostrum and its importance in initial days of their baby. Misconceptions and discard of the colostrum was practiced by 16.65%	<i>"It make baby intelligent and make it live for 100 years"</i>

Table 2: Breast feeding practices comparison

Category	Rural	Urban	Slum
Introduction of breast feeding	66.6% fed their baby as soon as possible and rest delayed due to perceived lack of milk and misconception regarding colostrum.	There was no misconception regarding colostrum. All participants fed as soon as possible.	Half of mother started the feeing as soon as possible and rest half had perceived lack of milk and misconception regarding colostrum.
Implementation and duration of breast feeding	As most of them work as daily laborers, they fed their baby in between the time interval of their work.	Baby is breast fed as and when required. There was no strict time table and duration for each feed.	Most participants (66.6%) followed the same as done by urban counterparts but some breast fed only for the reason to make them sleep and when baby cry excessively with no scientific reason.
Opinion about colostrum	Most had positive attitude and misconception were present in few (16.6%) and didn't feed their baby with colostrum.	Positive attitude and had fair information regarding its importance to their baby.	66% with positive attitude and rest with misconception which were based on cultural beliefs.

CONCLUSION

All the mothers exclusively breast fed their infants up to 6 months. There was no difference of opinion on practice of infant breast feeding as all mothers practiced exclusive breast feeding. Adherence to cultural and traditional practices which influence the child feeding was followed by mothers belonging to rural and slum areas.

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Conflict of Interest: No Conflict of interest

Ethical Approval: Yes EC13072015

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Clinico-microbiological Profile of Diabetic Foot Infections

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ABSTRACT

Introduction: Diabetes mellitus is a major public health problem in India and worldwide. One of its most common and feared complications is Diabetic foot infections (DFIs), which, if neglected, very often terminate in limb amputation. Limb-threatening DFIs are usually polymicrobial. Proper management of these infections requires appropriate antimicrobial selection based on culture and antimicrobial susceptibility results; however, initial management comprises empirical antimicrobial therapy. Knowledge of likely etiologic agents can help guide this decision and result in limb salvage.

Objectives: To study the common clinical presentation of DFIs, isolate the organisms responsible and to determine the antimicrobial susceptibility pattern of the isolates.

Materials and methods: During the period from Nov 2011 to Oct 2013, pus and tissue samples were taken from the affected feet of 60 DFI patients and subjected to smear microscopy, aerobic and anaerobic culture. The antimicrobial susceptibility testing of the isolates was done by Kirby Bauer disc diffusion method.

Results: Most of the study patients presented with advanced clinical features such as gangrene (38.3%), abscess (38.3%) and limb cellulitis (18.3%). Polymicrobial foot infection was present in 31 cases (51.7%). Aerobes were predominantly isolated (93.6%). Overall, the most common isolate was *Staphylococcus aureus* (36.4%). Gram positive organisms (54.5%) were isolated more frequently than gram negative organisms (45.5%). Gram positive isolates showed 100% sensitivity towards linezolid. All the major groups of organisms showed high sensitivity towards third generation cephalosporins. High sensitivity towards meropenem, and other newer generation antimicrobials including piperacillin-tazobactam, tigecycline and colistin was noted among the gram negative isolates.

Conclusion: Proper education and awareness about DFIs, aggressive antimicrobial therapy and foot care can reduce the associated morbidity and help in limb salvage. Initial empirical therapy with a broad spectrum antimicrobial such as third generation cephalosporins is recommended. With several reported advantages, including excellent efficacy, good soft tissue penetration and tissue concentrations even in the presence of limb ischemia, significantly shorter length of hospital stay, decreased parenteral antibiotic duration and higher early discharge rates, ability to institute oral-only therapy on an out-patient basis, and consequent cost-effectiveness, linezolid has emerged as a good treatment choice in pure gram positive infections, especially against multidrug resistant strains, and in chronic, recalcitrant cases.

Keywords: Diabetic foot infections, DFI, polymicrobial, linezolid.

INTRODUCTION

Diabetes mellitus is a chronic disorder affecting a large segment of population and also a major public health problem.¹ Occurrence of complications associated with diabetes mellitus is fairly common.

Among these complications, Diabetic foot is one of the most feared. Diabetic foot is characterised by several pathological complications such as neuropathy, peripheral vascular disease, foot ulceration and infection with or without osteomyelitis, leading to development of gangrene and even necessitating limb

amputation.^{1,2}

Proper management of these infections requires appropriate antibiotic selection based on culture and antimicrobial susceptibility results; however, initial management comprises of empirical antimicrobial therapy. Selecting the appropriate antimicrobial therapy for diabetic foot infections requires a knowledge of likely etiologic agents.³

Limb-threatening diabetic foot infections are usually polymicrobial. Commonly encountered pathogens include methicillin-resistant *staphylococcus aureus*, hemolytic streptococci, enterobacteriaceae, *pseudomonas aeruginosa*, and enterococci. Anaerobes, such as *bacteroides*, *peptococcus*, and *peptostreptococcus*, are rarely the sole pathogens but are seen in mixed infections with aerobes.⁴

Mild to moderate infections with localized cellulitis can be treated on an outpatient basis with oral antibiotics. Parenteral antibiotics are needed to treat more severe or limb-threatening infections, and should include coverage of both gram-positive and gram-negative organisms as well as provide both aerobic and anaerobic coverage.

Even with the emergence of newer and stronger antibiotics, as well as multidisciplinary teams providing optimal foot care, about 10-30% of diabetic patients with a foot ulcer will eventually progress to an amputation, which may be minor (foot sparing) or major.³ Progress of infection is usually associated with delayed diagnosis and underestimation of the extent of infection, or suboptimal wound or antimicrobial therapy.⁵

This study was undertaken with the aim of studying the various modalities of presentation of diabetic foot and to know the microbiological profile of organisms isolated from patients with diabetic foot ulcers. The antimicrobial spectrum of these isolates would assist clinicians in the therapy of this dreaded complication of diabetes.

MATERIALS & METHODS

During the period from Nov 2011 to Oct 2013, 60 diabetic patients with foot infection attending the General Surgery Out Patient Department of JSS Hospital and Medical College were included in

our study. These patients were either known diabetics or newly detected to be diabetic by blood glucose estimation at the time of their visit to the hospital.

A detailed history of the patient regarding age and sex, type and duration of diabetes, presence and duration of foot ulcer, discharge from the ulcer, nature of the discharge, among others, was taken by means of questionnaire. Relevant history regarding smoking, hypertension, peripheral neuropathy, peripheral vascular disease, nephropathy, visual problems and antibiotic usage was taken and recorded.

The foot was thoroughly examined for signs of ulceration, gangrene, abscess, cellulitis and other pathological manifestations of diabetic foot. If present, such findings were recorded. Any foul smell, local rise of temperature, discharge and discolouration of the surrounding area was noted.

The adequacy of peripheral circulation was checked by palpating for the posterior tibial artery and the dorsalis pedis artery pulsations. Basic neurological evaluation of the extremity, including touch, pain and joint position sense was examined in the foot to rule out presence of neuropathy.

For sample collection, the surrounding area of the foot ulcer was cleaned with spirit, povidone iodine and sterile normal saline with a sterile cotton swab. The ulcer was washed with sterile normal saline, superficial dead tissue and slough as removed with sterile scissors and scalpel. The ulcer was then debrided with a sterile scalpel. Pus or discharge from the ulcer base and debrided necrotic tissue were taken immediately to the microbiology laboratory and processed without delay.

Direct microscopy: The smears were stained by Gram staining technique and examined under oil immersion objective of the light microscope in the Department of Microbiology, JSS Hospital. The smears were examined for the presence of pus cells, gram positive and gram negative organisms. The size, shape, arrangement of bacteria and presence of spores, if any was noted.

Aerobic culture: Aerobic culture was carried out on 5% sheep blood agar, MacConkey agar and

chocolate agar plates which were pre-incubated in the incubator overnight to rule out the possibility of contamination of the plates. The inoculated media were incubated at 37°C overnight. Subsequent subcultures were done whenever necessary. The colonies were examined under magnifying lens and identified using the standard microbiological procedures like colony morphology, Gram staining and biochemical reactions.

Antibiotic susceptibility testing was done by Kirby Bauer method of disk diffusion. The antibiotics used were ampicillin, amikacin, gentamycin, ciprofloxacin, clindamycin, vancomycin, piperacillin – tazobactam, meropenem, cefotaxime, tigecyclin, colistin, linezolid, pristinamycin, erythromycin, ceftriaxone and ceftazidime. The respective zones of inhibition were interpreted.

Anaerobic culture: The inoculated **Robertson cooked meat broth** was incubated till it was turbid, not earlier than 48 hours. Smears of each specimen from Robertson cooked meat broth was made. The organisms were identified using Gram staining and colony morphology.

RESULTS

Of the 60 cases studied, most of the patients belonged to the fourth, fifth and sixth decades of life (73.2%). Males were more affected compared to females with a ratio of 2.2:1. Majority (36.7%) of the patients had diabetes for a period between 5 to 9 years, while 3.3% of the patients had diabetes for 20-24 years.

The most common presenting clinical features were gangrene (38.3%), abscess (38.3%), cellulitis (18.3%) and superficial foot ulceration (16.7%).

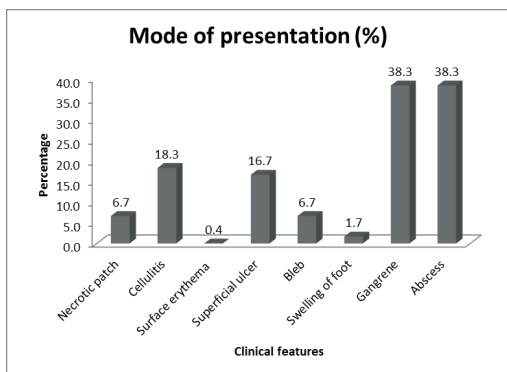


Fig 1: Mode of presentation of patients with DFI

Uncontrolled and/or long-standing diabetes was a feature in majority of the study population, as indicated by the high incidence of diabetic neuropathy (55%), nephropathy (51.6%) and retinopathy (57%) respectively.

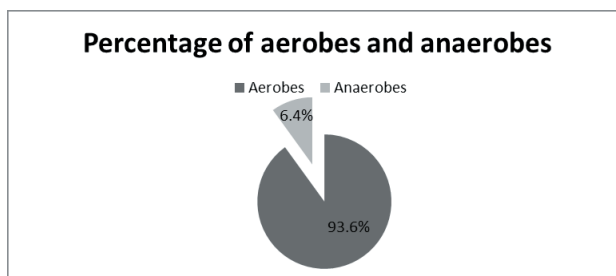


Fig 2: Percentage of aerobes and anaerobes isolated among the study population

Overall, the most common aerobe among the isolates was *Staphylococcus aureus* (36.4%). Gram positive organisms (54.5%) were isolated more frequently than gram negative organisms (45.5%). Among the gram negative aerobes, *Pseudomonas aeruginosa* (14.8%) and *Escherichia coli* (13.6%) were the most common.

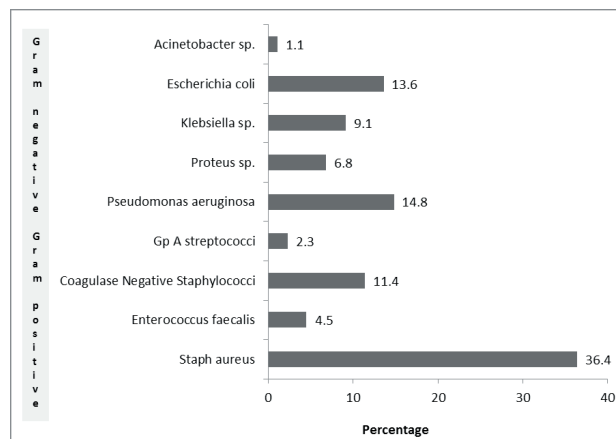


Fig 3: Number and percentage of aerobes isolated

Of the 60 cases included in the study, polymicrobial foot infection was found to be present in 31 cases (51.7%). The average number of isolates per case was 1.56.

Among the antimicrobials with demonstrable activity against all the gram positive isolates, 100% sensitivity was seen towards linezolid and pristinamycin.

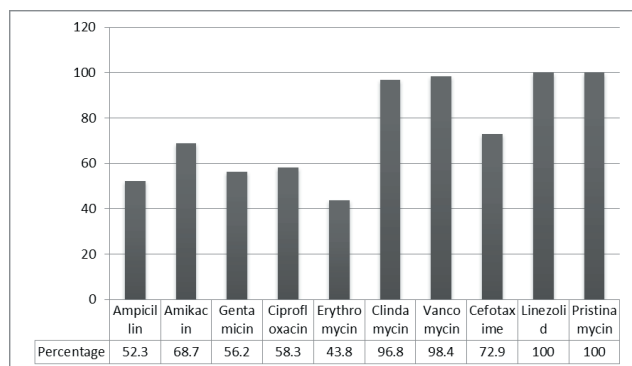


Fig 4: Antibiotic sensitivity patterns among the gram positive isolates

All the major groups of gram negative isolates, including *Pseudomonas aeruginosa*, *Escherichia coli*, *Klebsiella* and *Proteus* species showed high sensitivity towards the third generation cephalosporins. 95.8% susceptibility of the gram negative organisms towards meropenem, and 100% susceptibility towards the other newer generation antimicrobials piperacillin-tazobactam, tigecycline and colistin was also noted.

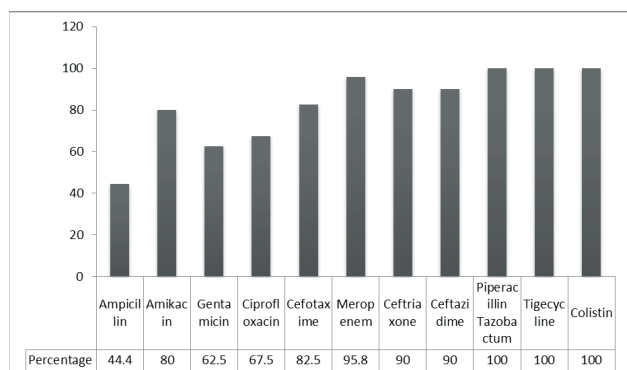


Fig 5: Antibiotic sensitivity patterns among the gram negative isolates

DISCUSSION

The good control of blood sugar in diabetic patients is a desirable goal in the prevention of certain infections and to ensure maintenance of normal host defense mechanisms determining resistance and response to infection. There is a significant diminution in intracellular bactericidal activity of leukocytes with *Staphylococcus aureus* and *Escherichia coli* in patients with poorly controlled diabetes. Serum opsonic activity for both *Staphylococcus aureus* and *E. coli* are significantly low.⁶

Good control of blood sugar may markedly improve healing of wounds in diabetic patients with good peripheral blood flow. Polymorphonuclear leucocyte functions such as chemotaxis, phagocytosis and intracellular killing improve with lowering of

blood sugar.⁷ Blood glucose monitoring is currently recommended to aid in the day to day management of diabetes.³

Diabetic foot is considered one of the most threatening and disabling complications for a diabetic patient as the lesions of the extremities can become so severe that the patient may risk the amputation of the toe, foot or leg. Because of serious or recurrent infections and impaired healing processes, initially trivial lesions usually progress to more serious forms such as gangrene, cellulitis and abscesses that can lead to limb amputation.⁸ Many diabetic foot ulcers are neglected because they may produce few symptoms and their importance is not appreciated by the patients. Patients who develop foot lesions have significantly less knowledge of diabetes including foot care. It is therefore important to educate the patients to help recognize infection in diabetic foot early and treat it vigorously.

A large number of clinico-microbiological studies in India and worldwide have confirmed the polymicrobial nature of diabetic foot infections.^{9,10,11,12,13,14} These studies have also highlighted the common bacterial isolates and their corresponding sensitivities towards the commercially available antibiotics. The aim of these studies is to identify potent antimicrobials having efficacy against most of the commonly occurring pathogens in such infections, with the aim of accelerating infection control and tissue healing.

Antibiotic choices for these infections continue to evolve. History has seen penicillin progress to antistaphylococcal penicillins and cephalosporins, but these drugs are now giving way to drugs that are effective against methicillin-resistant *S. aureus* (MRSA). While vancomycin has been the gold standard to treat MRSA infections, newer therapeutic options have been developed over the last 5 years. These include pristinamycin, daptomycin, tigecycline and linezolid. A clear consensus as to the antimicrobial of choice is yet to occur.

Linezolid as an antimicrobial¹⁵

Linezolid, a first-in-class oxazolidinone, is active against most known Gram-positive pathogens, including MRSA and vancomycin-resistant *Enterococcus faecalis*. It has virtually 100%

bioavailability after oral administration, making it particularly useful for oral step-down therapy, potentially allowing patients to be discharged from the hospital sooner. Since it has essentially no Gram-negative and little anaerobic activity, linezolid must be used in combination with another agent when treating mixed infections. Although treatment failures and resistant strains of *S. aureus* have been reported, linezolid remains a valuable antibiotic for treating skin and soft-tissue infections.

Linezolid in Diabetic foot infections

Linezolid has shown good clinical cure rates in treating DFIs. A randomized, open-label, multicenter study of DFIs of all types compared the efficacy and safety of parenteral and oral linezolid with parenteral ampicillin/sulbactam and intravenous or oral amoxicillin/clavulanate given for 7–28 days.¹⁰ Among 371 patients, clinical cure rates associated with linezolid and comparators were statistically equivalent overall (81 vs 71%, respectively), but significantly higher for linezolid-treated patients with infected foot ulcers (81 vs 68%) and for patients without osteomyelitis (87 vs 72%).

Similarly, in a randomized, open-label trial involving 1200 adult patients hospitalized with complicated skin and soft-tissue infection suspected or proven to be caused by MRSA, Itani *et al.* compared outcomes in patients treated with either linezolid or vancomycin for complicated skin and soft-tissue infections.¹⁶ Linezolid treatment was associated with a significantly shorter length of hospital stay, decreased parenteral antibiotic duration and higher early discharge rates. Although linezolid is considerably more expensive than older oral and many parenteral antibiotics, it may be cost saving if it allows earlier hospital discharge.

Another added advantage of linezolid is its reported efficacy even in the presence of limb ischemia. In a study conducted by Stein GE *et al.*¹⁷ linezolid soft tissue penetration and serum antimicrobial activity were analysed in six patients with peripheral vascular disease and severe diabetic foot infections requiring surgical intervention. Linezolid concentrations in tissue were found to be 51% (range, 18% to 78%) of simultaneous serum concentrations. Rapid (1 h) and prolonged (12 h) inhibitory activity (titres \geq 1:2)

was observed for linezolid against each of the study isolates. Furthermore, bactericidal activity (titres \geq 1:2) was observed for at least 6 h (50% of the dosing interval) against four of these five strains.

These findings suggest that linezolid could be effective even when concentrations at the infection site are diminished due to impaired blood flow.

One of the major adverse events of linezolid is myelosuppression, which may result in anemia and/or thrombocytopenia.¹⁵ The risk of hematologic toxicity appears to be dependent on the duration of therapy, generally occurring after 2 weeks of treatment. Fortunately, most cases resolve after therapy is discontinued. Other less frequently reported, but potentially irreversible, complications of linezolid therapy include peripheral neuropathy and optic neuropathy. These have usually been noted to occur after prolonged (e.g., several months) therapy. For patients being treated with linezolid for longer than 14 days, weekly monitoring of blood counts and clinical symptoms is warranted.

Antibiotic therapy for mild infections in patients who have not recently received antibiotic therapy can often be directed at just staphylococci and streptococci. Empirical therapy for infections that are chronic, moderate or severe, or that occur in patients who have failed previous antibiotic treatment, should usually be broader spectrum.

We recommend empirical therapy with a broad spectrum antimicrobial like third generation cephalosporins, either oral or parenteral, in patients presenting with suspected diabetic foot infections. Linezolid therapy may be considered in pure gram positive infections, especially against multidrug resistant strains, and in chronic, recalcitrant cases. It may also be combined with other drugs in polymicrobial infections.

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Study of Dermatophytosis in Tumkur, Karnataka

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ABSTRACT

Background: Dermatophytosis is one of the major skin diseases prevalent all over the world and more prevalent in tropical and subtropical countries including India. Dermatophytoses are caused by a group of keratinophilic fungi called dermatophytes which belongs to three major genera namely *Trichophyton*, *Microsporon* and *Epidermophyton*. The present study is undertaken to know pattern of dermatophytoses in this region.

Methods: Skin, nail and hair samples were collected from 110 clinically suspected cases of dermatophytoses and subjected to direct microscopy by KOH (Potassium hydroxide) mount and culture on Sabouraud's dextrose agar (SDA) and Dermatophyte test medium. The isolated dermatophytes were identified. A detailed history was recorded including age, sex, occupation, duration and site of infection and treatment.

Results: Dermatophytoses was more common in the age group of 21- 30yrs and the male to female ratio was found to be 2.1:1. The predominant clinical type was *Tinea corporis* followed by *tinea cruris*. Multiple site involvement in same patient was found in 6 cases. The commonest dermatophyte isolated was *Trichophyton rubrum* in 20 cases followed by *Trichophyton mentagrophyte* in 10 cases, *Trichophyton violaceum* and *Microsporum gypseum* in 2 cases each and *Epidermophyton floccosum* in one case.

Conclusion: Dermatophytoses was found to be more common in 21-30yrs of age group with male predominance. The common dermatophyte isolated in this region is *Trichophyton rubrum*.

Keywords: dermatophytosis, tinea, *Trichophyton rubrum*.

INTRODUCTION

Dermatophytosis constitute a group of superficial fungal infections of keratinized tissues-the nail, the hair and the stratum corneum, caused by a homogeneous group of keratinophilic fungi called Dermatophytes. The disease is a consequence of the host reaction to the metabolic products of the fungus rather than to the invasion of living tissue by the organisms.

Dermatophytosis is one of the major skin diseases prevalent all over the world. They are more prevalent in tropical and subtropical countries including India. Heat and moisture play an important role in promoting the growth of Dermatophytes. They are also influenced by socioeconomic factors like poverty, poor hygiene, overcrowding, immunocompetence of the host and pathogenicity of the infectious agent. Extensive dermatophytoses were seen in patients with diabetes, HIV infection and on immunosuppressive drugs.^{1,2,3,4}

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The term Dermatophyte literally means 'plant growing on the skin' derived from the words dermatos=skin and phyto=plant. The Dermatophytes are hyaline septatemolds with more than hundred species described. They are divided

into three anamorphic genera namely Trichophyton, Microsporum and Epidermophyton and epidemiological groups -anthropophilic, zoophilic and geophilic species.⁵

The first scientific proof of the Dermatophytosis was provided by Remak in 1845. Since then many have surveyed and isolated the Dermatophytes in different countries.⁶ In India Dr. Powell in 1900 first reported the case of Dermatophytosis from Upper Assam.⁷ Till date various studies have been conducted from different parts of India and it remained a major public health problem. The distribution of the Dermatophytic infections vary with geographic region, passage of time, living conditions, social habits, occupation, migration of population. This study had been undertaken to determine the pattern of dermatophytosis in Tumkur, Karnataka.

MATERIALS & METHODS

Cases: A total of 110 clinically suspected cases of dermatophytosis of all age groups and of both sexes attending OPD of Skin and STD of Sri Siddhartha Medical College, Tumkur were included in this study. A detailed history was recorded including age, sex, occupation, duration and site of infection and treatment.

Specimen collection and processing: Lesions were cleaned with 70% alcohol to remove the dirt and contaminating bacteria. Skin scrapings from the edge of the lesion, nail clippings and infected hair plucking were collected in a sterile paper, folded and labelled. The sample is divided into two parts, one for direct microscopy and other for culture.

Direct microscopic examination was carried out using 10% KOH (Potassium hydroxide) for skin scrapings and hair stubs. Nail clippings were cut into small pieces and incubated in a tube containing 40% KOH overnight and then examined.

All the specimens are inoculated into two sets of tubes containing Sabouraud's Dextrose Agar (SDA) with 0.5% cycloheximide and 0.05% of chloromphenicol and Dermatophyte Test Medium (DTM). Tubes are incubated, one at 37°C and other at room temperature for 4 weeks. Inoculated DTM tubes were observed for colour change of the indicator phenol red (yellow to red) for two

weeks. Dermatophyte growth was subcultured to tube containing SDA and topography, texture and pigment of the colony were recorded.

Isolated dermatophytes were identified and characterised by microscopic morphology, slide culture, urease test, hair perforation test.^{8,9,10}

Statistical analysis was done by chi square test.

RESULTS

The maximum occurrence of dermatophytosis was found in the age group of 21 to 30 yrs (table -1) and male female ratio of 2.1:1 was seen (fig-1).

The predominant clinical type t.corporis was found in 43 cases followed by t.cruis in 25 cases. Multiple site involvement in same patient was found in 6 cases. (table-2)

67 cases were positive by direct microscopy, 35 by culture and 32 were positive by both (table-3).

The commonest dermatophyte isolated was *Trichophyton rubrum* in 20 cases followed by *Trichophyton mentagrophyte* in 10 cases, *T.violaceum* and *Microsporum gypseum* in 2 cases each and *E. floccosum* in one case (table-4). The distribution of different species of dermatophytes among different dermatophytoses are shown in Table No - 5.

DISCUSSION

Dermatophytoses was found to be more common in the age group of 21-30 yrs. Similar incidence was found in various studies. It is less common in two extremes of life. The probable reasons could be increased environmental exposure, greater physical activity and increased sweating.¹¹ The infection is more common in males than females with the ratio of 2.1:1. The increased outdoor physical activity in males increases the incidence. Probably shy nature and negligence in females many of the infections go unreported.⁶ Table No- 6 shows the distribution of age and sex in different studies.

T.corporis was the predominant clinical type followed by t.cruis. This is probably due to lack of personal hygiene, overcrowding and also severe itching associated with it which induces the patients to seek early medical advice. They are more common in the age group 21-40 yrs and in males. This correlates

the findings of many studies in India (Table-7).

T.capitis was the fourth common clinical type, generally considered as less common in India due to the use of vegetable or coconut oil on the scalp which inhibits the growth of dermatophytes.¹² It is more common in the age group of <20yrs. The lower incidence of dermatophytoses after prepubertal age is believed to be due to the sebum containing free fatty acids which hinder the growth of the fungus.¹³

The incidence of *t.pedis* is low in this region as many are bare foot walkers and it is common in people who wear shoes which increases the dampness and favours the growth of dermatophytes.

T.unguium was more when compared to other studies as most of the people here are farmers who work in fields often prone for injuries, this favours the entry of dermatophytes as a rule they never infects the normal nail. It was found to be more common in 21-30yrs age group as they are more cosmetic conscious than the older age group.

Multiple site involvement is seen in this study as they scratch the site of infection and touch the other parts of the body with the fingernails carrying fungus beneath.

KOH positivity was found to be more than culture positivity rate, reason could be due to improper sample collection and contamination of the culture tubes.

T.rubrum was the most common etiological agent followed by *T.mentagrophytes*. Similar observations were found in earlier workers from India. The common occurrence of *T.rubrum* in various parts of the country is due to its greater adaptability to survive in varying climatic conditions like warm, humid climate and more susceptible to individuals with poor nutrition.⁶

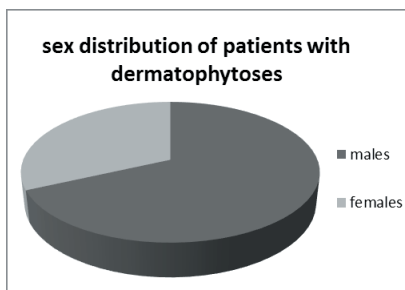


Fig 1: Sex distribution of patients with Dermatophytoses

Table-1: Distribution of patients with Dermatophytoses according to age

Age group(yrs)	No. of cases	%
1-10	4	3.6
11-20	18	16.4
21-30	38	34.5
31-40	29	26.4
41-50	12	10.9
51-60	8	7.3
>60	1	0.9
Total	110	100

Table-2: Distribution of patients according to different clinical types

Sl. No	Clinical type	No. of cases	%
1	t.corporis	43	39.1
2	t.cruris	25	22.8
3	t.capitis	8	7.3
4	t.unguium	23	20.9
5	t.pedis	3	2.7
6	t.faciei	2	1.8
7	t.corporis+t.cruris	3	2.7
8	t.cruris+t.pedis	1	0.9
9	t.pedis+t.manuum	1	0.9
10	t.faciei+t.corporis	1	0.9

Table-3: Comparison of microscopy and culture results of Dermatophytoses

Microscopy	Culture+	Culture-	Total%
KOH+	35	32	67(60.9%)
KOH-	-	43	43(39.1%)
Total	35(31.8%)	75(68.2%)	110(100%)

Table-4: Distribution of various species of Dermatophytes

Dermatophyte species	Total No	%
<i>T.rubrum</i>	20	57.1%
<i>T.mentagrophytes</i>	10	28.6%
<i>T.violaceum</i>	2	5.7%
<i>E.floccosum</i>	1	2.9%
<i>M.gypseum</i>	2	5.7%

Table-5: Distribution of species of Dermatophytes in different dermatophytoses. .12

	T. rubrum	T. mentagrophytes	T. violaceum	E. floccosum	M. gypseum	Total
T.corporis	6(30%)	5(50%)	1(50%)	-	1(50%)	13
T.cruis	5(25%)	3(30%)	-	1	-	9
T.capitis	2(10%)	-	1(50%)	-	1(50%)	4
T.unguim	2(10%)	-	-	-	-	2
T.pedis	1(5%)	-	-	-	-	1
T.faciei	1(5%)	-	-	-	-	1
T.corporis +T.cruis	2(10%)	-	-	-	-	2
T.cruis+ T.pedis	-	1(10%)	-	-	-	1
T.pedis +T.manum	-	1(10%)	-	-	-	1
T.faciei+ T.corporis	1(5%)	-	-	-	-	1
Total	20	10	2	1	2	35
%	57.1%	28.6%	5.7%	2.9%	5.7%	

Table-6 : Predominant age groups and male : female ratio in different studies.^{1,14,4,15, 11, 16, 17, 18,19,20}

Studies	Predominant age group(yrs)	Male:female
Sudershan V	21-30	1.5:1
Vijayakumar MR	11-40	3:1
Gupta BK	21-30	2.3:1
Nita Patwardhan	21-30	2:1
BelurkarDD	21-30	0.6:1
SumanaV	21-30	3:1
Venkatesan G	-	1.4:1
Neetu Jain	31-40	2:1
Hanumanthappa H	21-30	1.94 : 1
Maity PP	21-30	2.6:1
Present study	21-30	2.1:1

Table - 7: The distribution of different clinical types of dermatophytoses in different studies.^{1,21,22,4,6,7,23,24}

.15,16,12,25,,17,19,20

Studies	T.corporis	T.cruis	T.capitis	T.unguim	T.pedis	T.barbae	T.faceie	T.mannuu	Mixed
Kurup PV et al			2.02	4.05	22.97	3.37			59.46
Poria VC et al	36	40	5.3	4.3	4.6	2		3	4.6
Siddappa K et al	34.62	32.31	6.93		1.53			1.53	22.31
vijayashankar MR et al	41	35	8	2	10	1.5		2.5	
Gupta BK et al	37.7	34.6	5.03	4.4	5.6		3.8	8.8	
Huda MM et al	27.3	10.7	3.5	7.1	8.3		1.1	3.5	3.57
Sanchita K et al	24	34.8	16.8	2.8	2		6	3.2	10.4
Nita patwardhan et al	24.57	22.28	12	4	17.71	2.85		8.57	
Vernekar MP et al	40.5	26.25	10	6.25	12.5			5	
SeemaBhaduria et al	42	8.5	21	4.5				15	
Sumana MV et al	66.6	2.8	27.8	27.8			2.8		
Belurkar DD et al	20.19		19.72	14.08	17.84	18.78			
Grover WCS	15.5	26.2	3.8	8.7	24.7		2.9	13.5	
Venkatesan G et al	64.8	26.8		2.8	5.6				
Neetu Jain et al	37.5	15	20	2.5	12.5	0.8		10.8	0.8
Hanumanthappa H	33.3	23.3	11.3		2	2	2.7	1.3	16
Present study	39.1	22.8	7.3	20.9			1.8		5.5

Table-8: The distribution of different types of dermatophyte species isolated in different studies.^{1,22,14,2}

.3,4,23,15,26,16,12,25,13,17,27,18,19,20

Studies	T.rubrum	T.mentagrophytes	T.violaceum	T.tonsurance	T.verrucosum	T.schoenlenii	E.floccosum	M.gypseum	M.canis	M.audounii	M.ferruginum
Kurup PV et al	27.7	4.1	0.7				1.35		1.35		
Sudarshan V et al	87.09	3.22	6.47				3.22				
Siddappa K et al	81.82	1.51	4.54				9.09			3.03	
vijayashankar MR et al	55.5	31.12	3.33	3.33			1.11				
Gupta BK et al	42.2	6.06	12.12	1.5			15.15				
RanganathanS et al	52.2	15.59	4.89	6.72			6.11	0.3			
Nita patwardhan et al	28.12	25	6.25	3.12	6.25		15.67				

Cont... Table-8: The distribution of different types of dermatophyte species isolated in different studies.

1,22,14,2,3,4,23,15,26,16,12,25,13,17,27,18,19,20

Vernekar MP et al	55.18	31.03		3.45			6.89	3.45			
Sumana MV et al	52.7	30.55	11.1				2.77	2.77			
Belurkar DD et al	53.52			12.21	21.6					8.92	
Suman Singh et al	73.27	17.24	1.72				7.75				
Sanjeev Grover	8.7	2.9		20.5							5.8
Beerpur et al	43.7	28.1	4.7	4.7		4.7	7.8			6.2	
Venkatesan G	73.3	19.7					4.2	2.8			
Neetu Jain	45.71	14.29	10	8.57		4.29	4.29				
Hanumanthappa H	58.9	24.6		5.4			0.7	8.2			
Kumar S	65.09	17.92	3.78				8.49			4.72	
Maity PP	12.1	8.1		9.7			1.6	4.8	1.6		
Present study	57.1	28.6	5.7				2.9	5.7			

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Ethical approval: This study was approved by Institutional Ethical Committee of Sri Siddhartha Medical College and Research Centre, Tumkur, Karnataka.

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Hypercholesterolemia Associated with Subclinical Hypothyroidism in NCR Population

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ABSTRACT

Background: Subclinical hypothyroidism characterised by elevated level of total cholesterol, is controversial. Females are more affected by subclinical hypothyroidism comparing to males.

Material & Methods: Total 131 both male & female were enrolled for the study compared with 61 healthy controls. Body mass index, serum concentration of TSH and FT₄ and Total cholesterol was measured. Thyroid profile of the participants was estimated by ELISA. Total cholesterol (TC) was measured by CHOD-POD method.

Results: SCH patients were characterised by higher body mass index and elevated level of total cholesterol compared to control group (<0.01). Females with SCH were having higher BMI (<0.01) and higher total cholesterol (<0.05) when compared with male of SCH. TSH was positively correlated with TC in male group of SCH (r=0.32, p=<0.05) as well as female group of SCH (r=0.34, p=<0.05).

Conclusion: Hypercholesterolemia was associated with subclinical hypothyroidism. Females with SCH were characterised by higher risk of hypercholesterolemia comparing to males.

Keywords: SCH, hypercholesterolemia, Thyroid stimulating hormone, BMI

INTRODUCTION

Subclinical hypothyroidism is common endocrine disorder. Few to various symptoms of hypothyroidism are present in subclinical hypothyroidism or it may be asymptomatic.¹ Subclinical hypothyroidism is present worldwide. In India its prevalence varies from 8 to 12% of entire population approximately.^{2,3} Subclinical hypothyroidism is confirmed by the laboratory investigation when it presents serum concentration of thyroid stimulating hormone (TSH) and free thyroxine (FT₄) within the reference range.⁴ Although it is not a gender specific disease, studies have defined that females are more affected rather than males with Subclinical hypothyroidism.⁵

Thyroid hormones are known to play an effective role on lipid metabolism more influence on degradation rather than synthesis of it. Severe hypothyroidism is usually associated with an increased level of total cholesterol further patients with hypothyroidism have increased incidence of residual myocardial ischemia.⁶ Studies have indicated that hypercholesterolemia is found in SCH patients but this result was not consistent.^{7,8} So the main objective of this study was to assessment of the total cholesterol in Subclinical hypothyroidism.

MATERIAL & METHODS

This cross sectional study was conducted in Santosh medical College & hospital, Ghaziabad. Total 131 subclinical hypothyroidism patients both male (56) and females (75) were enrolled for the study & compared with 61 healthy controls. Age group of the study population was between 25-45 years. The patients were enrolled having newly diagnosed

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subclinical hypothyroidism and not associated with any previous or family history of thyroid disorder, cardiovascular disease, diabetes, hypertension, renal disorder, smoking, pregnancy or alcoholism.

METHODS

Body mass index, thyroid profile and total cholesterol were measured in study group of subclinical hypothyroidism. Body mass index (BMI) was calculated in aforesaid population by obtaining the weight of the individual in kilogram (kg) which is divided by the square of the height of that individual in meter square (m²). The range between (18.5 – 24.99) kg/m² was considered normal body mass index.⁹ Thyroid profile (TSH & FT₄) of the study group was estimated by enzyme linked immunosorbant assay (ELISA). The ELISA kits were purchased from *Avantor Performance India*.¹⁰ Total cholesterol was estimated by CHOD-POD method by using *ERBA diagnostic, Mannheim, Germany* kits.¹¹

STATISTICAL ANALYSIS

All the variables (Age, BMI, TSH, FT₄, and TC) were expressed as Mean ± SD. The unpaired student t test was used between the SCH and control groups. This student t test also applied between the groups of males and female in subclinical hypothyroidism. A pearson correlation coefficient was used for correlation of TSH with total cholesterol in male as well as female group. A p value <0.05 was considered as statistically significant. IBM SPSS version 20.0 was used for the statistical analysis.

RESULT

There was statistically significant difference was observed in SCH groups compared to control group. BMI, TSH and Total cholesterol was significantly (<0.01) different between the groups. (Table-1) In subclinical hypothyroidism patients females are characterized by significantly higher Body mass index and elevated level of total cholesterol concentration compared to males. Highly significant difference was observed in TSH between male and females of SCH. In case of FT₄ this result was not significant.

Body mass index was highly significant (<0.01) between the groups of male and female. The level of Total cholesterol was higher in female patients of

subclinical hypothyroidism the result was significant (<0.05). (Table-2)

A positively significant correlation was observed between TSH and Total cholesterol in males group (Fig.-1) as well as female group (Fig.-2). The result was statistically significant (<0.05). (Table-3)

Table-1 Baseline characteristics between SCH and control Group ^a

Parameters	^b Control (61)	^b SCH(131)
Age(yrs)	35.7±3.37	36.03±3.5
BMI(kg/m ²)	22.91±1.69	27.71±3.19**
TSH(μIU/ml)	2.73±0.72	11.53±3.65**
FT ₄ (ng/dl)	1.17±0.19	1.15±0.24
TC(mg/dl)	184.52±13.92	207.5±21.39**

Table -2 Baseline characteristics between male and female group of subclinical hypothyroidism ^a

Parameters	^b Male (56)	^b Female (75)
Age(yrs)	35.76±3.76	36.22±3.31
BMI(kg/m ²)	26.29±1.93	28.77±3.53**
TSH(μIU/ml)	9.41±1.96	13.12±3.83**
FT ₄ (ng/dl)	1.11±0.22	1.19±0.26
TC(mg/dl)	203.13±16.75	210.76±23.88*

^a By an unpaired student't test. ^b All the variables were expressed as Mean ± SD.

*p value significant at 0.05 level

**p value significant at 0.001 level

Table-3 Correlation between TSH & TC in male groups and female group of SCH¶

Parameters	r value
TSH-TC [¶]	0.32*
TSH-TC ^{¶¶}	0.34*

¶ Pearson correlation coefficient

TSH- thyroid stimulating hormone, TC- total cholesterol, SCH- subclinical hypothyroidism

¶Male group of SCH, ¶¶Female group of SCH

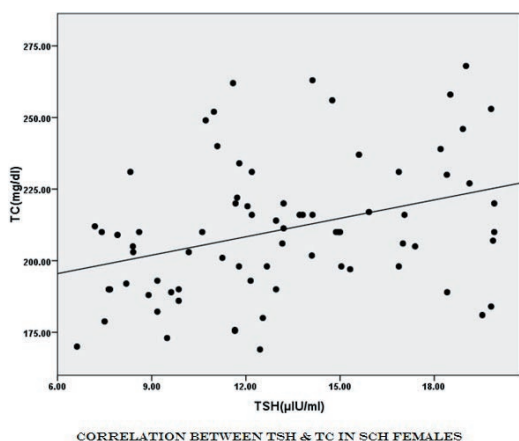


Figure-1 Total cholesterol (TC) was positive correlated ($r=0.32$, $p<0.05$) with thyroid stimulating hormone (TSH) in SCH males. Y axis represents the concentration of TC in mg/dl while X axis represents the concentration of TSH in μ IU/ml.

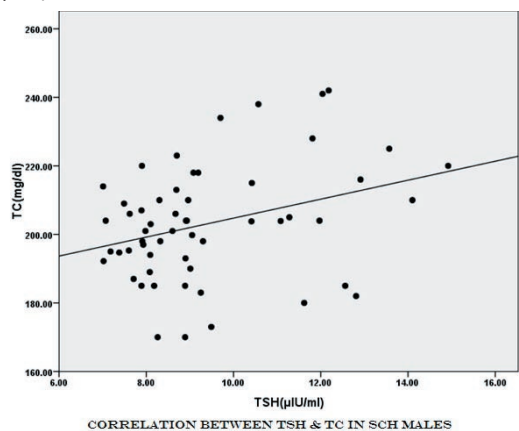


Figure-2 Total cholesterol (TC) was positive correlated ($r=0.34$, $p<0.01$) with thyroid stimulating hormone (TSH) in SCH females. Y axis represents the concentration of TC in mg/dl while X axis represents the concentration of TSH in μ IU/ml.

DISCUSSION

This study supports the hypothesis that peoples with Subclinical hypothyroidism are characterized by higher body mass index and higher concentration of total cholesterol. Tseng et al supporting our study while reported that people with SCH has a higher BMI and elevated serum total cholesterol.¹² Knudsen et al concluded that slightly increase TSH levels were associated with increased risk of occurrence of obesity.¹³ The data from NHANES III have observed hypercholesterolemia in SCH patients compared to control group.¹⁴ Erdam et al¹⁵ and Gao et al¹⁶ supported our study by showing the elevated level of serum total cholesterol. On contrary to it Sampaolo G et al reported that subclinical hypothyroidism is not characterized by hypercholesterolemia.¹⁷

and supporting to this Fiarresga A et al concluded that the level of total cholesterol was lower in SCH patients compared to control group.¹⁸ In this study we observed that SCH females are characterized by higher total cholesterol compared to males. Supported to this Luboshitzky R et al observed that middle aged women with SCH are characterised by elevated total cholesterol.¹⁹ This study defines that TSH is positively associated with total cholesterol in both male and female group of SCH. In support to this Tromso Study observed positive association between TSH and Total cholesterol levels.²⁰ Zhao M et al reported that TSH exhibited a stronger effect on the total cholesterol levels in moderately old subjects than in younger subjects.²¹ Moreover, supporting to this Rotterdam study concluded that Subclinical hypothyroidism is highly prevalent in elderly women and strongly associated with myocardial infarction.²²

CONCLUSION

This study specifies that people with SCH are characterised by higher body mass index and hypercholesterolemia, females are more prone towards this compared to males. Frequent increased weight along with elevated total cholesterol might be worsening in patients of SCH with severity of disease. Future risk of associated cardiovascular diseases could not be avoided due to that. Early detection of disease can be helpful for the treatment of disease. Measurement of total cholesterol could be highlighting the possible risk of further development of cardiac risk and the direction in the way disease progress.

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Conflict of Interest: None

Source of Funding: Self

Ethical Clearance: Taken

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Assessment of Placental Weight, Newborn Birth Weight in Normal Pregnant Women and Anemic Pregnant Women: A Co-relation and Comparative Study

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ABSTRACT

Introduction : Pregnancy is a joyful experience most of the times but it can also be a time of unknowns. Anemia is such a condition in which there is utero-placental insufficiency leads to poor placental and neonatal outcome. There is a dearth of research literature in the area of comparative study in Indian setting. Hence it was felt necessary to compare the changes in normal and anemic pregnant women.

Material & Methods: Non experimental, descriptive approach was used and Study was conducted in Maternity ward of Guru Gobind Singh Medical Hospital, Faridkot, (Punjab). Through purposive sampling 30 normal pregnant women and 30 anemic pregnant women and self structured tool was used for collection of data.

Results: The mean placental weight in 30 normal pregnant women was 521.00gms, Mean Placental weight in anemic pregnant women was 553.00gms. There is statistically no difference in placental weight in both groups. The mean birth weight in 30 normal pregnant women was 3152gms, Mean Placental weight in mild, moderate, severe anemic pregnant women was 3100 gms, 2800 gms, 2930gms. There was positive correlation between placental weight and baby's weight at p value 0.05 level of significance.

Conclusion: The findings of the study provides us with the evidence that decrease or increase in maternal Haemoglobin levels leads to changes in the placental weight and due to alteration in placental weight it affects the birth weight. There is positive correlation between placental and birth weight.

Keywords: *Placental weight, Birth weight, Pregnant women, Anemic, Normal, Newborn.*

INTRODUCTION

A woman is the mother of mankind. Pregnancy is one of the nutritional demanding times in women's life.¹ Most prevalent nutritional deficiency during pregnancy is Anemia.² Anemia in pregnancy is characterized by a reduction in the concentration of haemoglobin in the blood. Anemia in pregnancy is

present in very high percentage of pregnant women in India.²

In pregnancy, anemia has a tremendous effect on placenta. The placenta is an organ that connects the developing fetus to the uterine wall to allow nutrient uptake, waste elimination, and gas exchange via the mother's blood supply. Placental volume has been taken as an indicator of placental function.³ Maternal anemia causes the development of a big placenta.⁴ An increase in placental volume in case of maternal anemia has frequently been interpreted as evidence of compensatory hypertrophy for reduced oxygen

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supply. The placental weight increased according to the birth weight.⁵

This study helps to describe the findings of placenta in case of anemia, so that the researcher can easily compare the anemic and normal placenta. Although not many studies were done, but out of all studies few studies showed increase placental weight and few showed decrease placental weight in anemia. This study was selected get to know the real facts about placental changes and birth weight changes in normal pregnant women and anemia pregnant women. Conceptual framework of general system theory was used in the study.

OBJECTIVES OF THE STUDY

- To assess the placental weight in normal and anemic pregnant women.
- To assess the Birth weight in normal and anemic pregnant women
- To compare the placental weight and Birth weight among normal and anemic pregnant women.
- To co-relate the placental weight with baby's weight.

MATERIALS & METHODS

Study was conducted in Maternity ward of GGSMC&H, Faridkot (Punjab). Non-experimental descriptive (comparative) approach and purposive sampling technique was used to select 60 (30 in anemic and 30 in normal group) sample. Data was collected from all the selected subjects who fulfilled the inclusion and exclusion criteria. Researcher obtained written informed consent from all subjects.

Inclusive Criteria:

- Normal and anemic pregnant women admitted in maternity ward for delivery.
- Women who were willing to participate in the study.
- Singleton pregnancy.

Exclusive Criteria:

- Women who were having any medical complication.
- Women having multiple pregnancy.

- Women having high risk pregnancy

ETHICAL CONSIDERATION

This study had been approved by the ethical committee of University College of Nursing and Baba Farid University of Health Sciences, Faridkot with approval no. BFUHS/2k13/p-TH/3531.

SELECTION AND DEVELOPMENT OF THE TOOL

Tool was selected and developed by keeping in mind the objectives of the study reviewing theoretical sources, previous studies, internet and thorough discussion with the guide and co guide.

Part I:- It consist of Socio demographic profile.

Part II:- Placental weight.

Part III:- Birth weight.

Part I:- Socio demographic profile.

The socio demographic profile which was structured interview schedule was filled by investigator. It consist of age, gravidity, haemoglobin level ,period of gestation (in weeks), education , religion, family income, dietary habits, occupation.

Part II:

Placental weight:-(gms)

Part III:

Birth weight------(gms)

RESULTS

Table 1 and figure 1,3 ,5 depicts the comparison of placental weight in normal pregnant women and anemic pregnant women as per t- test the comparison was found Non- Significant at p value of 0.16 and hence concluded that there is no difference in placental weight of normal pregnant women and anemic pregnant women.

Table 2 and figure 2,4,6 depicts the comparison of Birth weight in normal pregnant women and anemic pregnant women as per t- test the comparison was found Significant at p value of 0.012 and hence concluded that there is difference in Birth weight of normal pregnant women and anemic pregnant women.

Table 3 and figure 7 shows the correlation of placental weight with birth weight in normal pregnant women and anemic pregnant women at 0.05 level of significant. It can be concluded that there is weak positive correlation between placental weight and baby's weight.

DISCUSSION

The finding of present study revealed that placental weight in normal pregnant women is 521.00 gms while placental weight in anemic pregnant women is 553.33 gms. Placental weight was more in anemic pregnant women as compared to normal pregnant women. These findings are consistent with other studies, such as Chinchpure Supriya⁶ that placental weight in normal pregnant women was 485.5 and in anemic pregnant women was 544.8. Begum Mahamuda et.al⁷ reported that mean volume of placenta in normal group, Mild anemic group and moderate anemic group were 444.00±38.37, 472.59±17.34 and 485.38±24.62 respectively. Kesha Baptiste Roberts⁸ findings suggested that the placenta had compensatory responses to anemia. A disproportionately heavy placenta in anemia, suggestive of placental hypertrophy, may indicate an adaptive response to an adverse intrauterine environment. Levario-Carrillo M et.al. (2003)⁹ Showed that placenta weight in the group of women with anemia was 558+/-105 g and in the group of women without this diagnosis 527+/-107 g. Godfrey KM, Redman CW, Barker DJ, Osmond C.¹⁰ showed that Large placental weight was associated with a low maternal hemoglobin. Lao TT, Wong WM¹¹ reported that as Compared to the control group, the iron deficiency group had higher placental weight (P = 0.001) and placental ratio (P < 0.001). The findings were inconsistent with Dr. Adil (2012)¹² findings that showed placental weight in anemic group was 446.96 gms and in normal group was 472.68 gms.

The finding of present study revealed that birth weight in normal pregnant women is 3152gms while birth weight in Mild anemic pregnant women is 3100gms, in Moderate Anemic pregnant women is 2800gms while in severe anemic pregnant women is 2930gms, it is significant at 0.05 level. These findings are consistent with other studies, such as Ahmad Muhammad Owais. at el. (2011)¹³ Study result showed an association of maternal anemia in

pregnancy with increased risk of LBW babies, Ervasti M, Sankilampi U, Heinonen S, Punnonen K (2009)¹⁴ showed that hypochromic red blood cells indicating the lowest iron status was associated with a high birth weight and a long duration of pregnancy. Menendez C. et al. (2000)¹⁵ concluded that anemia is associated with reduced birth weight, which was thought to be effected through placental insufficiency. Lao TT, Tam KF.(2000)¹¹ showed that there was an associated with an increased placental weight/birth weight ratio in anemia. Sifakis S, Pharmakides G (2000)¹⁶ reported that Prematurity, spontaneous abortions, low birth weight, and fetal deaths were complications of severe maternal anemia.

In present study findings showed the Correlation of placental weight with birth weight in normal pregnant women and anemic pregnant women, there was positive correlation between placental weight and birth weight. These findings were consistent with the Chinchpure Supriya (2011)⁶ that showed placental weight and birth weight had significant positive correlation that as the placental weight increases the birth weight also increases. Also supported by Ervasti M et.al. (2009)¹⁴ that the lowest iron status of mother was associated with a high birth weight. Findings were also compared with Akhter S et.al. (2010)¹⁷ that showed Maternal [Hb] and serum ferritin showed a highly significant positive with placental weight, birth weight. Findings were further supported by Asgharnia. M et al. (2008)¹⁸ there were statistically significant relationship between placental weight and birth weight ($\alpha = 0.05$) And Manop Janthanaphan MD¹⁶ reported that the placental weight increased according to the birth weight ($r = 0.450, p < 0.005$).

Table 1: Placental weight in Normal and anemic pregnant women N:60

	Mean (gms)	Std deviation	t test	Sig p
Anemic group	553.3	118.88	1.39	0.169 ^{NS}
Normal group	521.0	44.825		

NS Non significant at 0.05 level

Table 2: Birth weight in Normal and anemic pregnant women
N:60

	Mean (gms)	Std deviation	t test	Sig p
Normal group	3152	0.425	2.6	0.012**
Mild	3100	0.0		
Moderate	2800	0.08		
Severe	2930	0.22		

**significant at 0.05 level

Table 3: Correlation of placental weight with Birth weight
N:30

Placental weight Birth weight	r	"p" value
Sample of 60	0.291	0.024**
Anemic pregnant women(30)	0.514	0.004***
Normal pregnant women (30)	0.14	0.461 ^{NS}

**significant at 0.05 level

***highly significant at 0.05 level

NS Non significant at 0.05 level

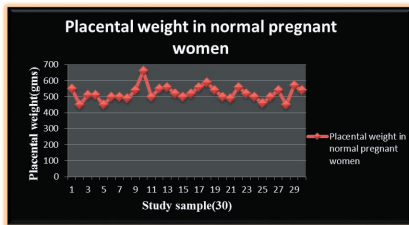


Figure 1: Distribution of placental weight in normal pregnant women

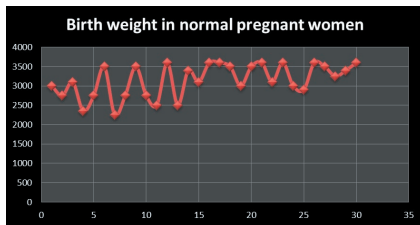


Figure 2: Distribution of Birth weight in normal pregnant women

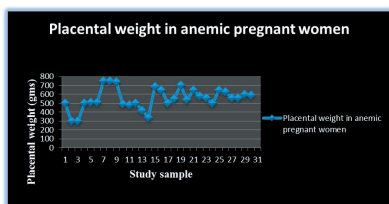


Figure 3: Distribution of placental weight in anemic pregnant women

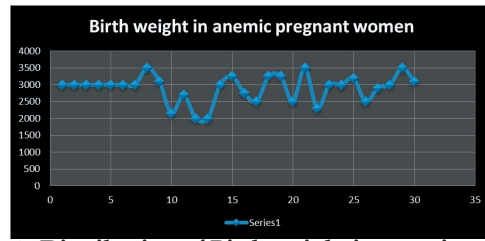


Figure 4: Distribution of Birth weight in anemic pregnant women

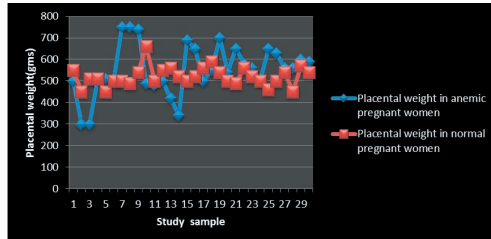


Figure 5: Distribution of placental weight in anemic and normal pregnant women.

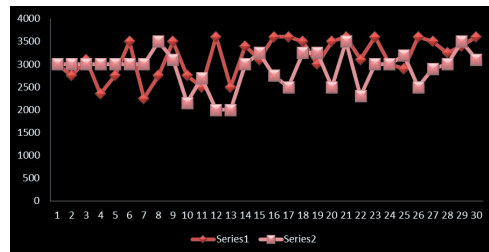


Figure 6: Distribution of Birth weight in anemic and normal pregnant women.

Series 1 :-normal pregnant women Series 2: anemic pregnant women.

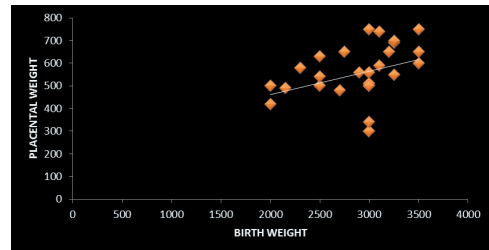


Figure 7: Correlation of placental weight with birth weight in anemic pregnant women and normal pregnant women.

CONCLUSION

The findings of the study provides us with the evidence that decrease or increase in maternal Haemoglobin levels leads to changes in the placental weight and due to alteration in placental weight it affects the birth weight. This study shows the positive correlation of placental weight with birth weight and suggests for prompt importance should be given to preconception counseling, early registration of cases, with identification of risk factors or complications and prompt treatment is necessary. The placenta is

a mirror which reflects the intrauterine status of the fetus.

AcknowledgementL: "In three words I can sum up everything I've learned about life: it goes on."

— Robert Frost

The present study is the end product of teamwork. I have been fortunate indeed to have the valuable guidance, help and support of our advisors and experts. There are not enough words to express my love for my parents S. Hardial Singh and Mrs. Sukhpal Kaur, my brother Mr. Navjot Singh Sandhu, for their prayers, moral support, love, affection and constant encouragement kept my working spirit alive day and night. — Daljeet Kaur

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Determinants of Quality of Work Life as an Important Issue to Improve Health Workers Performance in Indonesia

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ABSTRACT

The human resource are important asset for organization. Organization needs to build Quality of Work Life (QWL) of employees to boost their productivity. This study aims to description correlation QWL and the health workers performance in some health service organizations. This study was reviews on several article about QWL and performance of the health workers in Indonesia. The result found that QWL of health workers in some regions in Indonesia is quite diversed. Proportionally, mostly are in good condition. Non-material rewards also play an important role to improve the employee's QWL. The nurse's QWL is in line with salary increase and their authority in the organization. Besides, problem solving is a crucial factor that makes the employee remains comfortable to work in an institution. Communication is a way to deliver opinions, facts, thoughts, feelings, and values to other people. Conclusion, the QWL components that can affect health workers performance in some health organizations are: employee involvement, problem solving, sense of pride to institution, career development, and communication. Effort to increase employee participation can be achieved by establishing employee involvement, employee participation meeting, and quality improvement teams. Health organization is expected to improve and develop the QWL components, which is poor in employee's perception, to create work environment which supports health workers productivity.

Keywords: health worker, performance, Quality of Work Life, QWL, productivity.

INTRODUCTION

An organization should sustainably improve the quality of human resource to compete in global competition because human resources is the important asset for the organization. Therefore, organization needs to build the quality of employees' life to boost their productivity. In the field of health, the health workers have contributed up to 80% of health development success. Unfortunately, according to WHO in 2006, Indonesia is one of the 57

countries facing human resources crisis in the field of health.

Employee is a valuable human resource in organization. The competence of employee is based on knowledge and skill which is related to their job, job motivation, and job satisfaction.⁽¹⁾ Organization is required to do some efforts to maintain their employees quality. A good performance contributes to the productivity improvement of employees and organization. Employees need work atmosphere which supports their activity in order to run well. Organization takes responsibility for maintaining the quality of work life and guiding their employees to be willing to contribute optimally to achieve the organization's goal.

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Quality of work life (QWL) is a crucial issue

in the field of health, especially to reduce health workers crisis. The QWL is a unit of practice and a state of organizational goal, as well as an employee's perception where they feel secured, relatively satisfied, and be able to grow and develop as human being.⁽²⁾ Employees will feel valued and their organizational commitment to work will be higher.

Employee performance plays an important role to provide health service for the health organization community. Assessment or employees performance evaluation basically aims at providing information about work performance, development of the employees, and improving individual and organizational performance. It can be used for assesment of human resource management effectivity. Then, used for organization benefit, decision making about employees, and employee development, such as promotion, mutation, rotation, termination, and compensation adjustment.^(1, 3-5) This study aims to description correlation QWL and the health workers performance in some health service organizations in Indonesia.

METHODS

This study conducted by doing reviews from several researches by using of relevant article reported on the QWL and the performance of health workers in some regions in Indonesia. QWL components studied are based on Cascio's theory,⁽²⁾ namely employee involvement, compensation fairness, sense of security to work, workplace safety, sense of pride to institution, career development, facilities availability, problem solving, and communication.

Furthermore, all published papers in this field were searched, especially for regions in Indonesia. Looking into such databases as Science Direct, and Google Scholar to find the relevant article, using keywords "Quality of Work Life".

Definition of employee performance in this research refers to the theory^(1, 4, 6, 7) based on the measurement of work result done by the employees in doing their work, like nursing for nurses and midwives. The articles we analysis based on the theory to identifying independent variables which are most related to dependent variables.

FINDINGS

There are several information summarized on health worker's QWL in some regions in Indonesia. Base on Hendrawati's study in Banten, with the respondents of executive staffs (99 people) and structural echelons IV (15 people), found the employees performance is in good category (53.8%). Description of QWL of the employees is that most of them feel not really involved in work, and the compensation awarded is not really fair. Similar condition is also found in career development, problem solving, a sense of pride to the institution, and communication which do not run well. It is an important note which causes poor quality of work life in that organization environment.⁽⁸⁾

Meanwhile, components of QWL which have significant relationship with employee performance are employee involvement, fair compensation, career development, problem solving, and communication.⁽⁸⁾ Using multivariate research analysis, its known that the strongest QWL components which is related to the employee performance of the health institution is the employee involvement (B=1,987, OR=0,137, 95% CI= 0,033-0,573), problem solving of employee (B=2,369, OR=0,094, 95% CI= 0,023-0,384), and employee communication (B=3,620, OR=0,027, 95% CI= 0,006-0,126).

The research of Sari⁽⁹⁾ taking employee respondents in Tambora public health center (Puskesmas) with 119 respondents, its shown that majority is categorized as good performance (50.4%). QWL variable which is related to the employee performance has significant relationship with sense of pride to the institution (p value=0.029), and communication (p value=0.024).

Using multivariate analysis, it is found that the most dominant component, which is related to the performance, is sense of pride to institution, with the value OR (odds ratio) 2,969. It means, employees who have good sense of pride to institution will have the performance three times better than the employees who do not have the sense.⁽⁹⁾

Another research⁽¹⁰⁾ using 79 respondents of midwives from public health center in Middle Bangka Regency, found that good performance (67.9%) was higher than poor performance. Meanwhile, only one variable which had significant relationship

with employee performance, namely employee involvement (p value=0.045). The employees feel that they are not involved in work, which later contributes to the poor employee performance. Only two variable have the most significant impact on employee performance which are employee involvement (B=1,101, OR=3,006, 95% CI= 1,020–8,856), and communication (B=0,784, OR=2,190, 95% CI= 0,762–6,292),.

Research on 53 midwives in public health center also found that the majority is already in good QWL condition, and the performance is in good category. Only three variables of QWL which have significant relationship with performance, namely equal compensation, workplace safety, and sense of pride to institution.⁽¹¹⁾

Similar research was also conducted to the nurses in a hospital⁽¹²⁾ through 118 sample, found that the nurses having less good performance (62,71%) are higher. The research found that there is relationship between nine factors of QWL with the performance of the nurses. Those factors must become a concern for the hospital management party to improve the nurses performance (coefisien value (R^2) 0,764). Meanwhile, the most dominant variable which affects to the performance is career development (Beta value 0,304). It shows that career development factor has the biggest leverage to improve the performance.

Kuanto⁽¹³⁾ using sample of 81 nurses in a privat hospital, found that number of nurses with less good performance (69,3%) are higher than good performances. Only three variables that have significant relationship with the performance, which are sense of security to work (p value=0,050), sense of pride to institution (p value=0,031), and problem solving (p value=0,026). The variable which has the most dominant relationship with the performance is problem solving (Exp B= 5,494)

In addition, research on 97 midwives in one of the hospitals in Jakarta⁽¹⁴⁾ found that the number of midwives with good category performance is higher (53,6%). Variable which has significant relationship with the midwives performance is compensation (p-value 0,033, OR=0.30), workplace safety (p-value 0,021, OR=3.68), problem solving (p value 0,010, OR=0.22), and communication (p-value 0,020,

OR=4.27). The most dominant variable which affects to the performance of midwives is communication.

Lastly, the result of research⁽¹⁵⁾ conducted on 130 nurses in one of the hospitals in Semarang found that there is no significant relationship between the performance (the variables which are career development, employee involvement in organization, equal compensation, work environment, p>0,05). Nurses with good category performance is 50%.

Descriptions QWL condition of health workers in some regions in Indonesia is quite diversified. Proportionally, mostly are in good condition. However, there are still number of employees who feel that they are not involved in work, receive unfair compensation. Besides, in term of career development, problem solving, sense of pride to institution, as well as communication, the condition is not really good and does not run well.

Employee as human resource is a unique as well as complicated creator. When they work in organization environment, they should be treated with good quality of work life, so they are able to work effectively, efficiently, productively, and with excellent quality. Management party should create positive QWL such as giving opportunity to participate, developing career, treating equally, overcoming conflict with no tendension, supervising honestly and objectively, giving proper salary, providing health care, creating good work environment.⁽¹⁶⁾

Currently, globalization era forces an organization to arrange a strategy to improve employee performance. Organization should create a condusive work environment to boost employee performance. Environment in organization which supports quality of work life is the environment which is characterized by employees participation, fair compensation, sense of security to work, workplace safety, available facilities, career development, sense of pride to institution, problem solving, and good communication, so will help the organization achieve its goal.⁽²⁾

Similar with result in six health organizations in Central West Ontario, Canada⁽¹⁷⁾ shows that job satisfaction predictor in organization specifically based on QWL component are good communication, good support from organization in form of training

and development. Also, according the research⁽¹⁸⁾ which indicates that QWL has relationship with other career factors, such as confidence level about success criteria.

Positive QWL condition will build sense of belonging, sense of responsibility, and sense of participation, including loyalty and dedication to organization.⁽¹⁶⁾ Similar with Saraji, showed that the majority of employees were dissatisfied with occupational health and safety, intermediate and senior managers, their income, balance between the time they spent working and with family and also indicated that their work was not interesting and satisfying.⁽¹⁹⁾ But, Dehaghi found no significant relations with none of the eight aspects of QWL.⁽²⁰⁾

The compensation system in this analysis is significantly related to employee performance. Inadequate compensation system could become one of the factors causing job dissatisfaction which later leads to employee productivity.⁽²¹⁾ Non-material rewards also play an important role to improve employee's QWL. Manager should manage the decision of giving rewards to employee. One of them is by applying expectancy theory, which is deciding kind of rewards based on employee's needs.⁽⁵⁾

The QWL program aims at sustainably improving employee performance, for example by giving better opportunity in participation, giving a challenge, expectations, and promising prosperity/wealth.⁽¹⁶⁾ Similar with this study, that high QWL is important for organization to achieve high performance and growth. Evidently there are objective (physical and structural design) factors that provide work place setting and intervening policy factors that affect work processes of employees.⁽²²⁾

The QWL is also often related to Quality of Life (QoL) of employee. Narehan, et all⁽²³⁾ which found that QWL program affects to employee QoL in organization. The QWL is now applied as a strategic tool to attract and retain their employees. Became a part of business strategy that focus on several things which affect employee's QWL, and to maintain work life balance that focuses on performance and work commitment.⁽²⁴⁾

Performance could be individual or personal team work. Performance of work is not limited to employee

with job title, but also all employees in organization.⁽³⁾ A person who mostly has authority to conduct the performance assesment is head of employee, but other could also do it better. So, performance assesment can be also done by fellows, staff, or individual evaluation.⁽⁶⁾ If work assesment is applied well, it will give valuable benefits to organizations and employees.⁽²⁵⁾ Applied QWL measure may be an adequate tool while assessing the success of human resources management.⁽²⁶⁾

CONCLUSION

Generally, description of QWL of the health workers in some areas in Indonesia is in a positive condition, although some parties still think that the work life is less supportive. Moreover, the result of performance assesment of the health workers is mostly in a good category. The most dominant QWL variables which have relationship with the health worker performance are problem solving career development, sense of pride to institution, employee involvement, and communication.

Health organization is expected to improve and develop the QWL components, which is poor in employee's perception, to create work environment which supports health workers productivity. By doing this, health worker performance can be improved and give affect to organization performance.

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Review of Utilization of Family Planning Methods in India

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ABSTRACT

Background; less educated and poorest households leads to minimum use of family planning services. **Aim;**- to study the review of utilization family planning methods in India, **method;**- studies related to utilization of family planning methods were analyzed, results;- forty family were followed up. There was 40 women out of 177 in child bearing age group of 15-49 yrs. more than 90% subjects told the weakness the main side effect of OCP and irregular mensuration (55.5%). **Recommendation;**- increase awareness about family planning methods among target group through mass media, radio, T.V. , role play, poster, banner etc.

Key-words ;- OCP, emergency contraceptive pills, poor household, NRHM, family planning methods.

INTRODUCTION

India was the first country to start family planning program long back in 1952. The name of family planning program was changed to family welfare planning & lastly to the present Reproductive and Child Health.

Good reproductive health implies that people are able to have safe sex life. Men and women should be informed about access to safe, effective, affordable, and acceptable methods of family planning of their choice. Human fertility as determined by many factors are customs, morals and habit of social group to marital obligation of life¹

A study from Rajasthan showed 60.8% had knowledge regarding family planning methods but only 19% were using and that irregularly²

In NRHM, the family planning program was implemented on cafeteria approach and is demand driven need based³

Unmet need and unplanned pregnancy;- contraceptive need of the people have changed dramatically over the past decades. In 2005-2006 the unmet need for contraceptives was 13% of which 13% was spacing methods⁴

Various studies showed that the unmet need of family planning is greatest in 15-19 yrs. old and the

less educated & the poorest households^{5,6}

About 8% maternal death are attributed to unsafe abortion⁷

Emergency contraceptive, a low cost, simple and effective technology can provide a method for women to use within first few days of unprotected intercourse to prevent unwanted pregnancy. Emergency contraceptive pills as essentially provided by the private sector mainly in the urban areas. Its strategy should be to reach to poor, rural women who do not have access to private sector.

MATERIALS & METHOD

Studies related to family planning method and its utilization were analyzed

Results;- In the study of attitudes of women towards family planning methods and its use study from a slum of Delhi done by Kumar s et. All , forty families were followed up. There was 40 women out of 177 in child bearing age (15-49 yrs.) . more than 90% subjects told the weakness is the main side effect of OCP followed by irregular mensuration (55.5%) and headache.

Almost 2/3rd. of women did not adopt family planning methods because they went to more children or son while in another study on family planning practices and methods of women of urban slum of

Lucknow done by Arjit Kumar et. all more than 55.6% of the women in study were married before 18 yrs. of age and 44.4% were married after 18 yrs. of age.

More than 226(66.5%) of women was currently using contraceptive and 114(33.5%) were not using contraceptives techniques even after having knowledge about them.

More than half (54%) of women told that their husband were currently using a oral pills as a method of contraception. 12.2% of women husband were using Nirodh whereas 24.3% of women were sterilized and 20.8% were using coper-t. Very few 8.8 of women were using method of contraception i.e. (DMPA/ injections).

CONCLUSION

It is concluded that the in the study of attitudes of women towards family planning methods and its use study from a slum of Delhi done by Kumar s et. All , forty families were followed up. There was 40 women out of 177 in child bearing age (15-49 yrs.) . more than 90% subjects told the weakness is the main side effect of OCP followed by irregular mensuration (55.5%) and headache.

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RECOMMENDATION

Increase awareness about family planning methods among target group though mass media , radio, T.V. , role play, poster , banner etc.

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Conflict of Interest: No conflict of interest

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Assessing Risk of Cardiovascular Disease among School Teachers: A High Risk Approach at School Settings

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ABSTRACT

Background: The Chronic non-communicable diseases especially Coronary Heart Disease, Hypertension, Diabetes etc are major causes of death and disability worldwide and have increased from 55% (1990) of total burden of diseases to estimated 73% (2015). School Teachers face high amounts of stress during teaching and handling young students. And studies have shown high incidence of heart disease in primary and secondary school teachers. Hence, the study was undertaken to screen hypertension and diabetes among school teachers and to assessing risk of coronary vascular disease among school teachers which is an easily accessible group.

Material and Methods: The present study was a cross sectional study, carried out in two randomly selected schools and school teachers were the study participants. Data regarding socio-demographic risk factors like age, sex and behavioral factors like tobacco use, physical inactivity etc, were collected and anthropometry was done at school setting. School teachers were screened for Diabetes and Hypertension. Data were analyzed by using proportions or percentages & chi-square test.

Results: Total 72 teachers participated in the study and 59 (81.94% %) were females. Staff belonged to various age groups from 21 to 62 years and was from different social strata. The results showed that 4(5.56%) were showing hyperglycemia and 2 (2.8%) were known patients of diabetes. Among who got screened 12(16.67%) were having high blood pressure levels and 4(5.56%) were showing high normal pressure. The other risk factors of CVD were also prevalent among school teachers.

Keywords: Hypertension, Diabetes, Coronary vascular disease, School, teacher's health.

INTRODUCTION

Non communicable diseases are global health and developmental emergency, as they cause premature deaths. Cardiovascular diseases (CVDs)

are the leading causes of morbidity and mortality worldwide. By 2020, the estimated deaths due to CVDs are expected to reach 25 million deaths worldwide ¹. In 2008, they caused 7.9 million deaths among less than 60 years age group in South East Asia and CVDs accounted for 25% of deaths ². Life style related diseases and risk factors like Diabetes, Obesity, Hypertension and stress related disorders, heredity factors, advancing age, cigarette smoking, lack of physical activity etc are on rise worldwide and India is no exception. Assessment of these risk factors like high blood pressure, diabetes mellitus, obesity, , can help to predict the likelihood of CVD ^{3,4}.

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Hypertension is one of the major risk factors for cardiovascular mortality, which accounts for 20-50% of all deaths⁵. Hypertension is one of the diseases of occupational origin. It is ranked fifth amongst the ten most important categories of occupational illnesses⁶. Many studies have observed that, School teachers face high amounts of stress during teaching and handling young students. In overcrowded class rooms, teachers face intensive verbal communication, prolonged standing, high volume of workload put them under stress. The effects of stress are linked to the six leading causes of death, heart disease, cancer, lung ailments, accidents; suicide etc⁷. And studies have also shown high incidence heart disease in primary and secondary school teachers⁸. Large number (28%) of teachers found to have undergone Coronary artery bypass graft (CABG) in recent years as observed in ongoing retrospective study of 6000 CABG patients in Apollo hospital Hyderabad, Andhra Pradesh⁹.

WHO Global Strategy on Diet, Physical Activity and Health (DPAS)2004, endorsed the Health Promoting School based approaches and urged workplace wellness as a healthy settings strategy and highly recommended for implementation of the same¹⁰. The present study was intended to develop School based health promotion/ intervention strategy by assessing risk of coronary vascular disease and its risk factors(hypertension and diabetes) among school teachers, for promoting wellness of teachers at school setting.

MATERIAL & METHODS

The present cross sectional study was carried out in two randomly selected 70 urban high schools from Belgaum, Karnataka. Seventy two school teachers were included in the study after obtaining the consent. Data regarding socio-demographic variables like age, sex and behavioral factors like tobacco use, physical inactivity etc, were collected by interview method. The anthropometry [Height, Weight, Waist circumference] and Blood Pressure were measured. School teachers were screened for Diabetes and Hypertension. The blood pressure > 130 /85 mm hg and < 140/90 mm hg was defined as high normal blood pressure and the hypertension was diagnosed if blood pressure was > 140/90 mm Hg or known hypertensive or on treatment¹¹. The diabetes was

diagnosed either self reported case or if, fasting blood glucose \geq 126 mg/dl or random blood sugar \geq 180 mg /dl¹². Non laboratory based method for assessment cardiovascular Disease risk developed and evaluated by Thomas AG and CR Young in NHANES (National Health and Nutrition Examination Survey) study, which substituted BMI(body mass Index) for cholesterol was used to predict the risk of CVDs. And was the only chart and model that compared with laboratory based model using a prospective follow up cohort. This non based laboratory model was used in the present study¹³. The Proportions, Percentages of various variables, the prediction rates (fatal/nonfatal 5 year risk of CVD) were analyzed and chi square test was used to know the significant difference between various groups.

RESULTS

Total 72 teachers participated in the study and it was found that, 59 (81.94% %) teachers were females and 64(88.89%) were graduates. The age of staff was from 21 to 62 years and the belonged to different social strata. Majority belonged to class III (23.61%), II (23.61%) and IV (20.83%) respectively and only 5.56% belonged to class I followed by class V (15.28%). One third [22/72 (30.56%)] of teachers had a family history of one or the other non communicable disease [HT/DM /CVD] and of that 17/22 (77.27%) had first degree relatives having disease. School teachers were having behavioral risk factors apart from non modifiable risk factors which made them vulnerable for CVD. None of the teachers consumed alcohol, however, 2/13(15.4%) male teachers used to consume tobacco. By age 16(22.22%) teachers were at risk, gender wise majority were at low risk and two thirds of teachers were having overweight and at risk of CVDs. The various risk factors of CVD among school teachers were as listed in Table 1;

All teachers were screened for diabetes and hypertension. The results revealed that, 1 (1.3%) were known patients of diabetes and self reported about the condition and 4(5.56%) were showing hyperglycemia. Amongst the teachers 12(16.67%) were showing high blood pressure levels and of that 9(12.5%) were known patients of hypertension and were on treatment. And 4(5.56%) were showing high normal pressure. The prevalence of hypertension was more among female teachers compared to male

teachers [11/59(18.64%) Vs 1/13(7.7%)]. Three fourths of teachers had a controlled blood pressure on treatment whereas the known diabetic patient had uncontrolled sugar level. In the present study 3(4.12%) hypertensive and 3 (4.12%) diabetic patients were newly diagnosed. The five year cardiovascular (fatal / nonfatal) risk was assessed using non laboratory method risk chart and the results were as shown in table 2;

DISCUSSION

Life style and stress related diseases are prevalent among school teachers. Teachers suffered from many health problems related to stress and its consequences. In the present study 16.67% teachers had hypertension and 5.56% were having Diabetes. Majorities (70.83%) of teachers were having overweight & obesity and 5.56% had high normal blood pressure. It was evident from the results that, most of them were having risk factors of CVDs and were at risk of CVDs. The cumulative predicted risk assessment for 5 year fatal/ nonfatal coronary events revealed that, 15.24% teachers were having high risk of getting CVDs events. Majority (81.94%) were having low risk as, most of them were youngsters, females and not addicted to any bad habits.

Compared to a study conducted in Biskra (Algeria) government primary school teachers who reported stress related symptoms like head ache (74%) and diseases hypertension (5%), heart problems (5%) and diabetes (2%)⁷, Indian teachers were having more health problems especially cardiovascular related problems and are at more risk of CVDs events..

Similar, study conducted among school teachers, at Libya to assess risk factors of CVDs revealed that, 15.1% of the teachers had hypertension, 5.2% had angina and 2.7% teachers suspected to be having ischemic heart disease. Results also revealed that, age, gender, family history of hypertension, BMI, smoking index, fasting blood sugar level, and HDL were significantly and independently associated with the occurrence of CVD¹. Another study among teachers in Alexandria reported that, 23.26% were hypertensive and in Tunisia (Sousse City) the prevalence of hypertension was 28.8% among the school teachers¹⁴. IHD was prevalent among 2.7% of school teachers studied in India¹⁵. Many studies from

various places have found higher prevalence of risk factors (HT) of CVDs and angina / IHD among school teachers. Though, we did not look for symptoms like angina in our study but we tried to estimate the overall cumulative risk of CVD events among teachers which was quite high (15.24%).

A study done to assess Cardiovascular Reactivity during teaching, which is an emerging occupational stress in school teachers observed, significant increments in heart rates [HR (beats/min) 90 +/- 12 to 133 +/- 10; $p < 0.005$]; and blood pressures [SBP (mm of Hg) 112 +/- 16 to 140 +/- 8; $p < 0.05$; DBP (mm of Hg) 76 +/- 8 to 80 +/- 9; $p < 0.05$] were noted at the end of the classes. This indicates that, primary school teachers undergo moderate to severe stress during teaching, resulting in increased cardio vascular reactivity without much physical exertion. Repeated changes in cardiovascular reactivity and prolonged exposure to such stress may be potential risk factor for hypertension and coronary artery disease and other health problems⁹. The school teachers are one of the risk groups who require the screening of risk factors for CVDs and schools should adopt healthy strategies to cope up stress related problems and for promotion of health.

In the present study, the prevalence of behavioral risk factors (smoking, alcohol) was less, as more female teachers were present in the study compared to male teachers and all were nonsmokers. As smoking is one of the strongest CVD predictors and more common in males biologically, the study recommends further studies with large sample, so as to assess actual risk among teaching faculty and to develop proper intervention strategies for whole population.

Many studies^{16, 17, 18} have observed that, risk factors of CVDs are prevalent even among school children especially adolescents. The healthy teacher – the healthy student concept can be inculcated in schools as one of the health promoting strategies towards prevention of emergence of risk factors of CVDs both among teachers and students and as well in community. A healthy heart project involved teachers for promotion of health towards CVDs prevention as teachers can make strong impact on the students and mould them in adopting healthy life style, eat healthy diet, take regular physical activity, health hazards of alcohol, stop tobacco use, etc¹⁹. Not

only as a role model, even their health is equally important and they have an important role towards promotion of community health.

Although, stress was one of the risk factor of CVDs, present study did not assess the stress among

school teachers as it was very subjective factor and belonged to special domain and is one of the limitations of the tool. As the study was done on pilot basis it included limited sample. Systematic stratified required sample should be taken so as to sample is adequate for lager application.

Table1. Risk factor profile of Coronary Vascular Disease among School Teachers n = 72

Risk factors	No	Percentage %	P value
Age*			
< 35	25	34.72	p > 0.05
36 - 49	31	43.06	
>50	16	22.22	
Sex*			
Male	13	18.06	p < 0.001
Female	59	81.94	
F/ H/O*			
Hypertension	13	18.6	p < 0.001
Diabetes	9	12.5	
No F/ H	50	69.44	
BMI!			
< 23	21	29.17	p < 0.001
>= 23	51	70.83	
> 27	23	31.94	
Physically Active	26	36.11	p < 0.02
Physically Inactive!	46	63.89	
Apparently Healthy	56	77.78	p < 0.001
Hypertension!	12	16.67	
Diabetes!	4	5.56	

*Non modifiable risk factors ! Modifiable risk factors

Table 2: Five year cardiovascular (fatal / nonfatal) risk among school teachers n= 72

Risk	5 Year Risk	Color code	Number	Percentage	p value
LOW	<5%	BLUE	42	58.33	p < 0.001
LOW	5- 10%	GREEN	17	23.61	
MODERATE	10-20%	YELLOW	2	2.80	
HIGH	20-30%	LAVENDER	1	1.34	
HIGH	>30%	RED	10	13.90	

CONCLUSION

The health of teachers is important and risk factors of CVDs are prevalent among them and they are at risk of CVD.

They are potential group for health interventions especially; comprehensive strategies like school based approaches and targeted high risk approaches. Non laboratory methods (prediction / risk charts) can be used by non medical groups like teachers and students and can be used as one of long term strategy for control of CVDs and other non communicable diseases. Non laboratory method of assessing CVDs is one of cost effective method/module which can be very useful in resource poor settings like India. Schools and school based approaches are recommended to control and prevent CVDs and other non communicable diseases.

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A Comparative Study of Maternal Outcome in Booked and Unbooked Pregnancy Induced Hypertension Mothers in a Tertiary Care Hospital, Rajahmundry

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ABSTRACT

Introduction: PIH is pregnancy specific, finding of Hypertension without proteinuria on atleast two occasions with six hours apart after 20 wks of gestation. It is one of the commonest disorders associated with increased risk of maternal and fetal complications, and is one of the main public health problems.

Objectives: The study was carried out with following objectives: 1) To compare the sociodemographic profile of booked and unbooked PIH patients. 2) To compare the Maternal outcome in Booked and Unbooked Pregnancy induced hypertension cases.

Materials and methods: This was a retrospective, cross-sectional, record-based study conducted in a tertiary care hospital. Information regarding demographic details, maternal and labour outcome parameters were recorded in a prestructured proforma and compared in booked and unbooked PIH patients delivered at GSL Medical College & General Hospital, Rajahmundry.

Results: In rural population there was a significant difference, Unbooked constituting 65% and booked of 35%. Majority (80%) of unbooked cases were illiterates. PIH was more common among primigravida in both the groups which was statistically significant ($p=0.03$). Gestational age was significantly lower in Unbooked ($p=0.01$). It was observed that severe PIH and complications were more in Unbooked than Booked cases.

Statistical Analysis: The results were presented in means and percentages. Chi-square test was used for comparing the groups. For all statistical analysis $p<0.05$ was considered statistically significant.

Conclusion: Pregnancy induced hypertension is a major worldwide health problem seen associated with pregnancy especially among young primigravidas, who remain unbooked during pregnancy. Maternal morbidity and mortality can be reduced by strengthening antenatal services, encouraging population, early recognition and institutional management.

Keywords: PIH, Maternal outcome, complications, booked, unbooked

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INTRODUCTION

Pregnancy induced hypertension is the second most common medical disorder seen during pregnancy. It is pregnancy specific, finding of Hypertension without proteinuria on at least two occasions with six hours apart after 20 wks of gestation.¹ It has long been one of the major problems for women

in pregnancy, along with infection and postpartum hemorrhage. The incidence of PIH in developing countries is 2-10 % of all pregnancies.² The initiating event in PIH appears to be reduced uteroplacental perfusion as a result of abnormal cytotrophoblast invasion of spiral arterioles. Placental ischemia leads to widespread dysfunction of the maternal vascular endothelium that results in enhanced formation of endothelin and thromboxane, increased vascular sensitivity to angiotensin II, and decreased formation of vasodilators such as nitric oxide and prostacyclin.³ PIH is associated with increased maternal and fetal morbidity and mortality. It is one of the commonest disorders associated with increased risk of maternal complications, and is one of the main public health problems. In PIH cases most of the deaths occur due to complications and not due to hypertension alone. World Health Organization estimates that at least one woman dies every seven minutes from complications of hypertensive disorders of pregnancy.⁴ They may also suffer from the consequences of high rate of operative deliveries and adverse effects of maternal drugs. Care of the expectant mother has always been a priority area in any nations public health agenda. Addressing maternity care needs may have considerable ramifications for achieving Millennium development goal-5. Maternal complications are highly associated with non-utilization of antepartum, intrapartum services and lack of awareness in pregnant women. Poor pregnancy outcomes are also associated with delayed recognition and intervention in the affected mothers. In the light of current maternal morbidity and mortality it is pertinent to determine the relationship between the booking status of the PIH patients and maternal health outcomes. So the present study was conducted to compare the maternal outcome in Booked and Unbooked PIH mothers delivered at GSL Medical College & General Hospital, Rajahmundry.

MATERIALS & METHODS

This is a retrospective, Cross-sectional, hospital based study conducted in GSL General Hospital and Medical College, Rajamundry, AP. The study was conducted after approval by the institute ethical committee. In the present study inpatient records were utilized as a source for the data. Pregnancy induced hypertension cases admitted and delivered

in GSL hospital from January 2012 – Dec 2012 were included. PIH cases admitted during the same duration but delivered outside and chronic hypertension cases were excluded. Pregnant women those who had at least three antenatal care checkups were labeled as booked cases. Those pregnant women who had no antenatal care throughout the pregnancy period was labeled as unbooked cases.⁵ Initially main inpatient records were identified by referring to the parturition register record of the obstetric unit. The information regarding the case details was obtained from the Medical record section of the hospital. Data was collected from the information recorded in the inpatient records which included sociodemographic details, obstetric history, presenting complaints, gestational age at delivery, mode of delivery and maternal complications. The recorded findings were noted in a pre-structured case record proforma. The collected data was analyzed by using Microsoft Excel 2007. The results were presented in means and percentages. The comparisons between the Booked and unbooked were made employing chi-square test. $P < 0.05$ was considered as statistical significance.

RESULTS

In the present study total 150 PIH patients who had fulfilled the inclusion criteria were taken from the records. It was observed that 68 PIH patients were booked and 82 were unbooked. Data was analyzed to find out the maternal outcome in terms of Gestational age, Gestational age at onset of PIH, severity of PIH, presence or absence of eclampsia, mode of delivery, renal, hepatic, retinal affection & other complications in relation to booking status. The Sociodemographic profile of this current study was shown in table 1. Age for both groups ranged between 17 to 41 years, with mean age being 25.11 ± 7.91 years in the booked group and 24.97 ± 7.80 years in the unbooked group. Table -1 represents that there was a statistically significant difference between educational status and parity of PIH patients with booked and unbooked status with $p < 0.02$ and $p < 0.03$ respectively. There was no statistically significant difference in various demographic characteristics like age, economic status, past history and family history of PIH patients among both the groups.

Table-1: Sociodemographic profile of the study population

Variables	Booked (N=68)	Unbooked (N=82)	P value
	n(%)	n(%)	
Age Group			
<20yrs	32 (47.06)	40 (48.78)	P=0.91
20-29yrs	10 (14.70)	11 (13.42)	
30-39yrs	23 (33.82)	29(35.36)	
40yrs and above	3 (4.42)	2 (2.44)	
Economic status			
BPL	62 (91.18)	79 (96.34)	P=0.18
APL	6 (8.82)	3 (3.66)	
Educational status			
Literate	29 (42.65)	16 (19.52)	P=0.02*
Illiterate	39 (57.35)	66 (80.48)	
Past h/o PIH			
Yes	15 (22.06)	13 (15.85)	P=0.33
NO	53 (77.94)	69 (84.15)	
Family h/o PIH			
Yes	24 (35.30)	30 (36.58)	P=0.86
No	44 (64.70)	52 (63.42)	
Parity			
Primi	35 (51.47)	56 (68.29)	P=0.03*
Multi	33 (48.53)	26 (31.71)	

Number in parentheses represents percentage

Table-2: Comparison of Rural and Urban Subjects with regard to registration of pregnancy

Area	Booked (n=68)	Unbooked (n=82)	P value
	n(%)	n(%)	
Rural	25 (36.76)	44(53.65)	P=0.03*
Urban	43 (63.24)	38 (46.34)	

*P<0.05 statistically significant

Table -2 represents that booked PIH patients were more from Urban area compared to rural area, the difference was found to be statistically significant. Table -3 depicts that PIH cases that delivered preterm were more in unbooked group when compared to the booked group, the difference observed was statistically significant (p<0.01).

Table: 3: Gestational age at delivery

Gestational age	Booked (n=68)	Unbooked (n=82)	P value
	n(%)	n(%)	
Full term	53 (77.94)	49 (59.75)	P= 0.01*
Preterm	15 (22.06)	33 (40.25)	

*P<0.05 statistically significant

Table: 4 Mode of Delivery in Booked and Unbooked PIH patients

Mode of delivery	Booked (n=68)	Unbooked (n=82)	P value
	n(%)	n(%)	
Vaginal	43 (63.24)	35 (42.68)	P=0.01*
Caesarean	25 (36.76)	47 (57.32)	

*P<0.05 statistically significant

Table -4 explains that Mode of delivery was significantly affected by the booking status (P=0.01).

Table: 5 Type of intervention in each Delivery mode.

Mode of delivery		Booked (n=68)	Unbooked (n=82)
		n(%)	n(%)
Vaginal	Spontaneous	18 (26.47)	7 (8.54)
	Induced	25 (36.76)	28 (34.15)
Caesarean	Emergency	10 (14.71)	38 (46.34)
	Elective	15 (22.06)	9 (10.97)

Table -5 depicts that in booked group elective caesarean sections were more compared to emergency caesarean sections. In unbooked group emergency caesarean sections were more when compared to elective caesarean sections. In booked and unbooked cases induced vaginal deliveries were more compared to spontaneous vaginal delivery.

Table: 6 Severity of PIH in Booked and Unbooked PIH patients

Severity of PIH	Booked (N=68)	Unbooked (N=82)	P vaule
	n(%)	n(%)	
Mild PIH	50 (73.53)	23(28.05)	P=0.000*
Severe PIH	15 (22.06)	39(47.56)	
Impending eclampsia	3 (4.41)	15(18.29)	
Eclampsia	0	5 (6.09)	

*P<0.05 statistically significant

Table-6 represents that severe PIH was observed more in unbooked group compared to booked group, accounting for 47.56% and 22.06% respectively, the difference observed was statistically significant (P=0.000).

Table: 7 Maternal Complications in Booked and Unbooked PIH patients

Maternal Complications	Booked (N=68) n(%)	Unbooked (N=82) n(%)
PPH	2 (2.94)	7 (8.53)
Abruptio Placentae	1 (1.47)	5 (6.09)
Retinal Affection	0	2 (2.43)
Renal Failure	0	1 (1.21)
HELLP	0	2 (2.43)
Hepatic Failure	0	1 (1.21)
DIC	0	1 (1.21)
Maternal Death	0	1 (1.21)

Table -7 explains that maternal complications were more in unbooked PIH patients compared to booked PIH group.

DISCUSSION

Hypertensive disorder of pregnancy is considered a major worldwide health problem that carries an increased risk of perinatal and maternal morbidity and mortality.⁶ In the present study observations showed that 47.06% of booked group and 48.78% of unbooked group were below 20 years of age. The mean age of the total PIH patients was 25.04 ± 7.82 . A study by Sivakumar .S et al⁷ had found mean age correlating with this study. These findings suggest that PIH mostly affects teenage age group.⁸ More than three fourth of the PIH patients of both the groups belonged to BPL category. A Study by Parmar MT et al¹⁰ also emphasized findings similar to this study. In the aspect of literacy status, the study observations revealed that 57.35% of booked PIH patients and 80.48% of unbooked PIH patients were illiterates. This implicates that maternal literacy level is associated with booking status and utilization of antenatal care services. The study results showed that 53.65% of unbooked cases were from rural area, indicating that rural public is less aware of importance of early registration or booking status. Regarding gestational age at the time of delivery it was observed that 40.25% of unbooked group had preterm delivery, this was in concordance with previous study done by Teklu S et al¹¹ which reported preterm delivery rate of 48.6%. PIH was more common among primigravida in both the groups which was statistically significant ($p=0.03$). A previous study done by saxena S et al¹² also reported finding similar to the current study. There was difference in the mode of delivery in both the groups which was statistically significant ($p=0.01$).

In the aspect of vaginal delivery 63.24% of PIH patients were booked and 42.68% were unbooked, where as caesarean section rate revealed that 36.76% were booked and 57.32% were from unbooked group. There by the study projects that the major chunk of unbooked cases resulted in caesarian section. A study conducted by Gandhi MR et al¹³ showed that the rate of vaginal and caesarean delivery was 53.7% and 43.6% respectively. The current study gives an impression that the rate of caesarean section was more when compared to vaginal delivery in unbooked cases which suggests that most of the unbooked cases land into emergencies which require special attention ,thereby terminating pregnancy by caesarean section for the sake of maternal and foetal well -being. Cesarean delivery rates are reportedly increased in patients with hypertensive disorder of pregnancy.¹⁴ In booked PIH cases more than half of the cases were delivered by vaginal route indicating early diagnosis, treatment and less chances of complications in booked cases.

As a whole it was observed that severity of PIH was more in Unbooked group rather than booked where as mild PIH was more in booked group rather than unbooked. On comparison of mild PIH, severe PIH, impending eclampsia, eclampsia between both the groups the difference observed was statistically significant ($p=0.000$). A study done by Abate M¹⁵ concluded that all the eclamptic patients were unbooked and none from booked. There by the conducted studies give impression that booking of antenatal cases as soon as pregnancy was confirmed, regular antenatal visits and early diagnosis of PIH

is very essential to prevent maternal complications, otherwise this may lead to maternal mortality. Inadequate and improper management of PIH lead to various complications.

The major adverse outcomes of PIH include eclampsia, hemorrhagic, ischemic strokes, hepatic dysfunction, HELLP syndrome, renal failure as well as increased frequency of cesarean delivery, preterm delivery, and abruptio placentae.¹⁶ In the present study the rate of complications were more in unbooked when compared to booked group. The complications observed in booked group were PPH (2.94%) and abruptio placenta (1.47%), where as other complications like renal failure (1.21%), Retinal Affection (2.43%), HELLP syndrome (2.43%), hepatic failure (1.21%), DIC (1.21%) and maternal death (1.21%) were observed in unbooked group. Earlier studies done Farid M et al¹⁷ and Al. Mulhim A.A et al¹⁸ also reported similar complications in their studies.

CONCLUSION

Present study revealed that, PIH was still a very common problem in the rural population. It was more common in young primigravidas, who remained unregistered during pregnancy. Majority of the unbooked cases were illiterates, had preterm delivery and high caesarian section rate. The unbooked group also had more severity of PIH and maternal complications. Hence, the results convey that the booked group had better maternal outcome when compared to unbooked group patients. Maternal mortality is either avoidable or easily manageable, provided timely care is sought and received. Adequate and quality antenatal care is the key to achieve safe motherhood. The adverse maternal outcome can be improved by registration, regular antenatal checkups, early diagnosis of PIH, timely provision and utilization of health services.

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Descriptive Epidemiology of H1N1 Cases in District Amritsar from the Year 2009 to 2014

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ABSTRACT

Background: Pandemic H1N1/2009 influenza was reported for the first time in Mexico in April 2009. WHO on 11th June 2009 indicated a global pandemic. The first confirmed case of H1N1 in India reported on 16th May, 2009 was a passenger, travelled from USA to Hyderabad. **Material and Methods:** Surveillance for H1N1 was done through IDSP in district. The nasopharyngeal swab samples of suspected case-patients were collected and sent to Post Graduate Institute of Medical Sciences and Research, Chandigarh for confirmation. **Findings:** First case of H1N1 was reported on 3rd October 2009 and out of 136 samples tested 36 were positive. Maximum H1N1 cases were found in year 2010 and no case in year 2011. The mean attack rate of cases remained 0.238/lac population. H1 N1 showed cyclic trends of about 3 to 4 years. CFR in these years remained 36.1%. Maximum number of cases was reported in age 21 to 30 years and minimum > 50 years age. Attack rates were higher in males and rural populations, with highest peak in December to March.

Conclusion: Mean attack rate observed was lower than in Hyderabad and other parts of India in year 2009. Case fatality rate was higher than in Hyderabad, US and UK. Maximum number of cases reported in age 21 to 30 years and the minimum in age > 50 years, resembled with studies of USA, Canada, UK, Andhra Pradesh and other parts of India. Peak of cases in December to March was different from Andhra where it peaked in August to October in years 2009 and 2010; and in Eastern India, where peak was in June-July in year 2010.

Keywords: H1N1, pandemic, IDSP, attack rate, CFR and surveillance.

BACKGROUND

On 28 April 2009, WHO raised the pandemic alert from phase 4 to phase 5, indicating that the new virus had spread to several WHO regions.¹ On 11 June 2009, WHO raised its pandemic alert level from phase 5 to phase 6 and characterized the outbreak as moderate. Pandemic H1N1/2009 influenza, reported for the first time in Mexico in April 2009, shows that the implicated virus is a genetic re-assortment of four different influenza virus strains. The triple re-assortant were first seen at least ten years ago and have likely been circulating in pigs since then.² Genetic re-assortments in the influenza virus cause fast and unpredictable antigenic changes in important immune targets leading to recurrent epidemics

of febrile respiratory disease every 1 to 3 years, consistently necessitated the development of new vaccines.³ The case fatality rates (CFR) in the USA and United Kingdom (UK) was in the range of 0.1-0.2%.^{4,13} Compared with previous pandemics of this century, Influenza A (H1N1) has high transmission ability but low virulence.⁵ However, it can cause severe complications such as pneumonia resulting in respiratory failure, acute respiratory distress syndrome, multi-organ failure and death.⁶

The first confirmed case of A (H1N1) in India was reported on 16th May, 2009. The patient was a passenger who travelled from USA to Hyderabad.⁷ Thereafter; community transmission was reported from many parts of the country.⁸ The laboratory

confirmed cases and deaths of H1N1 found in Punjab were 252 cases and 40 deaths in first phase from April 2009 to April 2010, 46 cases and 23 deaths from August 2010 to December 2011, 15 cases and 4 deaths from January to December 2012, 183 cases and 42 deaths from January to December 2013, 27 with 3 deaths from January to December 2014 and 290 with 56 deaths till July 2015.⁹

Author studied descriptive epidemiology of A (H1N1) cases reported in Amritsar district during the years 2009 to 2014.

MATERIAL & METHODS

Amritsar, a border district of Punjab has three portals for entry into India from abroad: (i) An international airport (ii) Wagha Border land port (iii) Attari Railway Station. It has the risk of acquiring H1N1 infection from the persons entering into India from abroad. District Health Authority (Civil Surgeon) and; Airport and Border Quarantine Health Officer, Amritsar are looking after the prevention, control and management of H1N1 cases in district.

As per the national guidelines, pharyngeal or nasopharyngeal swabs were collected from the suspected case-patients and their close contacts for detection of the virus using real-time-polymerase chain reaction (RT-PCR) assay. A suspected case of influenza like illness (ILI) and laboratory confirmed influenza A were defined. X¹⁰. Death due to A (H1N1) was considered when the infection was confirmed by laboratory testing, either before or after death. Only laboratory confirmed cases were provided with the antiviral treatment.¹¹

Data source, collection and analysis

Surveillance was set up through IDSP across the district.¹² The District Epidemiologist assisted by his team visited the suspected case-patients, collected their samples and sent those to Post Graduate Institute of Medical Sciences and Research (PGIMER) laboratory, Chandigarh for confirmation. Some of the suspected case samples were tested in the Religare laboratory. Line list of all cases and death reports were collected, analyzed and the valid conclusions were drawn.

FINDINGS

First case of H1N1 was reported on 3rd October 2009 in district Amritsar. Samples of 136 H1N1 suspected cases were tested in the years 2009 to 2014 and 36 (26.47%) were found confirmed. The mean age of confirmed cases was 36.75 ± 11.015 years. Out of the 36 samples found positive for H1N1, 29 were detected by PGIMER and 5 by Religare laboratory.

Table 1. Year wise distribution

Year	H1 N1 Cases.	
	No.	%
2009	6	16.66
2010	19	52.77
2011	0	0.00
2012	1	2.77
2013	9	25.00
2014	1	2.77
Total	36	100.00

$$X^2 = 43.65 \quad df = 5 \quad P < 0.001$$

Table 1 shows that maximum number of H1N1 cases, 19 (52.77%) were found in year 2010. This was followed by 9 (25.00%) and 6 (16.66) cases in years 2013 and 2009 respectively. There was 1 (2.77%) case each in year 2012 and 2014 and no case in year 2011. The difference in the number of H1N1 cases was highly significant statistically.

Table 2. Attack rate per lac population

Year	No. of H1N1 Cases	Population	Attack rate/lac population
2009	6	2, 482, 315	0.242
2010	19	2, 490, 110	0.763
2011	0	2, 490, 110	0.000
2012	1	2, 515, 215	0.040
2013	9	2, 628, 080	0.343
2014	1	2, 669, 102	0.038

$$X^2 = 8.086 \quad df = 5 \quad P > 0.1$$

Table 2 shows that mean AR of these years remained 0.238/lac population. Maximum was 0.763/lac population in year 2010 and minimum 0.038/lac population in year 2014. The AR was 0.242/lac population in year 2009 and reached its peak in year 2010 followed by no case in 2011. Again in year 2012 AR was 0.040/lac population followed by the rising trend of 0.343/lac population in year 2013 that further showed a decreasing trend of AR 0.038/lac population in year 2014. This shows that H1N1 has cyclic trends of about 3 to 4 years. The difference in AR of H1N1 cases in years (except 2011) was insignificant statistically.

Table 3. Case fatality rate

Year	H1N1Cases		Case fatality rate
	No.	Deaths	
2009	6	2	33.33
2010	19	6	31.58
2011	0	0	0.00
2012	1	1	100.00
2013	9	4	44.44
2014	1	0	0.00
Total	36	13	36.11

$X^2 = 217.91$ $df = 5$ $P < 0.001$

Table 3 shows that out of 36 H1N1 confirmed cases found during these years there were 13 deaths with 36.1% CFR. Maximum CFR was 44.44% in year 2013 and minimum 0% in year 2011. The difference in CFR of H1N1cases was highly significant statistically.

Table 4. Age wise distribution

Year	H1 N1 Cases	Age in years				Total
		20-30	31-40	41-50	> 50	
2009	Count	3	2	0	1	6
	% in years	20.00	25.00	0.00	33.33	16.67
	% in age	50.00	33.33	0.00	16.67	100.00
2010	Count	8	4	6	1	19
	% in years	53.33	50.00	60.00	33.33	52.78
	% in age	42.11	21.05	31.58	5.26	100.00
2012	Count	1	0	0	0	1
	% in years	6.67	0.00	0.00	0.00	2.78
	% in age	100.00	0.00	0.00	0.00	100.00
2013	Count	3	2	3	1	9
	% in years	20.00	25.00	30.00	33.33	25.00
	% in age	33.33	22.22	33.33	11.11	100.00
2014	Count	0	0	1	0	1
	% in years	0.00	0.00	10.00	0.00	2.78
	% in age	0.00	0.00	100.00	0.00	100.00
Total	Count	15	8	10	3	36
	% in years	100.00	100.00	100.00	100.00	100.00
	% in age	41.67	22.22	27.78	8.33	100.00

$X^2 = 7.260$ $df = 12$ $P > 0.05$

Table 4 shows that no case was reported < 20 years age. Maximum number of cases 15 (41.67%) were reported in age 21 to 30 years followed by 8 (22.22%) and 10 (27.78%) in the age 31 to 40 and 41 to 50 years

respectively. Only 3 (8.33%) cases were reported > 50 years age. In all years higher number and percentage of H1N1 cases reported was observed in 21 to 40 years age. The difference in number of H1N1cases in various age groups was insignificant statistically.

Table 5. Sex wise distribution

Year	H1 N1 Cases	Sex		Total
		Male	Female	
2009	Count	4	2	6
	% in years	18.18	14.29	16.67
	% in sex	66.67	33.33	100.00
2010	Count	12	7	19
	% in years	54.55	50.00	52.78
	% in sex	63.16	36.84	100.00
2012	Count	0	1	1
	% in years	0.00	7.14	2.78
	% in sex	0.00	100.00	100.00
2013	Count	5	4	9
	% in years	22.72	28.57	25.00
	% in sex	55.56	44.45	100.00
2014	Count	1	0	1
	% in years	4.55	0.00	2.78
	% in sex	100.00	0.00	100.00
Total	Count	22	14	36
	% in years	100.00	100.00	100.00
	% in sex	61.11	38.39	100.00

$X^2 = 2.436$

df = 4

P > 0.05

Table 5 shows that there were 22 male (61.11%) and 14 (38.39%) female cases. In all years, except 2012 higher number and percentage of males was found. The difference in number of H1N1 cases in both sexes was significant statistically.

Table 6. Area wise distribution

Year	H1 N1 Cases	Area		Total
		Urban	Rural	
2009	Count	4	2	6
	% in years	30.77	8.70	16.67
	% in area	66.67	33.33	100.00
2010	Count	9	10	19
	% in years	69.23	43.48	52.78
	% in area	47.37	52.67	100.00
2012	Count	0	1	1
	% in years	0.00	4.35	2.78
	% in area	0.00	100.00	100.00
2013	Count	0	9	9
	% in years	0.00	39.13	25.00
	% in area	0.00	100.00	100.00
2014	Count	0	1	1
	% in years	0.00	4.35	2.78
	% in area	0.00	100.00	100.00
Total	Count	13	23	36
	% in years	100.00	100.00	100.00
	% in area	36.11	63.89	100.00

$X^2 = 9.689$

df = 4

P < 0.05

Table 6 shows that higher percentage of H1N1 cases was observed in rural area. This difference in number of H1N1 cases in rural and urban areas was significant statistically. Out of the 36 H1N1 cases 23 (68.89%) were residents of rural area and 13 (36.11%)

of urban area. In earlier years of 2009 and 2010, higher number of cases was found in urban area, no case of any sex in year 2011, while later on in years 2012 to 2014, higher numbers of cases were found in rural areas. The disease has shown a trend of spread from the urban to the rural areas.

Table 7. Month wise distribution

Year	H1 N1 Cases	Months							Total
		January	February	March	August	September	October	December	
2009	Count	0	0	0	0	0	2	4	6
	% in years	0.00	0.00	0.00	0.00	0.00	100.00	100.00	16.67
	% in month	0.00	0.00	0.00	0.00	0.00	33.33	66.67	100.00
2010	Count	7	6	0.00	3	3	0	0	19
	% in years	63.64	54.55	0.00	100.00	75.00	0.00	0.00	52.78
	% in month	36.84	31.58	0.00	15.79	15.79	0.00	0.00	100.00
2012	Count	0	0	0.00	0	1	0	0	1
	% in years	0.00	0.00	0.00	0.00	25.00	0.00	0.00	2.78
	% in month	0.00	0.00	0.00	0.00	100.00	0.00	0.00	100.00
2013	Count	3	5	1	0.00	0	0	0	9
	% in years	27.28	45.45	100.00	0.00	0.00	0.00	0.00	25.00
	% in month	33.33	55.56	11.11	0.00	0.00	0.00	0.00	100.00
2014	Count	1	0.00	0.00	0.00	0	0	0	1
	% in years	9.09	0.00	0.00	0.00	0.00	0.00	0.00	2.78
	% in month	100.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
Total	Count	11	11	1	3	4	2	4	36
	% in years	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	% in month	30.56	30.56	2.78	8.33	11.11	5.56	11.11	100.00

$\chi^2 = 53.225$

df = 24

P < 0.01

Table 7 shows that bimodal peaks of H1N1cases have been observed i.e. higher peak of 27 (75%) cases, in December to March and lower peak of 9 (25%) cases in August to October. There was no case from April to July and in November. The difference in number of H1N1 cases in different months was highly significant statistically.

Table 8. District wise distribution

Year	H1 N1 Cases	District			Total
		Amritsar	Taran taran	Gurdaspur	
2009	Count	3	2	1	6
	% in years	25.00	22.22	6.67	16.67
	% in area	50.00	33.33	16.67	100.00
2010	Count	9	2	8	19
	% in years	75.00	22.22	53.33	52.78
	% in area	47.39	10.53	42.11	100.00
2012	Count	0	1	0	1
	% in years	0.00	11.11	0.00	2.78
	% in area	0.00	100.00	0.00	100.00

Cont... Table 8. District wise distribution

2013	Count	0	4	5	9
	% in years	0.00	44.44	33.33	25.00
	% in area	0.00	44.44	55.56	100.00
2014	Count	0	0	1	1
	% in years	0.00	0.00	6.67	2.78
	% in area	0.00	0.00	100.00	100.00
Total	Count	12	9	15	36
	% in years	100.00	100.00	100.00	100.00
	% in area	33.33	25.00	41.67	100.00

 $X^2 = 13.460$

df = 8

P < 0.01

Table 8 shows that the maximum number of cases, 15 (41.67%) were reported from the adjoining district Gurdaspur, followed by district Amritsar and Taran tarn, reporting 12 (33.33%) and 9 (25%) cases respectively. The difference in numbers of H1N1 cases in districts was highly significant statistically.

CONCLUSION

The mean AR remained 0.238/100,000 population which was lower than 1.9/100,000 population found in Hyderabad and other parts of India in year 2009 but it resembled with studies showing higher AR in males.⁶ This study showed that H1 N1 has cyclic trends of about 3 to 4 years. CFR of H1N1 cases found was 36.1%. This was estimated as 7% in Andhra Pradesh and 6% from India.¹⁵ Maximum number of cases reported in age 21 to 30 and the minimum in age > 50 years showed results consistent with studies conducted in Andhra Pradesh and other parts of India.¹² Similar findings were observed in USA, Canada and UK.^{12, 14, 15, 16, 17} i.e. highest in age 25-49 years and lowest in age > 65 years. Highest peak of H1N1 cases was reported in December to March while in Andhra it peaked in August to October in 2009 and 2010. Transmission of infection in various parts of India started around mid-June.¹³ In Eastern India, transmission was highest in months of June-July in year 2010.⁸ This might be due to the climatic and other variations. Highest number of cases reported from the adjoining district Gurdaspur might be due to the reason that there are 2 tertiary health care institutions named Government College, Amritsar and Sri Guru Ram Das Institute of Medical Sciences and Research situated in Amritsar. Thus it is critical that health-care workers (HCW), patients, and visitors, follow infection control (IC) precautions and

take preventive, control and treatment measures; and launch awareness campaigns.

LIMITATIONS

1. There is under-reporting of cases due to non-availability of laboratory facilities as only PGIMER, Chandigarh was included.
2. The attack rates reported could be an underestimate of the true population rate as the cases reported were mainly from hospital case-patients.

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Conflict of Interest: Nil

Source of Funding: Self

Ethical Clearance: Not needed as the study is based on the records and information.

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BMI Stratification and Lifestyle Behaviour and Disease Distribution in Desk Job Workers? A Cross-sectional Study in Chennai, India

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ABSTRACT

Background and Objectives: Obesity has been shown to be one of the major risk factor in the emergence of twin epidemics of Diabetes and Hypertension across the globe. With statistics reporting increasing trend in obesity in Chennai, India, the primary goal of the study was to study the association of weight, measured using body mass index (BMI), with health related lifestyle behaviours of smoking and alcohol consumption, and non-communicable diseases like diabetes, hypertension in desk job workers in Chennai.

Methods: The study was a cross-sectional study conducted over three days in June 2015 at the work place of a corporate organisation in Chennai. A structured interview was carried out to collect information on demographics, lifestyle behaviours and disease history, while BMI was calculated using the measured height in metres and weight in kilograms by a trained personnel. The data were then analysed using SPSS version 16.

Results: Statistically significant association was observed of BMI with age, gender and health related lifestyle behaviours (smoking, alcohol consumption), as measured by Pearson Chi square test of association with $p < 0.05$. While no association of BMI was found with diabetes and hypertension in the study group.

Interpretation & Conclusion: Despite study limitations, the observations could help develop insights regarding the pattern of lifestyle risk factors and NCD in desk job workers in the current era of urbanization and stressful work schedule, and further help in developing better health check packages and targeted interventions based on the identified correlates.

Keywords: BMI, Hypertension, Diabetes, Smoking, Alcohol, Desk Job, NCD

INTRODUCTION

Over the past 25 years, the prevalence of obesity has doubled across the globe, with WHO reporting about 13% adults being obese and 39%

being overweight in 2014 across the globe¹. A similar picture prevails in India with the problem being more pronounced in women². As per the National Family Health Survey 3 report, 39% women in Chennai were either overweight or obese, compared to the 23% prevalence in men².

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Obesity, as measured by raised body mass index (BMI), is an established risk factor for various non-communicable diseases (NCD) like diabetes, hypertension, heart diseases, stroke, osteoarthritis and cancers like colon and breast^{1,3-9}, with the

relationship being linear – increase in BMI increases risk of NCD^{1,10}. Further NCD like diabetes and hypertension have been reported to share a special bondage, with studies reporting diabetics to be twice at risk of developing hypertension, while one-third hypertensives of developing diabetes¹¹.

BMI has been used as population level measure of obesity and the risks associated with it¹², with the values being age-independent and same for both sexes¹³.

Apart from obesity, smoking and alcohol consumption has been found to be important health-related lifestyle factors affecting the global burden of NCD¹⁴, with studies reporting some association of alcohol and smoking with obesity^{15,16}.

Hence the purpose of this study was to explore the association between weight and lifestyle behaviour factors (smoking, alcohol consumption) and the existence of non-communicable disease (diabetes, hypertension) in a sample of employees engaged in desk job work in Chennai, India.

MATERIALS & METHODS

The study was cross-sectional study. The participants consisted of employees of a corporate organisation in Chennai, who participated in a three day health camp held at the workplace in June 2015. A structured in-person interview using an interviewer administered questionnaire was conducted within the study population to collect information on demographics, lifestyle behaviours and disease history. The demographic information included age, gender, and marital status. Information on lifestyle behaviours included smoking and alcohol consumption status, while non-communicable disease included history of diabetes and hypertension. Participants who reported current alcohol drinking or smoking (at least once per month) were defined as drinkers or smokers, while participants who had received drug therapy for diabetes or hypertension were recorded as having the respective risk factor regardless of laboratory data. Written informed consent was obtained from all participants. The study was approved by the CSR Ethics committee at Apollo Hospitals, Chennai.

Anthropometric assessment included of height

(in meter) and weight (in kilogram) using wall mounted stadiometer and digital weighing scale respectively. BMI was then calculated from Quetelet's index (Kg/m^2), with the weight status classified based on WHO guidelines¹ as

- Category I: Normal Weight - BMI between 18.5 and under 25
- Category II: Overweight - BMI between 25 and under 30
- Category III: Obese - BMI above 30

STATISTICAL ANALYSIS

The statistical analysis was done using SPSS 16.0 software (SPSS Inc., Chicago). Descriptive analyses were conducted to determine the distribution of demographic factors, lifestyle behaviours and NCD in general and across BMI categories. Participants were divided in to three categories based on BMI: Category I (normal weight), II (overweight) and III (obese). To assess the association of BMI groups with its potential correlates like age, gender, smoking status, drinking status, diabetes, and hypertension, Pearsons Chi-square test of association were performed, with the statistical significance set at $p < 0.05$.

RESULTS

A total of 252 males and 171 females aged 20 to 72 years participated in the study. Data were manually collected from the participants at their workplace in Chennai, India. The characteristics of the participant is as shown in table 1.

Participants were divided in to three groups based on BMI: I (normal weight), II (overweight) and III (obese). The characteristics of the participants based on BMI stratification is shown in table 2, with the statistical results as follows:

- Pearsons chi-square test was performed to examine the relation between BMI and age. The relation between these variables was significant, $\chi^2(6, N = 423) = 14.094$, $p < 0.05$, thereby indicating that obese people were more likely to belong to the age group of 36 to 55 years.
- Pearsons chi-square test was performed to examine the relation between BMI and smoking. The relation between these variables was significant,

X^2 (2, N = 423) = 6.132, $p < 0.05$, indicating obese and overweight individuals were more likely to be non-smokers than normal weight individuals.

- Pearsons chi-square test was performed to examine the relation between BMI and alcohol consumption. The relation between these variables was significant, X^2 (2, N = 423) = 14.723, $p < 0.05$, strongly indicating that obese and overweight individuals were more likely to be non-alcohol consumers than normal weight individuals.

- Pearsons chi-square test was performed to examine the relation between BMI and gender. The

relation between these variables was significant, X^2 (2, N = 423) = 44.099, $p < 0.05$, strongly indicating that obese and overweight individuals were more likely to be females than normal weight individuals.

- Pearsons chi-square test was performed to examine the relation between BMI and Diabetic status. There was no relation between these variables, X^2 (2, N = 423) = 4.328, $p > 0.05$.

- Pearsons chi-square test was performed to examine the relation between BMI and hypertension. There was no relation between these variables, X^2 (2, N = 423) = 0.500, $p > 0.05$.

Table1: Study Population Characteristics

Parameter		Male	Female	Total
Sample	n (%)	252	171	423
Age (in years)	Mean (SD)	45.94 (11.13)	44.89 (8.95)	45.52 (10.31)
BMI* (Kg/m ²)				
Class I (Normal Weight)	n (%)	79 (31)	18 (11)	97 (22.9)
Class II (Overweight)	n (%)	127 (50)	77 (45)	204 (48.2)
Class III (Obese)	n (%)	46 (18)	76 (44)	122 (28.8)
Smoke				
Yes	n (%)	39 (15)	0 (0)	39 (9.2)
No	n (%)	213(85)	171 (100)	384 (90.8)
Consume Alcohol				
Yes	n (%)	47 (19)	0 (0)	47 (11.1)
No	n (%)	205 (81)	171 (100)	376 (88.9)
Diabetic				
Yes	n (%)	57 (23)	33 19)	90 (21.3)
No	n (%)	195 (77)	138 (81)	333 (78.7)
Hypertensive				
Yes	n (%)	61 (24)	27 (16)	88 (20.8)
No	n (%)	191 (76)	144 (84)	335 (79.2)

*BMI – Body Mass Index; I – Normal Weight (BMI = 18.5 to <25), II – Over Weight (BMI = 25 to <30), III – Obese (BMI = >30)

Table 2: Characteristics of Study Population based on Body Mass Index (BMI)

		I ^a	II ^a	III ^a	p* Value
Sample	n (%)	97	204	122	
Mean BMI (Kg/m²)	Mean (SD)	22.69 (1.63)	27.27 (1.39)	33.24 (3.26)	
Age Group (years)					
<=35	n (%)	24 (24.7)	33 (16.2)	12 (9.8)	0.029[‡]
36-45	n (%)	22 (22.7)	55 (27)	47 (38.5)	
46-55	n (%)	32 (33)	81 (39.7)	44 (36.1)	
>55	n (%)	19 (19.6)	35 (17.2)	19 (15.6)	
Gender					
Male	n (%)	79 (81.4)	127 (62.3)	46 (37.7)	0.000[‡]
Female	n (%)	18 (18.6)	77 (37.7)	76 (62.3)	
Smoke					
Yes	n (%)	13 (13.4)	21 (10.3)	5 (4.1)	0.047[‡]
No	n (%)	84 (86.6)	183 (89.7)	117 (95.9)	
Consume Alcohol					
Yes	n (%)	19 (19.6)	24 (11.8)	4 (3.3)	0.001[‡]
No	n (%)	78 (80.4)	180 (88.2)	118 (96.7)	
Diabetic					
Yes	n (%)	18 (18.6)	52 (25.5)	20 (16.4)	0.115
No	n (%)	79 (81.4)	152 (74.5)	102 (83.6)	
Hypertensive					
Yes	n (%)	18 (18.6)	45 (22.1)	25 (20.5)	0.779
No	n (%)	79 (81.4)	159 (77.9)	97 (79.5)	

^aI – Normal Weight (BMI = 18.5 to <25), II – Over Weight (BMI = 25 to <30), III – Obese (BMI = >30)
 *p values based on Pearson Chi-Square test of association
[‡]statistically significant as p<0.05

DISCUSSION

Diabetes and Hypertension have been claimed to be the emerging twin epidemics in developing countries¹⁷. India has been declared the diabetic capital of the world¹⁸, while hypertension has been shown to affect about 33% of urban and 25% of rural Indians¹⁰. Obesity has been shown to be one of the leading risk factor for diabetes and hypertension¹. With 39% women in Chennai found to be either overweight or obese, compared to the 23% men², the purpose of this study was primarily to assess the association of weight with health related lifestyle behaviours (smoking and alcohol consumption), and the non-communicable diseases (diabetes, hypertension) in desk job workers in Chennai.

In the present study, there was a statistically significant association of BMI with age, gender

and health related lifestyle behaviours (smoking, alcohol consumption). With obese and overweight population more likely to be of 36 to 55years of age, females (89.47% females as opposed to 68.65% males), non-smokers and non-alcoholic, compared to normal weight population. Although diabetes and hypertension had a positive correlation with BMI, it was not statistically significant

BMI has been shown in literature to be a better indicator of diabetes^{6,7,19}, and hypertension^{8,9,12,20}. Though in recent times there has been emergence of contradictory evidence suggesting existence of a more complex relationship between BMI and diabetes, with results showing lean or lower BMI cases to have stronger predisposition to type 2 diabetes^{21,22}. But in contrast our findings suggest no association of BMI with either diabetes or hypertension in the study

group, which may partly be attributed to the sample size variability across groups.

Potential health related lifestyle behavioural risk factors like alcohol and smoking has been shown to be the major driving force behind NCD emergence in studies evaluating prevalence of risk factors of NCD in India²³⁻²⁵. Though there have been studies reporting a rise in female smokers in India²⁶, in our study alcohol consumers and smokers were all exclusively male. This can be explained by the fact that smoking and alcohol carry cultural and social constraints in South India, more specifically in female population.

Studies have been inconclusive in regards to association between weight and alcohol^{15,27-29}, with studies reporting positive association in men and negative association in women between alcohol consumption and BMI^{15,28}. Our findings showed obese or overweight to be those who don't consume alcohol than normal weight individuals. This may be explained by the fact that alcohol consumers were exclusively males in our study, and further caution to be exerted with interpretation, as detailed history of drinking habits was not available and as reporting may be influenced by cultural differences²⁹. Furthermore the amount of alcohol consumed was lacking, keeping in mind that studies have shown men and women with low alcohol consumption to weigh less than do non-drinkers or subjects with higher alcohol consumption¹⁵.

Similar findings were seen in smoking population, in contrast to our belief, with obese and overweight individuals being non-smokers than normal weight individuals, consistent with some studies^{30,31}, but not with others^{15,32}. This finding may be explained by the fact that the smokers were exclusively males in our study. But then the evidence has been inconclusive pertaining to studies evaluating gender based association of weight and smoking, with studies reporting male dominance^{28,30,33}, both men and women ex-smokers to be heavier than non-smokers¹⁵, or no gender difference³⁴.

Though in the current study, weight and height were measured by trained personnel, the results should be interpreted with caution as the study is limited by cross sectional study design carrying temporal ambiguity, lack of exhaustive questionnaire

and sample size variability across groups lacking generalizability.

Despite study limitations, the observations could help develop insights regarding the pattern of lifestyle risk factors and NCD in desk job workers in the current era of urbanization and stressful work schedule, and further help in developing specific health screen packages and targeted interventions based on the identified correlates. Further detailed and large scale research with repeated surveys carried out at the same time of the year with large number of participants is recommended including other measures of weight like waist circumference and skin-fold thickness, thereby providing unique information on lifestyle and obesity over time.

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A Study of Acute Renal Failure in Snake Bite Patients at Bengaluru

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ABSTRACT

Background: The complications related to kidneys are observed in majority of patients with snake bite admitted to a hospital and is an important cause morbidity and mortality. The onset of renal failure in these patients is signaled by the development of oliguria or anuria. Early treatment improves survival in snake bite victims.

Objectives: To study the renal involvement in patients with snake bite with reference to clinical features and the time of onset of acute renal failure. To study the, course, need for renal replacement therapy including dialysis.

Methods: One hundred snakebite patients admitted to Victoria Hospital, Bowring and Lady Curzon Hospitals attached to Bangalore Medical College and Research institute, Bangalore from Oct 2013 – Sept 2014 were studied prospectively using systemic random sampling and particularly looked for development of acute renal failure. Patient or attenders have not seen the snake were excluded. Patients were followed up till discharge or death. Clinical data was tabulated. Statistical analysis was done.

Results: Common signs and symptoms were fang mark (94.7%), swelling (97%), tenderness (89%), blisters (73.6%), bleeding manifestations (73.6%), pallor (71%), oliguria (47%), anuria (10.5%) and haematuria (21%). Hypotension was present in 47% which may be cause of ARF. All the ARF patients showed coagulation abnormalities in the form of prolonged BT, CT, PT and aPTT. Thrombocytopenia was seen in 89%. Albuminuria was present in 46% of patients. All the ARF patients were given ASV for 3 to 5 days. Mean ASV vials used in present study is 34.1±10. Platelet transfusion was done in 23.6% and haemodialysis in 28.9% of patients. Two patients became dialysis dependent.

Conclusions: Thrombocytopenia was significantly related to clinical bleeding ARF is usually associated with oliguria and is generally occurs within 48 hours. Bite to ASV therapy time, bite to renal insufficiency time and coagulation abnormalities were the major prognostic factors predicting the final outcomes. Dose of ASV therapy required is more in patients with ARF. Albuminuria is found in all patients who had coagulation abnormalities and ARF.

Keywords: ARF, Oliguria, Bleeding manifestations, Viper bite.

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INTRODUCTION

Snakes have formed an object of awe and curiosity all over the world. They have been associated with mysticism apart from being objects of fear.¹

There are about 216 species of snakes identifiable in India on which 52 are known poisonous.²

In 2004, WHO initiated snake bite treatment groups in India and many large hospital and medical colleges have been joined the initiative and are now carrying out random controlled trails or specific studies to answer some of the questions in the area of snake bite management and treatment.^{3,4}

Significance of the study -The principal systemic effects of the envenomation are on the nervous system, kidneys, heart and blood coagulation and locally at the site of bite.^{5,6} The complications related to kidneys are observed in majority of patients with snake bite admitted to a hospital and is an important cause morbidity and mortality. This acute renal failure is largely a preventable complication. So, the patients with snake bites should be hospitalized and monitored for early detection of renal complications. Early treatment improves survival in snake bite victims.

AIMS AND OBJECTIVES

- To study the renal involvement in patients with snake bite with reference to clinical features and the time of onset of renal failure.
- To study the course & need for renal replacement therapy including dialysis.

METHODOLOGY

Study Design – Prospective study.

Sample size was calculated by $Z \alpha^2(1-P_1)/P_1 + (1-P_2)/P_2 \{(\text{Log}_e(1-e))\}^2 = 100.$ ⁽⁷⁾

One hundred snakebite patients admitted to Victoria Hospital, Bowring and Lady Curzon Hospitals attached to Bangalore Medical College and Research institute, Bangalore from Oct 2013 – Sept 2014 were studied using systemic random sampling and particularly looked for development of acute renal failure. Later each case is studied and investigated with respect to onset, clinical features, course in the hospital, need for renal replacement therapy including dialysis and mortality due to ARF. Patients were followed up till discharge or death. They were treated as per protocol. Clinical data was tabulated. Statistical analysis was done.

Inclusion Criteria

1. Patient or attenders have seen the offending

snake.

2. Definite fang marks are noted.
3. Features suggestive of snake bite with or without local and systemic envenomation.

Exclusion criteria

1. Patient or attenders have not seen the snake.
2. No definite fang marks.
3. No features of envenomation.

STATISTICAL METHODS

Results on continuous measurements are presented on Mean±SD (Min-Max) and results on categorical measurements are presented in Number (%). Significance is assessed at 5% level of significance. Student t test (two tailed, independent) has been used to find the significance of study parameters on continuous scale between two groups (Inter group analysis). Chi-square/ Fisher Exact test has been used to find the significance of study parameters on categorical scale between two groups. Z-test for proportion has been used to find the significance of incidence of ARF in association with basic socio-demographic and clinical features.

Statistical software: The statistical software namely SPSS 15.0, Stata 8.0, MedCalc 9.0.1 and Systat 11.0 were used for the analysis of the data and Microsoft Word and Excel have been used to generate graphs and tables.

Institutional Ethical Committee clearance was obtained.

RESULTS AND OBSERVATIONS

Table 1: Type of snake

Type of snake	Number	%
Cobra	7	7.0
Viper	49	49.0
NK	44	44.0
Total	100	100.0

Table 2: Site of snakebite

Site of bite	Male		Female		Total	
	No	%	No	%	No	%
Upper limb	19	31.1	11	28.2	30	30.0
Lower limb	42	68.9	28	71.8	70	70.0
Total	61	100.0	39	100.0	100	100.0

Table 3: Showing clinical features of snakebite patients

Presenting complaints	Male (n=61)		Female (n=39)		Total (n=100)	
	No	%	No	%	No	%
Pallor	21	34.4	23	58.9	44	44.0
Fang Marks	59	96.7	34	87.2	93	93.0
Swelling	58	95.1	35	89.7	93	93.0
Blisters	35	57.4	15	38.5	50	50.0
Tenderness	43	70.5	33	84.6	76	76.0
Bleeding	31	50.8	15	38.6	46	46.0
Hypotension	22	36.1	14	35.9	36	36.0
Oliguria	12	19.6	6	15.4	18	18.0
Anuria	2	3.3	2	5.1	4	4.0
Hematuria	6	9.8	2	5.1	8	8.0

65% of patients had thrombocytopenia with mean value of 1.97 and mean blood urea and serum creatinine was 58.24 and 2.3 respectively.

Table 4: No of patients who needed platelet transfusions

Platelet transfusion	Number (n=100)	%
Done	10	10.0
Not done	90	90.0

Table 5: No of patients who needed hemodialysis

Hemodialysis	Number (n=100)	%
Done	11	11.0
Not done	89	89.0

Outcome of snakebite patients

Out of 100 patients 59% recovered completely, 38% developed ARF and 2% developed dialysis dependency and morbidity was seen in 1%.

Table 6a: Association of ARF patients with clinical characteristics

Characteristics	Total number of patients	Number of ARF patients	%	Chi Square p value
Type of snake				
Viper	49	29	59.2	0.002**
NK	44	7	15.9	0.003**
Time lag in hospitalization				
6-12 hrs	23	14	60.9	0.023*
Duration of hospital stay				
3-4 in days	39	4	10.3	0.004**
7-9 in days	13	12	92.3	<0.001**
Total	100	38	38.0	-

Table 6b: Association of ARF patients with clinical characteristics

Characteristics	Total number of patients	Number of ARF patients	%	Chi Square p value
Clinical features				
Pallor	44	27	61.4	0.004**
Blisters	50	26	52.0	0.041*
Bleeding	46	28	60.9	0.001**
Oliguria	18	18	100.0	<0.001**
Anuria	4	4	100.0	0.0101*
Hematuria	8	8	100.0	<0.001**
Toxicity				
CVS	7	6	85.7	0.009**
Urine examination				
Albumin +	46	30	65.2	0.001**
RBC +	19	16	84.2	<0.001**
Platelet transfusion Done	10	9	90.0	0.007**
Hemodialysis				
Done	11	11	100.0	<0.001**
Fasciotomy				
Done	17	16	94.1	<0.001**
Not done	83	22	26.5	0.039*
Total	100	38	38.0	-

Table 7: Urine examination findings

Urine examination	ARF			Chi Square p value
	Absent (n=60)	Present (n=40)	Total (n=100)	
Albumin +	13 (21.7%)	33 (82.5%)	46 (46.0%)	<0.001**
RBC +	1 (1.7%)	18 (45.0%)	19 (19.0%)	<0.001**

Table 8: Comparison of site of bite in various studies

Site	Viramani ⁷	Banerjee ⁸	Sawai ⁹	Present study
Lower limb	80.6%	62.4%	67.8%	70%
Upper limb	16.4%	24.5%	25.2%	30%

DISCUSSION

SITE OF SNAKEBITE

TYPE OF SNAKES

In the present study most of the patients are bitten by viper snake with 49% and in 44% of victims snake is not known.

In the study done by Saini et al, Snakes were identified in 55% of the cases. The type of snake responsible varies from place to place as a particular species is predominant in certain geographic areas. For e.g.: Viramani et al⁷ reported Echis Carinatus common in Jammu, while Mishra et al¹⁰ reported 93% of their snake bite cases due to vipers in Bikaner and Hati et al¹¹ noted 52% of snake bites were due to cobra in West Bengal.

TIME LAG IN HOSPITALIZATION

In the present study 46% patients reported within 4 hours and another 43% in between 4-12 hours. In Mishra series¹⁰, 40% reported within 12 hours and in Raghubir Sharan's series¹² only 60% of patients were admitted within 12 hours.

CLINICAL FEATURES

In the present study 93% of patients showed fang marks and swelling of limb. Tenderness was present in 76%. Local pain was noted in 90.5% of cases in Virmani's study,⁷ and in 100% of cases in Mishra's series¹⁰ and 84% in Sarangi's series. Our study showed

pallor and bleeding in 44% and 46% of patients.

Cardiovascular toxicity is seen 7% in the form of hypotension, sinus tachycardia and sinus bradycardia. Bradycardia was probably because of a direct depressant action of snake venom over the SA node. Hypotension could be due to vasovagal syncope after snake bite or bradykinin induced vasodilatation. Muzumdar et al¹³ reported cardio toxicity due to viper bites in 74% of patients and Mishra¹⁰ reported cardio toxicity in 25% of patients.

Neurological complications were noted in 6 patients in the form of ptosis, ophthalmoplegia limb weakness and altered sensorium.

ACUTE RENAL FAILURE IN SNAKEBITE

In the study conducted by Srilatha et al¹⁴

ARF was seen in 34% of ARF which is comparable to our study.

CONCLUSION

- Thrombocytopenia was significantly related to clinical bleeding.
- ARF is usually associated with oliguria and generally occurs within 48 hours.
- Bite to ASV therapy time, bite to renal insufficiency time and coagulation abnormalities were the major prognostic factors predicting the final outcomes.

- Albuminuria is found in all patients who had coagulation abnormalities and ARF. It may appear before a gross clotting defect is detectable and is an indication for ASV therapy.

- Dialysis and supportive treatment appear to be the mainstay of therapy in cases complicated by renal failure.

- Indications for dialysis in ARF include anuria of more than 48 hours, severe hyperkalemia not responding to medical therapy, pulmonary edema, rising blood urea and serum creatinine.

LIMITATIONS

- This is hospital based study. So we can not apply results to general population. As each unit in the study have not get equal chance of selection to be include in this study.

Conflict of Interest – No

Institutional Ethical Committee clearance was obtained prior to start the study.

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Comparative Outcome of Laparoscopic Appendicectomy Over the Open Appendicectomy - A Prospective Study

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ABSTRACT

Worldwide, appendicitis is the most common cause of acute abdominal pain requiring surgery. The standard treatment for acute appendicitis is surgical removal of the appendix. This may be done by an open incision in the abdomen or through a few smaller incisions with the help of cameras (Laparoscopic Appendectomy). To demonstrate that Laparoscopic Appendectomy has good outcome with respect to the quality of life, less complications, infections and early recovery and discharge post surgery. Sixty patients with appendicitis diagnosed clinically and on ultrasound were included in the study performed at Department of surgery S N Medical College, Bagalkot. All patients included were 20 years of age or older. Patients were excluded if the diagnosis of appendicitis was not clinically established and if they had a history of symptoms for more than 5 days and/or a palpable mass. Outcomes like the quality of life, complications, infections and early recovery and discharge post surgery were studied.

Our study demonstrates that LA has good outcome with respect to the quality of life, less complications, very less infections and early recovery and discharge post surgery. Laparoscopic Appendectomy shows a more comfortable postoperative course (oral resumption, postoperative stay and analgesia) over open appendectomy with similar postoperative morbidity.

Keywords: Appendicitis, Pain abdomen, Open Appendectomy(OA), Laparoscopic Appendectomy(LA), etc.,

INTRODUCTION

Open appendectomy (OA) has withstood the test of time for more than a century since its introduction by McBurney.¹ The laparoscopic appendectomy (LA) was first described by Semm² in 1983, has struggled to prove its superiority over the open technique. OA is typically completed using a small right lower quadrant incision and postoperative recovery is usually uneventful. It is the most common general surgical procedure performed in India, after laparoscopic cholecystectomy and the most common intraabdominal surgical emergency, with a lifetime risk of 8%. The overall mortality of OA is around

0.5%; and morbidity, about 12%.³ Given the large number of procedures done annually, the validation of a minimally invasive technique that would improve outcomes may have a direct impact on patient management and possibly an indirect effect on the economics of health care in India.

OBJECTIVES

To compare postoperative outcome and morbidity of Laparoscopic Appendectomy over the Open surgical Appendectomy.

MATERIALS & METHODS

Inclusion Criteria: Patients with appendicitis were included in the study performed at Department of surgery S N Medical College, Bagalkot. The diagnosis of appendicitis was made on the following criteria:

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History of right lower quadrant pain or periumbilical pain migrating to the right lower quadrant with nausea and/or vomiting, fever of more than 38°C and/or leukocytosis above 10,000 cells per ml, right lower quadrant guarding, and tenderness on physical examination. and Ultrasonographic evidence of appendicitis. All patients included were 20 years of age or older.

Exclusion Criteria: Patients were excluded if the diagnosis of appendicitis was not clinically established and if they had a history of symptoms for more than 5 days and/or a palpable mass in the right lower quadrant, suggesting an appendiceal abscess treated with antibiotics and possible percutaneous drainage. Patients with the following conditions were also excluded: history of cirrhosis and coagulation disorders, generalized peritonitis, shock on admission, absolute contraindication to laparoscopic surgery (large ventral hernia, history of laparotomies for small bowel obstruction, ascites with abdominal distension), contraindication to general anesthesia (severe cardiac and / or pulmonary disease), inability to give informed consent due to mental disability, and pregnancy.

Surgical Procedure: Patients received 1 g of Ceftriaxone every 12 hours intravenously from the time of diagnosis until surgery. Patients found to have a complication (gangrenous or perforated appendicitis) during surgery were treated with "triple antibiotic" coverage: ampicillin (patients allergic to penicillin received vancomycin), gentamycin, and metronidazole until the white blood cell count was within normal limits and the temperature under 37.9°C for 24 hours. All other patients did not receive any antibiotics postoperatively. Nasogastric tubes were inserted in patients suspected to have a significant postoperative ileus.

Laprosopic Appendectomy was performed using three ports, with the laparoscope positioned at the umbilicus. Two 5-mm ports were inserted in the right and lower quadrant suprapubically. The abdominal cavity was explored to locate the appendix and rule out other possible diagnoses. The appendix and the mesoappendix were divided with an Maryland Bipolar. The right lower quadrant, the right colic gutter and the subhepatic space in the case of purulence were irrigated and the fluid was suctioned.

The appendix was removed in a laparoscopic bag. Fascial defects in the port sites were closed using 0 Vicryl suture. The skin incisions were closed in every case using 3-0 nylon. Nonsuction drainage was left in situ in cases of abscess and residual cavity.

Postoperative Course: Strict criteria were followed for the reintroduction of nutrition. Bowel sounds were checked every 12 hours. Once present, the patients were started on a clear liquid diet and advanced to regular diet when the liquid diet was tolerated and flatus observed. Patients were discharged when they tolerated a regular diet, had a normal white blood cell count under 10,000/mL, and were Afebrile for 24 hours.

Parameters Used for assessment of postoperative outcome: The following parameters were recorded:

1. Anesthesia time in minutes from the time of induction to reversal and operating time skin to skin in minutes.
2. Complications (intra-abdominal abscesses were defined by the presence of fever and elevated WBC and evidenced by computed tomography; wound infections were defined as redness and drainage from the wound requiring opening of the skin incision and packing).
3. Time until resumption of diet (clear liquid and regular diet) in hours and hospital stay in days.
4. A 8-item Activity Assessment Scale was used to measure activity on every postoperative day. This measured the patient's ability to perform 8 activities: lying in bed, sitting, getting in or out of bed or chair, reaching or stretching activity, walking around inside, going to toilet, light physical activities, moderate physical activities. All items had response categories scaled from 1 through 10, with verbal descriptors for each item.
5. Postoperative pain was assessed in 2 ways by a pain distress variable and a pain activity scale. The pain distress variable was a single response item that the patients used to indicate on a visual linear scale the severity of the worst pain that they experienced in the preceding 24 hours post procedure. The item was scaled from 0 to 10, with 0 being no pain and 10 being the most intense pain imaginable.

6. At 1 week and 2 weeks, patients were seen in the OPD and checked for complications (wound infection, intraabdominal abscess formation, and any other complication). Visual pain and quality scores from a scale of 0-10 were completed. 0 being worst and 10 being best.

7. Readmissions if any to the hospital and their cause were also recorded.

Statistical Methods: The appropriate sample size for our study was calculated before the beginning of the trial based on an analysis of sample sizes required for each of the main parameters (operating time, diet, length of stay, return to normal activity) for an $\alpha = 0.05$ and a power of 90%. All continuous variables are expressed as median (interquartile range).

All P values reported are 2-sided, and $P < 0.05$ denotes statistical significance.

RESULTS

The total of 60 patients underwent laparoscopic appendectomy. Out of 60, 8 patients were excluded from the study as they had cardiac abnormalities. Among remaining 52 patients who were included for our study, 48 (80%) were males and 12 (20%) were females,

Morbidity: There was no mortality in this study. Postoperative ileus was noted in two patients.

There were no infectious complications in the study.

Clinical Outcomes : Seventy-five percent (45/60) of patients were discharged on or before day three. Postoperatively, the severity of pain experienced and its influence on activity were on an average at score of 0 to 10, a score of 8 on day 1 in 26 patients, score of 6 on day 2 in 18 patients, and a score of 5 on day 3 in 12 patients. All the others had a score of 1 and 0.

Activity : There was a average score of 7 among the 8 quality scoring indices, 48 patients had a score of 7 and 8 on day 1 and day 2 respectively. 12 patients had a score of 6 on day 1 and day 2 of the surgery. There was not much limitation of routine daily activities among the patient even during follow up of 1 and 2 weeks.

DISCUSSION

Our study demonstrates that LA has good outcome with respect to the quality of life, less complications, absent infections and early recovery and discharge post surgery. There was no mortality in our study. This is consistent with the majority of past publications. The overall reported mortality of appendectomy is very low and was estimated in a review of a large administrative database at 0.05% for LA and 0.3% for OA,³ Infectious complications were not seen in our study. But infections do occur commonly Intraabdominal abscess formation is a serious complication and can potentially be life threatening. On the other hand, Klingler et al,⁴ in a study focused on the assessment of infectious complications in a PRS, corroborated our results, as the incidence of wound infections in their study was 6% in the laparoscopic group.⁵

Pain assessment was studied in 2 ways: subjectively by the administration of a visual analogue scale test and objectively by the tabulation of pain medications.⁶⁻⁸ The literature is divided on this subject. Some studies show less pain in the first 2 days after laparoscopy.⁹⁻¹¹ The length of hospital stay in our study was short. This finding is similar to others. Early publications in the 1990s demonstrated a significantly shorter hospital stay in favor of LA,^{12,13}

CONCLUSIONS

This study shows that Laparoscopic Appendectomy has good outcome ,better quality of life, less infections, lower risk of complication, fast recovery and short hospital stay compared to Open Appendectomy.

Acknowledgment: All the persons who were chosen as subjects in this study Dept. of Dept. of General Surgery, S.N. Medical College, Bagalkot, Karnataka.

Conflict of Interest: None

Ethical Clearance: Ethical clearance was obtained before the beginning of the study from the Institutional Ethical Committee, S.N. Medical College, Bagalkot, Karnataka.

Source of Support : Dept. of Dept of General Surgery, S.N. Medical College, Bagalkot, Karnataka.

The corresponding author confirms that he had full access to all the data in the study and had final responsibility for the decision to submit for publication.

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A Study to Know the Attitude, Knowledge and Practices about Menstrual Hygiene in School going Girls

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ABSTRACT

Background: The objective of this study was to highlight the knowledge, attitude and practices about menstrual Hygiene among adolescent school girls in NCR India.

Method: This was a cross – sectional survey including 465 randomly selected girl students from two secondary schools (one from rural and one from urban area) of Hapur and Meerut area of NCR India. A predesigned, pretested and structured questionnaire was used in this study.

Results: Most of the participant 141(62.67%) and 163(67.92%) belonged to age group of 13-15 years in rural and urban area respectively. Most of the girls in both group got knowledge about menstruation from mother 40% Vs 45% and sister 26.22% Vs 22.08% in rural and urban area respectively. Sanitary napkin was used more in urban 115(47.92%) than rural 85(37.78%). Clothes were used more in rural area 118(52.44%) than urban 79(32.92%). Regarding number of Pads used during menstruation was more than 3 pads per day in urban girls 49(20%) than rural girls 25(11%). Majority of participant 208(86.6%) and 157(69.78%) dispose off their pads with domestic refuse in urban and rural area respectively. Only 36(15%) and 25(11.11%) participant of urban rural area participated in ritual practices respectively.

Conclusion: In this study we found that knowledge about menstrual hygiene is poor in adolescent school girls and they follow the unhygienic practices during that time . These girls are also not involved in ritual practices. So there is need of efforts, such as educational program, to improve the knowledge, attitude and practices during menstruation.

Keywords: Adolescent, menstrual, menstrual hygiene, knowledge, practices.

INTRODUCTION

Menstruation is a physiological process which occurs as monthly bleeding from the uterine cavity coming out through vagina for 4-7 days occurring at a cycle of every 28-32 days during reproductive life of a woman. The first menstrual cycle called menarche occurs between the age of 9-15 years of age¹ with a mean age of 13 year and it profoundly changes the life of young girl¹. It is the period of

transition from childhood to womanhood. The WHO defines adolescent as individual in the age of group of 10-19 years². Adolescence comprises 10 years of life of an individual and is associated with physical changes and psychosocial stress^{3, 4}. Adolescent period is a critical time of identity formation and a period of transition from childhood to womanhood⁵. Menstruation is an unique and natural process in females⁶ but still associated with taboo of dirty or unclean in Indian society. The issues associated with menstruation are never discussed openly⁷. Discussion about menstruation is associated with shame, fear and anxiety. The condition of menstrual hygiene is very poor globally especially in India⁸ and

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Africa⁹. Unhygienic conditions at genital might lead to many diseases such as infection of urinary tract and reproductive tract such as bacterial vaginosis¹⁰; vulvo vaginal candidiasis, further leads to cervical cancer¹¹ and HIV. Apart from these complications, menstruation is also associated with school abstentism and school dropout because of lack of clean and private sanitation facilities at school¹². Girls also have fear of leakage and dropping of sanitary material, smelling and staining of clothes¹³.

MATERIAL AND METHODS

This is a cross sectional, community based study conducted in two girls school between January - February 2015. One school belonged to rural area of district Hapur and another belonged to urban area of Meerut, Uttar Pradesh. Permission to conduct this study was taken from school Authority and Ethical committee of LLRM Medical College, Meerut and SIMS Hapur. A total 465 of girls below 18 years of age were included in this study. A predesigned, pretested and structured questionnaire was used in this study.

Table: I Socio demographic variables				
Variables	Rural (n= 225)	%	Urban (n=240)	%
Age (Years)				
10-12	15	6.67	23	9.58
13-15	141	62.67	163	67.92
16-18	69	30.66	54	22.5
Education				
< 8 th	68	30.22	48	20
9-10 th	80	35.56	106	44.17
11-12 th	77	34.22	86	35.83
Age of Menarche				
10-12,	65	28.89	91	37.92
13-15,	145	64.44	134	55.83
> 16	15	6.67	15	6.25
Table: II Sources of Knowledge about menses				
Source	Rural (n= 225)	%	Urban (n=240)	%
Mother	90	40	108	45
Sister	59	26.22	53	22.08
Relative	23	10	24	10
Friends	40	17.78	28	11.67
Media	9	4	20	8.33
Other	4	2	7	2.92

Table: III Attitude of participant about menstruation				
Material used during menses	Rural (n= 225)	%	Urban (n=240)	%
Sanitary	85	37.78	115	47.92
Cloth	118	52.44	79	32.92
Both	22	9.78	46	19.17
Pads change Per day				
1	46	20.44	36	15
2	147	65.33	143	59.58
3	25	11.11	49	20.42
4	7	3	9	3.75
5+	0	0	3	1.25
Pads changed at night				
Yes	50	22.22	75	31.25
No	175	77.78	165	68.75
Pads changed at school				
Yes	22	9.78	33	13.75
No	203	90.22	207	86.25
Shaving the genitalia				
Yes	12	5.33	47	19.58
No	213	94.67	193	80.42
Disposal of pads with				
Domestic Refuse	157	69.78	208	86.67
Burning	33	14.67	20	8.33
Burial	35	15.56	12	5
Storage of pads with				
Clothes	191	85	176	73.33
Special Cupboard	34	15	58	24.17
Bathroom	0	0	6	2.5
Social aspect during menses				
yes	179	79.56	156	65
No	46	20.44	84	35
Taking bath daily				
yes	210	93.33	240	100
No	15	6.67	0	0
Stay indoor at home				

Cont... Table: III Attitude of participant about menstruation

Yes	65	28.89	51	21.25
No	160	71.11	189	78.75
Involve in ritual practices				
Yes	25	11.11	36	15
No	200	88.89	204	85
Involve in outdoor game				
Yes	29	12.89	43	17.92
No	196	87.11	197	82.08
Benefit of personal hygiene				
Prevention of infection				
Yes	156	69.33	201	83.75
No	69	30.67	39	16.25
Avoid body odour				
Yes	185	82.22	211	87.92
No	40	17.78	29	12.08

RESULT

In present study, the total number of participants were 465, out of which 240 and 225 belonged to urban and rural area respectively. Most of the participants 141(62.67%) and 163(67.92%) belonged to age group of 13-15 years in rural and urban area respectively. Almost equal number of rural participants were below 8th, 9-10th and 11-12th standard while in urban population 106 (44.17%) participants were 9-10th standard, 86(35.83%) 11-12th standard and 48 (20%) were < 8th standard. Most of the participants in both groups i.e. rural and urban area got knowledge from mother 90(40%) vs. 108(45%), sister 59(26.22%) vs.53(22.08%) and friends 40(17.78%) vs. 28 (11.67%). Regarding material used during menstruation, sanitary napkins used more in urban 115 (47.92%) in comparison to rural 85 (37.78%).Cloths were used more in rural area 118(52.44%) than urban 79(32.92%). Most of the rural population 147 (65.33%) usually used 2 pads per day while 143(59.50%) of urban population did so. More than three pads per day were used by 49 (20%) of urban population and 25(11%) of rural population. Urban population 75(31.25%) and rural population 50 (22.22%) said that they change pads during night for better hygiene. Only 33(13.75%)

participants of urban and 22 (9.78%) of rural area change their pads at school. The participants of urban area 47 (19.58%) shave their genitalia while rural 12 (5.33%).Majority of participants 208 (86.6%) and 157 (69.78%) dispose off their pads with domestic refuse in urban and rural area respectively. 176 (73.33%) subjects in urban and 191 (85%) in rural area store pads with their cloths. Special cupboard for storage of pads were used more in urban 58 (24%) than 34 (15%) in rural area. Most of the subjects 179 (79.56%) in urban and 156 (65%) in rural area were involved in kitchen work. Regarding daily bath for hygiene, 240(100%) urban subjects took daily bath compared to 210 (93.33%) of rural area. Rural participants 65 (28.89%) and urban participants 51 (21.25%) stayed indoor at home while 29 (12.89%) and 43 (17.92%) subjects in rural and urban area respectively participated in outdoor activities. Only 36 (15%) and 25 (11.11%) participants of urban and rural area respectively participated in ritual practices during menstruation. Most of the participants of urban 201 (83.75%) and rural156 (69.33%) believe that personal hygiene prevent infection while 211 (87.92%) urban and 185 (82.22%) rural subjects rejected the believe that it avoid body odour.

DISCUSSION

India is considered the youth country as there are more percentage of youth especially adolescent but females are neglected. Menstruation is associated with taboo of unclean and dirty in India. Various serious misconceptions and practices are also associated with menses. Unhygienic condition during menstruation is associated with various reproductive and urinary tract infections, which later in life may lead to serious complications. In present study the main source of information about menstruation was mother followed by sister. Similar results were also found in other study also⁽¹⁴⁾. About material used during menstruation in our study, the most common was sanitary napkin in urban area (47.92%) while in rural area it was cloth (52.44%). The use of sanitary pad is less in our study in comparison to other studies which was conducted in urban area⁽¹⁵⁾. Most of the girls in our study usually change their pads 2-3 times per day during menstruation which was also seen by other authors⁽¹⁶⁾. Most of the girls in both group revealed that they never changed their pads in school which is also found in other study⁽¹⁷⁾. The reason behind this could be poor hygiene in toilets and lack of privacy in schools. Majority of girls of urban and rural areas dispose the pads with domestic refuse. Burning and burial was found more in rural area (15.56%) which was also found in rural population in other study⁽¹⁸⁾. In our study most of the girls in rural as well as urban areas store their absorbant with cloths which was less than the other study conducted at Dehradun⁽¹⁹⁾. Majority of girls from both the groups are allowed to enter in kitchen and involve in cooking practice which was also seen in other study⁽²⁰⁾. All the girls in urban area and most of the girls of rural area were taking bath daily during menstruation. In other study by Adika et al (30.1%) girls stay at home during menstruation⁽²¹⁾. Majority of girls in both group follow the restriction in ritual practices and not involved in outdoor games such results are also found in other studies⁽¹⁹⁾. Regarding benefit of personal hygiene majority of girls knows that it prevents infection and also avoid body odour, the same result also found in other study⁽²¹⁾. The maximum of girls have history of menarche at the age of 13-14 years which is also seen in other studies.

CONCLUSION

Knowledge about menstruation is very poor among adolescent girls. It has been seen that most of the Reproductive tract infection & UTI are associated with poor menstrual hygiene; therefore, there is a need to educate the adolescent girls about their beliefs, attitude and paraphrases regarding menstruation. For this we can take help of the educational TV programme, school teachers, nurses and health professionals.

Conflict of Interest: None

Source of Funding: None

Ethical Committee Clearance: Taken

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Psychiatric and Psycho Social Rehabilitation of Long Stay Patients in Mental Hospitals: Practical Challenges

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ABSTRACT

Since the initiation of deinstitutionalization of patients suffering from mental illness, provision of easy access to health care facilities, community participation and rehabilitation of such patients has become practical challenge. Still now patients suffering from long term psychiatric illness lacks adequate care and opportunities which preventing them to become the part of mainstream of the society. Either they spend their life in long term psychiatric hospitals, rehabilitation centres or their life expectancy become shorter due to various adversities which they encounter. It is the high time to address difficulties in rehabilitation of long stay patients at various closed wards of psychiatry hospitals.

Keywords- *Rehabilitation, practical challenge, long stay patients, stigma, schizophrenia*

INTRODUCTION

There has been a surge in the field of psycho social rehabilitation for the mentally ill patients who have developed chronicity in past few decades. Main objective of psycho social rehabilitation is to reduce the burden of psychiatric disorder on the sufferers and provide opportunity for socio-occupational functioning and improve their life skills. It has been observed that persons who stays in a mental hospital for long duration in spite of good clinical recovery tends to develop maladjustment with their own environment. They may develop incapacity to interact with and find themselves in awkward position while mixing with the people living in community.

So this group of people are at the risk of developing chronicity and do require prolong inpatient care because of the complex psychopathologies of the psychiatric illness. Also such kind of individuals has to deal with the deleterious and negative attitude of the society in terms of stigma and prejudices.

Psychosocial rehabilitation can be conceptualised as a multidimensional therapeutic approach which requires active participation of many persons, e.g., patients, caregivers, mental health professionals, social network, administration and policy makers, etc. Psychosocial rehabilitation is not only a therapeutic endeavour but in true sense it has some reformatory

connotation too.

HISTORICAL ASPECTS OF PSYCHOSOCIAL REHABILITATION OF LONG STAY PATIENTS

In the 2nd decade of 20th Century reformatory movements like “Mental Hygiene movement” and “Deinstitutionalization in the treatment of chronic mental patient” nourished and propelled the psychosocial rehabilitation significantly in positive manner.

When categorically look back we can find that the origins of the psychiatric rehabilitation field are embedded in several historical developments: ⁽¹⁾ the moral therapy era; ⁽²⁾ the inclusion of the psychiatrically disabled into public-supported vocational rehabilitation programs; ⁽³⁾ the development of community mental health ideology; ⁽⁴⁾ the psychosocial rehabilitation centre movement; and ⁽⁵⁾ the development of skills training techniques as an effective mental health intervention.^[1]

CHRONIC ILLNESS AND LONG STAY PATIENTS. WHO ARE THEY?

Psychiatric illness like schizophrenia tends to have chronic course, gradual onset, indefinite duration with frequent remissions and exacerbations which causes personal and social functioning deficits and

low chances of return to the pre-morbid functioning which include inability to perform activities of daily living, become unemployed, dependent on family members or welfare agencies for their survival. They also face challenge interms of stigma and prejudices and become the neediest and disadvantaged groups of society". [2] Chronicity is determined not only by diagnosis but primarily by duration and disability due to the illness.

Long stay patients are those who at the time of anticipated or planned discharge reside in a long term or rehabilitation ward of the hospital or have a length of stay of 30 days or longer. Forensic patients are excluded from this definition.[3]

DEFINITION OF PSYCHOSOCIAL REHABILITATION

Definitions given by various authors try to include different domains of person's life.

Psychiatric rehabilitation is the "treatment that teaches chronically ill individuals the physical, emotional and intellectual skills necessary to live, learn, and work in their own particular environments".[4]

The World Health Organization (1996)[5] defined psychosocial rehabilitation as: "psychosocial rehabilitation is a comprehensive process that offers the opportunity for individuals who are impaired, disabled or handicapped by a mental disorder to reach their optimal level of independent functioning in the community".

According to Cnaan et al (1988) [6] rehabilitation is based on the assumptions that people will be motivated and get mastery and competence in the areas which they feel self-confident and more independent. Learning of new behavior is possible and individuals are capable of adapting to the same in spite illness and meet their basic needs.

OPPURTUNITIES IN PSYCHOSOCIAL REHABILITATION [7, 8]

Skills training

It includes systematic social skill building through curriculum based psycho educational and cognitive-behavioral interventions like 'basic cognitive skills

development-e.g. attention training- to facilitate learning and competency of the patients.

Peer support

It includes consumer self-help groups and advocacy networks. They focus mainly on normalization and empowerment of persons with severe and persistent mental illness.

Vocational services

The basic objective is to help the patients to set their own vocational goals, which form the basis for motivation toward recovery of vocational roles. It includes supported employment, transitional employment, supported education, specific job training, and prevocational skills training.

Consumer community resource development

This domain helps the patients and their families to create and operate support and advocacy networks for the long term welfare and making the community supportive towards the patients. This minimizes the deleterious effect of illness on socio-occupational functioning, increased social acceptance and reduced discrimination and stigma of the patient in the society.

CHALLENGES IN IMPLEMENTATION OF REHABILITATION SERVICES FOR LONG STAY PATIENTS

Concept of deinstitutionalization stressed the importance of making the chronically ill patients as a part of mainstream of the society by providing social, psychological and vocational support. This limits their prolonged stay in mental hospitals, reduces the burden on health care professionals also. However the picture is not simple because of various practical issues in implementing rehabilitation services for long stay patients, some of which are mentioned below.

Patient Related factors

- Duration and nature of illness and severity of symptoms
- Staff attitudes and expectations
- Types of treatment received
- Side effects of Pharmacotherapy and somatic

therapy

- Past physical & medical history which interferes with recovery

6.2 Psychosocial factors

- Patient's and family's attitude towards the patient and expectations

- Stigma, stereotypes, attributions and misconceptions about mental illness in family and the community

- Role fulfilment pattern in family

- Pre-morbid personality and functioning of the patient at different areas

- Prior availability of community services

- Felt needs of the patients & family regarding psychosocial treatment and rehabilitation

- Financial support

- Support from government health sectors and nongovernmental organizations.

Hospital as a dumping place

Many relatives of the patients are not interested in the treatment or rehabilitation of the patients and wanted to get rid of them because of various factors like financial burden, frequent violence from the patient, stigma of having mentally ill person in the house, gender discrimination and to avoid additional responsibilities. So they try to put such patients in psychiatric hospitals by providing wrong communication details and never turn back leading to dumping of such patients and longer duration of stay in the hospital.

Burn out of hospital staff

Psychosocial rehabilitation is a labour-intensive process. Success of psychosocial rehabilitation largely depends on the motivation and willingness of the professionals attached to it. These professionals tend to be burned-out because of insurmountable work pressure, emotional exhaustion, tendency to develop cynical and negative attitudes towards others and negative self-evaluation, especially regarding personal accomplishment at work. [9]

Challenges in special populations

Onset of psychiatric illness in adolescents and elderly patients requires a special attention because of their complex clinical presentations, diagnostic difficulties, susceptibilities to medications and associated medical co morbidities.

Also keeping such patients in psychiatric hospitals or rehabilitation centres for long duration leads to ethical concerns, legal problems like human rights issues, stigma and financial burden for caring of such patients which is most often very difficult to address.

Rehabilitation centres

In recent years there is increase in establishment of rehabilitation centres, half way homes for de-addiction treatment and caring of chronically ill patients, to reduce the burden on family members. But main problem of such facilities is monetary aspects which many of the people cannot afford especially in developing countries like India.

PSYCHIATRIC AND PSYCHOSOCIAL REHABILITATION STATUS IN INDIA

Psychosocial rehabilitation in India is still not so developed in comparison to developed countries. Some centres have been developed under the umbrella of Central and State Governments for the welfare of physically and psychologically disabled people. Some tertiary mental hospitals have their own wing of psychosocial and vocational rehabilitation centres. [Like Psychiatric rehabilitation services (PRS) in NIMHANS and rehabilitation and occupational therapy set up at Central Institute Psychiatry, Ranchi, etc.].

However apart from mental illness other problems like poverty, illiteracy, rapid and unplanned urbanization, industrialization, social disintegration, social atrocities and discrimination, malnutrition and gender biasness are the real practical challenges for which India is still not so prepared to cater the therapeutic and rehabilitative needs of the people.

CONCLUSION

Psychosocial rehabilitation is multidisciplinary therapeutic effort which includes active participation

of people like mental health professionals, occupational therapist, policy makers, judiciaries, social activist and most importantly patients and their key caregivers. We are living in an era of modern technology and accessibility of effective facilities which should help patients with chronic mental illness to be part of mainstream of the society instead of spending their entire lifetime in closed wards of psychiatry hospitals.

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Health Related Quality of Life among Mothers of Children with Autism Spectrum Disorder and Its Predictors

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ABSTRACT

Objectives: Autism, as a source of stress, may affect psychological health and quality of life of parents particularly mothers. The aim of this study was to examine the health related quality of life (HRQOL) among mothers of children with autism and its clinical and socio-demographic predictors.

Methods: In this cross-sectional study, 203 mothers of children with autism were selected via convenience sampling method. The participants answered the quality of life questionnaire (SF-36) and socio-demographic and some clinical information. Data were analyzed using descriptive statistics and logistic regression analysis.

Results: The mean age of mothers was 36.01 (SD=6.92) years and the majority were married (95.6%). The highest scores of HRQOL were related to physical functioning domain (66.07±27.69), and the lowest scores were related to vitality (38.36±23.04). The results of multiple logistic regression showed that lower age (OR = 0.61; P = 0.02) and poor level of child communication (OR = 0.21; P = 0.03) were associated with worse quality of life.

Conclusion: The research findings showed that HRQOL of mothers of children with Autism was low in most of domains. Age and child-mother communication should be considered as important predictive factors for the better HRQOL in mothers of children with Autism. Particular attention should be paid to the HRQOL in mothers and provide the support resources in the care of these children specially in those with poorer communication.

Keywords: health-related quality of life, Autism, mothers

INTRODUCTION

Autism Spectrum Disorder is considered one of the most complex childhood developmental disabilities which can devastatingly affect the children's intellectual, social, behavior, and linguistic abilities¹. The prevalence of autism has increased dramatically during the last decade² and current estimates of prevalence are around 20 per 10,000³. The estimated overall prevalence of autism in the Iran is 6.26 per 10,000 for five year olds⁴. Since autism is a chronic disease, parenting a child with autism

can have a significant impact on the parents' life⁵. Studies on other chronic diseases such as cancer and hemodialysis patients have shown poor quality of life in these patients^{6,7}. As a chronic situation, care giving of a child with developmental disabilities may be associated with high levels of distress and burden⁸ impaired mental health⁹, higher levels of stress^{10,11} and also impaired mental, physical and social health^{12,13} can impair health related quality of life (HRQOL) in these mothers.

The construct of HRQOL synthesizes the concepts of health status and quality of life (QoL). The construct of QoL represents one of the multidimensional, comprehensive outcome measures that is based on the individual's subjective perception regarding

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several aspects of life experiences¹⁴. In comparison, HRQOL is a subset of QoL which relates to an individual's health. The term HRQOL is considered to represent the physical, psychological, and social domains of health that can be influenced by an individual's perceptions¹⁵.

A few studies have explored the health-related quality of life (HRQL) in parents of children with autism. A study reported that the health-related quality of life of the mothers of children with high-functioning Asperger syndrome is impaired¹⁶. Similarly, Marchal et al. also found psychosocial variables rather than socio-demographics or child functioning showed most consistent and powerful relations to the HRQoL domains of cognitive functioning, social functioning, daily activities and vitality in mothers caring for their children with Down syndrome¹⁷. However, to the best of our knowledge, in Iran there is only one study regarding quality of life of the caregivers of children with cerebral palsy and reported that mothers of children with cerebral palsy suffer from poor physical and mental health¹⁸. Health outcome might be related to socio-demographic and child characteristics such as the severity of the core disability or main diagnosis, the age of the child, and the extent of coexisting behavioral problems. In addition, QoL could be related to socio-cultural contexts, therefore, recognition of diversities among cultures is necessary in order to design and conduct a valid and reliable HRQL research, as well as accurate cross-cultural programs. The purpose of this study was to assess the HRQL in mothers of children with Autistic Disorder and its predictors.

METHODS

Design and Participants

This cross-sectional study was conducted from June 2013 to July 2014 in three cities Qom, Karaj and Shahryar, Iran. 203 mothers of children with autism referred to rehabilitation centers where their children had been diagnosed with autism were selected via convenience sampling method. The inclusion criteria of was age less than or equal to 18 years of age with the autism diagnosis, consent to participate in the study, ability to communicate in Persian language, and lack of previous psychiatric disease or psychoactive medicine use.

Measures

We used a two-part questionnaire as follows:

1. A questionnaire was used to collect Socio-demographic variables and child characteristics such as clinical problems. The questionnaire consisted of questions about mother's age, marital status, educational status, economic status, employment, chronic disease of mother, gender of the child, age of the child, total number of children, birth order, diagnosis' age and child clinical problems such as verbal and non-verbal communication level.

2. HRQL was measured using the SF-36. The SF-36 has 8 subscales: physical functioning, body pain, general health, vitality, social functioning, role limitations due to physical problems, role limitations due to emotional problems and mental health. Scores in each subscale range from zero to 100, with zero representing the worst conditions and 100 representing the best possible score. The Physical Component Summary (PCS) scale includes physical functioning, role physical, bodily pain, and general health subscales, whereas the Mental Component Summary (MCS) scale includes vitality, social functioning, role emotional, and mental health subscales. Previous evaluations of the original as well as the Persian version of SF-36 indicated good reliability and validity^{19,20}.

ETHICAL ISSUES

This study considers strictly ethical issues of the research. The research followed the tenets of the Declaration of Helsinki; all Participants were included after informed consent. Participation in this study was voluntary and they were thus free to withdraw from the study at any time without having any effect on their treatment process. The research was approved by the ethical committee of Islamic Azad University, Karaj Branch as Master thesis.

Statistical Analysis

All analysis was performed using SPSS version 16. Descriptive statistics were used to explore the data. Logistic regression analysis was performed to assess the relationship between health HRQL and socio-demographic information and child characteristics. P-Value less than 0.05 were considered significant in all analyses.

RESULT

Samples characteristics:

The mean age of the mothers was 36.01 years (SD = 6.92) ranging from 23 to 59 and the majority were married (95.6%). The characteristics of the study participants are shown in Table 1.

Table 1: Mothers’ Socio-demographic/child characteristics of samples(n = 203)

	Number	%
Age (years)		
Mean (SD)	36.01	6.92
Educational status		
Illiterate	17	8.4
Primary	99	48.8
Secondary	62	30.5
Higher	25	12.3
Marital status		
Married	194	95.6
Divorced/ widowed	9	4.4
Occupation		
Not working	17	22.1
Working	186	91.6
Housing status		
Owner	100	49.3
Tenant	103	50.7
Chronic disease in mother		
Yes	41	20.2
No	162	79.8
Economic status		
Poor	45	47.3
Intermediate	40	42.1
Good	10	10.6
Child gender		
Boy	131	64.5
Girl	72	35.4
Child Communication level		
verbal	154	75.8
nonverbal	34	16.7
No communication	15	7.4
Birth order		

First born	80	40.8
Second	65	33.2
Third & higher	58	26
Child age	7.89 (3.39)	
Diagnosis age (years)	1.98 (1.30)	
Total number of children		
Two	3	1.5
Three	52	25.6
Four or higher	148	72.9

HRQL among mothers of children with Autistic Disorder

The mean score for HRQL variables are presented in Table 2. The highest scores of HRQOL were related to physical functioning domain (66.07±27.69), and the lowest scores were related to vitality (38.36±23.04).

Table 2: Descriptive statistics for quality of life

Quality of life scores (possible score range from 0 to 100)*	Mean	SD
Physical functioning	66.07	27.69
Role physical	38.55	40.74
Bodily pain	56.53	30.57
General health	51.88	25.65
Vitality	38.36	23.04
Social functioning	54.99	28.89
Role emotional	38.92	42.37
Mental health	42.35	23.47
Mental HRQOL MCS	43.65	24.59
Physical HRQOL PCS	53.25	25.51

* Higher scores indicate better conditions.

Relationship between HRQL and socio-demographic variables and child characteristics

To assess the relationship between HRQL and socio-demographic variables and child characteristics, multiple logistic regression analysis was performed. HRQL was treated as dependent variable as well as socio-demographic variables and child characteristics were considered as independent factors. Predicting variables with P-Value less than 0.15 were entered in multiple logistic regression models as predictor

variables. The results obtained from multiple logistic regression model showed that that lower age (OR = 0.61; P = 0.02) and child poor communication (OR = 0.21; P = 0.03) were associated with worse HRQL. Table 4 presents the results for total QoL score.

Table 3. The results obtained from logistic regression analysis

Socio-demographic	B	S.E.	Wald	Sig.	Exp(B)	95% CI	
						Lower	Upper
Age of the mother	-.08	.03	5.39	.02	.61	.85	.98
living status	2.24	2.17	1.06	.30	9.43	.13	64.06
Educational status	1.36	.76	3.19	.07	3.89	.87	17.33
Occupation	-.35	.28	1.51	.21	.70	.40	1.23
Child age	1.10	.84	1.70	.19	3.01	.57	15.79
Diagnosis age (years)	-.87	.85	1.03	.30	.41	2.23	2.23
Birth order	2.61	2.14	1.48	.22	13.72	.20	92.67
Total number of children	.07	1.65	.01	.99	1.01	.03	25.8
Child communication level	-1.66	.78	4.50	.03	.21	.04	.88

DISCUSSION

Studying HRQL of parents' of children with autism is essential for identifying the factors associated with the families' psychological adjustment. The integrative definition of QoL includes functioning across various health domains; HRQL is therefore a key variable to be considered in the evaluation of parents' adaptation to their child's disability. The present study has examined the QoL level and its predicting factors correlates among mothers of children with autism in an Iranian sample.

The results of our study shows poor quality of life in mothers of autistic children in most of its domains which are partially consistent with the previous studies that found poor QoL levels among parents of children with Autistic Disorder²¹⁻²⁵. The lowest HRQL scores in this study were reported by mothers in the vitality domain. On the other hand, the highest HRQL scores for the mothers were found in the physical functioning domain. Low quality of life regarding vitality can be due to Care giving of a child with developmental disabilities destroys the mental well-being more than physical well-being mothers of children with Autistic Disorder.

Assessment of predictors of mothers' QoL, demonstrated higher age of mothers and better communication level of the autistic child were

associated with better HRQL. Mothers who accepted the diagnosis of autism and resolved their emotion have a higher cognitive supportive engagement in play interactions with the children. In other words, their verbal and nonverbal communications with the children are enhanced a greater reciprocity²⁶. Higher quality of mother-child communication such as maternal acclaim and warmth decreases proceeds externalizing problems²⁷. We did not find any significant relationships between most of the variables and HRQL in final model. Perhaps the reason is other variables such as social support which are not included in this study.

CONCLUSION

In conclusion, the research findings showed that HRQL of mothers of children with Autism was low in more domains. Mother age and child communication level should be considered as important predictive factors for the better HRQL of mothers of children with Autism. Particular attention should be paid to HRQL in mothers of autistic children to provide emotional and psychological supportive resources for these mothers and promote indirectly the care of autistic children.

Limitations of the study

Several limitations of this research should be

noted. This cross-sectional study did not allow for measurement of variables over time. Non-random sampling reduce generalizability of the findings in this. Performing the longitudinal study controlling other variables, such as coping, depression, social support, physical and psychological symptoms is suggested in order to better understand the effect of variables on health and the way to improve HRQL of parents of children with Autism.

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A Study on Different Common Laboratory Parameters among Malaria Cases at Alluri Sita Ramaraju Academy of Medical Sciences, Eluru, and Andhra Pradesh

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ABSTRACT

Background: Malaria continues to be a major health problem in some of the most populated areas of the world, under developing countries continues to cause significant morbidity and mortality worldwide. The hematological abnormalities that have been reported to consistently with malaria are anemia, thrombocytopenia, atypical lymphocytosis and infrequently disseminated intravascular coagulation. **Objectives:** 1. To study the demographic profile of malaria cases. 2. To find the laboratory parameters abnormality among the Malaria cases. **Materials and Methods:** The present Hospital based descriptive study was conducted at Alluri Sita Ramaraju Academy of Medical Sciences, Eluru, Andhra Pradesh, during the period from January 2014 to December 2014 by retrospectively. A total of 68 individuals were selected from the hospital records based on the full details available in the case sheet. Results were analysed and necessary statistical tests were applied. **Results:** Out of 68 individuals, 43 were males and 25 were females. Out of 68 Malaria cases, there was 77.9% (53/68) patients were having haemoglobin < 12 gm/dl and remaining 15 patients were having haemoglobin > 12 gm/dl (P<0.05). About 47 % (32/68) malaria cases were having platelet count < 1,00,000/cmm. Of which, 8.8% (6/68) were having 10,000-20,000 low platelet count range. Only 53% of malaria cases were having normal range of platelets. There was statistically significant association was found between different grades of packed cell volume and sex (P<0.05). **Conclusions:** Based on the above study results, anaemia was identified as a common complication in malaria cases. In addition to that, platelet count was decreased not only in dengue fevers but also in malaria cases. Maximum numbers of patients tend to develop acute renal failure showing high blood urea and high creatinine levels. Our sample is less and there are many studies required for the support of our study.

Keywords: Age, Sex, Haemoglobin status, Packed cell volume, creatinine.

INTRODUCTION

Malaria is well-known to human being since centuries; it is a disease of tropical and subtropical countries particularly in Africa and Asia. It is

caused by protozoan Plasmodium, transmitted by female anopheles mosquitoes, which typically bite between dusk and dawn. Malaria continues to be a great health problem in some of the most populated areas of the world & continues to cause significant morbidity and mortality worldwide. As per world malaria report 2009, half of the world's population is at risk of malaria and an estimated 243 million cases led to nearly 8,63,000 deaths in 2008 ¹. In India, total 1.49 million malaria cases had occur. Out of which, 0.77 million (52.12%) cases were of

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P. Falciparum in year 2010. Annual parasite infection (API) of India for the year 2010 was 1.3. Annual Blood Smear Examination Rate (ABER) of India for the year 2010 was 9.21. Hematological changes, which are the most common systemic complications, play a significant role in these serious complications. The hematological abnormalities that have been reported to consistently companion which comprise anemia, thrombocytopenia, atypical lymphocytosis and infrequently disseminated intravascular coagulation.² Leucopenia, leucocytosis, Neutopenia, Neutrophilia, Eosinophilia and monocytosis also have been reported.^{3,4} In tropical countries like India, the majorities of the shared complications commencing due to malarial consequences is from hyperparasitemia. Mortality is very high (10-30%) in complicated P. falciparum infection. This study aimed to evaluate and determine of various hematological alterations in patients infected with malaria and to add more detailed information, especially from these highly affected zones. The level of parasitemia was also assessed and correlated with these haematologic changes.

OBJECTIVES

1. To study the demographic profile of malaria cases.
2. To find the laboratory parameters abnormality among the Malaria cases

MATERIALS & METHODS

The present Hospital based descriptive study was conducted at Alluri Sita Ramaraju Academy of Medical Sciences, Eluru, Andhra Pradesh, during the period from January 2014 to December 2014

retrospectively. A total of 68 cases were selected from the Alluri Sita Ramaraju Academy of Medical Sciences hospital records based on the full details available in the case sheet. Patient's age, sex, the presenting complaints, hematological and biochemical investigations, treatment given etc taken from the records. The diagnosis of malaria was done by rapid diagnostic test kits and confirmed by thick blood films stained with GIEMSA stain. All malaria positive smears were studied for confirmation, identification of species and review of smear for platelets count and other hematological changes. Results were analysed and necessary statistical tests like simple proportions and chi square tests were applied.

Table- 1: Age wise distribution of Malaria Cases:

AGE	MALE	FEMALE	TOTAL
< 15 yrs	5(83.33)	1(16.67)	6 (100%)
15-25 yrs	9(81.81)	2(18.19)	11(100%)
25-35 yrs	12(60.00)	8(40.00)	20(100%)
35-45 yrs	5(71.42)	2(28.58)	7(100%)
45-55 yrs	3(30.00)	7(70.00)	10(100%)
55-65 yrs	8(80.00)	2(20.00)	10(100%)
>65 yrs	1(25.00)	3(75.00)	4(100%)
Total	43(63.23)	25(36.77)	68(100%)

$$X^2 - 11.4, 6df, p= 0.076$$

Out of 68 Malaria patients, 43 (63.23%) were males and 25 (36.77%) were females. Maximum number of people (20) was in the age group of 25-35 yrs of age group. There was no statistically difference observed between different age groups and sex (P.0.05) among malaria patients..

Table – 2: Diagnosis of type of Malaria and other associated illnesses :

DIAGNOSIS	MALES	FEMALES	TOTAL
P. Vivax Malaria	6(54.54)	5(45.46)	11(100%)
P. Falciparum Malaria	11(61.11)	7(38.89)	18(100%)
P. Vivax Malaria + P. Falciparum Malaria	6(66.66)	3(33.34)	9(100%)
P. Vivax Malaria + P. Falciparum Malaria + P. Malariae Malaria	10(66.66)	5(33.34)	15(100%)
Clinical Malaria with Sd Bioline negative	5(71.42)	2(28.58)	7(100%)
P. Vivax + P. Falciparum + P. Malariae Malaria + Dengue	5(62.50)	3(37.50)	8(100%)
Total	43(63.23)	25(36.77)	68(100%)

$$X^2 - 0.71, 5df, p= 0.09$$

Among 68 individuals, 26.4% (18/68) patients were positive for P. falciparum alone, 16.1% were P. Vivax positive alone, 13.2% (9/68) were P. falciparum and P. Vivax and about 11.7% (8/68) patients were positive for P. vivax, p. falciparum, p. Malariae and Dengue.

Table – 3: Total Leucocyte Count distribution in Malaria cases :

TLC	MALES	FEMALES	TOTAL
< 4000	6(75.00)	2(25.00)	8 (100%)
4000 - 11000	27(64.28)	15(35.72)	42 (100%)
>11000	10(55.55)	8(44.45)	18(100%)
Total	43(63.23)	25(36.77)	68(100%)

$\chi^2 - 0.90, 2df, p= 0.6$

In the study group, 61.7% (42/68) Malaria patients were having normal leucocyte count, 26.4% patients were having leucocyte count > 11,000/cmm. Of which, 55.5% were males and 44.5% were females having TLC > 11,000/cmm.

Table – 4: Haemoglobin Status in relation to sex among malaria patients :

HAEMO-GLOBIN LEVELS	MALES	FEMALES	TOTAL
<7 gm/dl	3(37.50)	5(62.50)	8(100%)
7 – 12 gm/dl	27(60.00)	18(40.00)	45(100%)
12 – 18 gm/dl	13(86.6)	2(13.4)	15(100%)
Total	43(63.23)	25(36.27)	68(100%)

$\chi^2 - 4.53, 1df, p= 0.03$

Out of 68 Malaria cases, there was 77.9% (53/68) patients were having haemoglobin < 12 gm/dl and remaining 15 patients were having haemoglobin > 12 gm/dl. There was statistically significant association was found between different grades of haemoglobin level and sex

Table – 5 : Packed Cell Volume status in Malaria cases

PCV	MALES	FEMALES	TOTAL
10 - 20	2(22.22)	7(77.78)	9(100%)
20 - 30	14(53.84)	12(46.16)	26(100%)
30 – 40	23(79.31)	6(20.69)	29(100%)
40 – 50	4(100.00)	0(0.00)	4(100%)
Total	43(63.23)	25(36.77)	68(100%)

$\chi^2 - 13.0, 3df, p= 0.005$

There was statistically significant association was found between different grades of packed cell volume and sex. 5.8% (4/68) people were showing PCV 40-50 range in males and none of the females were having 40 -50 PCV range (P<0.05). (Sample of the study may be less).

Table – 6: Platelet Count distribution among Malaria Cases

PLATELET COUNT	MALES	FEMALES	TOTAL
10000 - 20000	2(33.33)	4(66.67)	6(100%)
20000 - 50000	15(75.00)	5(25.00)	20(100%)
50000 – 1 lakh	4 (60.00)	2 (40.00)	6(100%)
1 lakh – 1.5 lakh	5 (55.5%)	4 (44.5%)	9 (100%)
1.5 lakh – 3 lakh	13(59.09)	9(40.91)	22(100%)
>3 lakh	4(80.00)	1(20.00)	5(100%)
Total	43(63.23)	25(36.77)	68(100%)

Out of 68 patients, about 47 % (32/68) malaria cases were having platelet count < 1,00,000/cmm. Of which, 8.8% (6/68) were having 10,000-20,000 platelet count range. Only 53% of malaria cases were having normal range of platelets.

Table – 7: Blood Urea levels in malaria cases

BLOOD UREA (mg/dl)	MALES	FEMALES	TOTAL
7 – 20	10(71.42)	4(28.58)	14(100%)
20 – 40	13(56.52)	10(43.47)	23(100%)
40-100	12(60.00)	8(40.00)	20(100%)
100-200	5(71.42)	2(28.58)	7(100%)
>200	3(75.00)	1(25.00)	4(100%)
Total	43(63.23)	25(36.77)	68(100%)

$\chi^2 - 1.38, 4df, p= 0.8$

Among 68 Malaria cases, only 54.4% (37/68) malaria cases were having normal blood urea range i.e. 40mg/dl.

Table – 8 : Serum Creatinine status in Malaria cases

SERUM CREATININE (mg/dl)	MALES	FEMALES	TOTAL
0.1 – 1.2	19(57.57)	14(42.23)	33(100%)
1.2 – 4	7(58.33)	5(41.67)	12(100%)
4 – 8	11(78.57)	3(21.43)	14(100%)
8 - 12	3(60.00)	2(40.00)	5(100%)
>12	3(75.00)	1(25.00)	4(100%)
Total	43(63.23)	25(36.77)	68(100%)

$\chi^2 - 2.24, 3df, p= 0.52$

Among 68 Malaria cases, only 48.5% (33/68) malaria cases were having normal serum creatinine range i.e. 1.2 mg/dl.

DISCUSSION

Study conducted at tertiary care hospital from Alluri Sita Ramaraju Academy of Medical Sciences, 12 months of duration shows that among 68 individuals, 26.4% (18/68) patients were positive for *P. falciparum* alone, 16.1% were *P. Vivax* positive alone, 13.2% (9/68) were *P. falciparum* and *P. Vivax* and about 11.7% (8/68) patients were positive for *P. vivax*, *p. falciparum*, *p. Malariae* and Dengue. This finding was in consistent with national data which shows for 2010 year, *P. Falciparum* cases were of 52% of total malaria cases. There are many studies which indicates that precise hematological changes may vary with category of malaria with the background of nutritional status, demographic factors and malaria immunity^{5,6}.

In our study out of 68 Malaria cases, there was 77.9% (53/68) patients were having haemoglobin < 12 gm/dl and remaining 15 patients were having haemoglobin > 12 gm/dl. There was statistically significant association was found between different grades of haemoglobin level and sex ($P < 0.05$). We observed in other studies several significant changes concerning with haemoglobin and platelets. Many studies shows that anaemia is associated with malaria infection and mostly of normocytic normochromic type.^{6,7} The pathogenesis of anaemia in malaria is particularly complex and incompletely understood. It

is thought to result from a combination of hemolysis of parasitized red blood cells; accelerated removal of both parasitized and innocently un-parasitized red blood cell, depressed as well as ineffective erythropoiesis with dys erythropoietic changes and anemia of chronic disease.^{9,10} Other factors causative to anemia in malaria include decreased red blood cell deformability, splenic phagocytosis, so they have an increased rate of clearance from the circulation.¹¹

Our study shows that thrombocytopenia was present in many of the cases. But important finding is as the severity of infection increases the platelet count decreases in both *P. Vivax* and *P. Falciparum* infection. This proves that, platelet count of the patient decreases with increase in severity for both *P. Vivax* and *P. Falciparum* infection. The reduction in circulating platelet count are consistently reported in the different types of malaria.¹³ The possible mechanisms leading to thrombocytopenia in malaria can be immune mechanisms, oxidative stress, alterations in splenic functions and a direct interaction between plasmodium and platelets. The mechanism which might be a causative factor for thrombocytopenia in *P. falciparum* and *P. vivax* infection could be Peripheral destruction, induced by *P. falciparum*, in which immune complexes generated by malarial antigens lead to sequestration of the injured platelets by macrophages in the spleen, although this mechanism has not been properly evaluated in *P. vivax* malaria.¹⁴

Thus, our study shows that as the severity of infection increases the platelet count decreases in both *P. Vivax* and *P. Falciparum* infection. Thus, prediction of the hematological changes enables the clinician to establish an effective and early therapeutic intervention in order to prevent the occurrence of major complications. There was statistically significant association was found between different grades of packed cell volume and sex. Thus it proves other studies that have been done which showed a decrease in Packed Cell Volume values of malaria positive subjects due to the excessive destruction of the red blood cells and similar finding observed with Meraiyebu Ajibola, Akintayo Christopher Oloruntoba, Nenchi Dooshima Yetusoko et al study conducted in Nigeria in the year 2011 and published the same paper in the year 2012 Nov – Dec issue¹⁷.

CONCLUSIONS

Based on the above study results, anaemia was identified as a common complication in all types of Malaria cases. In addition to that, platelet count was decreased not only in dengue fevers but also in malaria cases. Significant association was found between Packed cell volume and different varieties of Malaria ($P < 0.05$). Persons who were showing high blood urea people tend to show high creatinine levels also in the study. Our sample is less and there are many studies required for the support of our study findings.

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Comparison of Disorder in Sleep Quality, Aggression and Educational Performance between Obese and Normal Weight Elementary-school Female Students

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ABSTRACT

The present research aimed to draw a comparison of disorder in sleep quality, aggression and educational performance between obese and normal weight elementary-school female students. The research sample comprised 200 girls (100 obese, 100 normal) aged between 10 and 13 years old who were selected through convenience sampling. The data gathering tools included Child Sleep Habits Questionnaire (CSHQ) and Aggression Questionnaire (AGQ) and the students' GPA was considered as the indicator of their educational performance. The research employed a casual-comparative method and the results of multivariate variance analysis indicated that, there is significant between-group difference in terms of sleep quality, aggression and educational performance. It can be concluded that, obese girls rate higher as compared to normal girls in disorder in sleep quality and aggression. Furthermore, obese girls rate lower than normal weight girls in educational performance.

Keywords: *Sleep Quality, Aggression, Educational Performance, Obese Children.*

INTRODUCTION

Obesity is defined as 20 percent of excess weight above the normal weight. Not many years ago, the issues of obesity or being overweight were restricted to adults; however, in the last two decades, this phenomenon has got quite prevalent among children and adolescents. In the last two decades, the rate of obesity among children and adolescents has got twofold and threefold, respectively¹.

The phenomenon of obesity and excess weight has rapidly escalated in developing countries and resulted in a number of problematic health-related issues. Obesity is correlated to hygienic-medical problems such as diabetes, cardiovascular diseases, and orthopedic problems in children. Obesity in tender age is strongly correlated to health-related problems such as anxiety, tension, depression and

somatic complaints which severely affect different aspects of children's life such as educational performance and the ability to adjust^{2, 3}. Moreover, psychological problems such as depression, anxiety, decreased self-esteem and quality of life are related to obesity and arouses this concern that, overweight children may turn into obese adults⁴.

Sleeping and resting are relief-providers and have protective role⁵, which contribute to physical and emotional strength⁶. Karimi (2011) of research shows that, sleeping disorder has higher rate among obese adolescents as compared to their counterparts. Evidence also indicates that, totally, obese children suffer from physiological complications and have difficulty while sleeping because, obesity plays substantial role in the emergence of respiratory problems. The soft tissues blockade some paths in the back of the throat that tightens the respiratory tract for a while. Snoring, shuddering breath and getting short or out of breath are the alarming signs of such problems which might lead c children to display behavioral problems, as well⁷. Obese children go to

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bed later and sleep less as compared to their peers with normal weight. Adolescents with less weight sleep far more than adolescents with normal weight⁵, and all the adolescents sleep less as they get older. Sleeping less than 6 hours per night if constant can affect attention, concentration and memory and it's also related to Alzheimer's disease. Moreover, the possibility of obesity in adolescents who sleep late at night is far more than their peer⁸.

Studies indicate that, inability to control emotions can occupy significant role in overeating. In a study by Hilbert et al., (2007) revealed that, overeating can predict the inability to regulate the emotions in women with ravenous appetite⁶. Furthermore, Tosca et al (2009) assert that patients suffering from eating disorder suffer from anxiety disorder, as well. Therefore, the inability in regulating the emotions and unhealthy psychological and behavioral responses to the stress associated with it can be one of the risk factors of childhood obesity¹. Longitudinal research shows that, children with emotional problems get 1.5 more overweight in 2.5 years as compared to normal children⁵. That is to say that, emotional problems occurring early in childhood can lead to obesity in children.

Besides, obesity and excess weight affects other aspects of life such as educational achievements, the abilities of concentration and attention. Feelings of rejection, depression and harassment that are common in obese children can negatively affect their abilities of concentration and attention⁹. With regard to relatively little attention devoted to the subject of the relationship between obesity, aggression and educational performance and also the role of psychological responses in the exacerbation of overeating and obesity, the present research aims to determine whether or not sleeping quality, aggression and educational performance of obese and normal female elementary school is different?

METHOD

The statistical population included all the female students studying in the fourth, fifth and sixth grades of elementary schools located in Ahvaz City in the school year ran from 2014 to 2015. The research sample comprised 200 elementary school students (100 obese and 100 normal) aged 10-13 years old that

were selected through convenience sampling. First, the BMI of students was calculated by the school's hygiene authority. Then, all the obese girls who granted their consent to cooperate were selected. A number of 100 students with normal weight were also selected. None of the students suffered from any diseases or used any medicines.

Child sleep Habits Questionnaire (CSHQ): this 33-item tool was designed and developed by Owens et al (2001) and is used to screen sleeping disorders in children aged between 3 and 12. The higher the score, the more intense the sleeping disorders. Previous studies have confirmed this questionnaire's content validity. The reliability of this questionnaire using test-retest on 10 children aged 6-11 is equal to .97. In the present research, Cronbach alpha was used to calculate CSHQ's reliability which equaled .91 indicating its acceptable reliability¹⁰.

Aggressive Questionnaire: AGQ was used to assess normal and obese levels of aggression. This self-report, pen and pencil scale was designed and developed by Buss and Perry (1992). The total score is obtained by summing up the scores except for the item number 18 which is reversely scored. The psychometric properties of this scale have been evaluated by Zahedi Far et al., (2000) and it has been normalized by Allahyari, as well. The obtained test-retest coefficients between the participants' scores were equal to .64 and .79, respectively. The Cronbach alpha was obtained to be .87. Moreover, the validity of the scale was assessed on 10-year-old children and was reported to be .85. Cronbach alpha was used to calculate AGQ's reliability which equaled .87 indicating its acceptable reliability¹¹.

Educational performance: The students' educational performance was based on descriptive evaluation (very good, good, acceptable, needing more effort). The researcher turned these descriptive evaluations into quantitative GPA with the aid of teachers.

RESULTS

Descriptive findings (as mean and standard deviation) for all the variables of the research have been presented in table 1.

Table 1- Mean and standard deviation of sleep quality, aggression and educational performance of obese and normal weight girls

Variables	Subjects	Mean	SD	N
Disorder in sleep quality	Obese girls	52.81	13.83	100
	Normal weight girls	48.4	12.91	100
	Obese girls	50.62	13.52	100
Aggression	Normal weight girls	36.23	12.80	100
	Obese girls	32.53	13.04	100
	Normal weight girls	34.38	13.02	100
Educational performance	Obese girls	16.47	1.90	100
	Normal weight girls	17.13	1.56	100
	Obese girls	16.80	1.76	100

The research hypotheses

The present research proposed the following hypotheses, for which the analysis will be provided.

First main hypothesis: there will be significant relationship between disorder in sleep quality, aggression and educational performance of obese and normal weight girls.

First alternative hypothesis: there will be significant relationship between the disorder in sleep quality of normal weight and obese girls.

Second alternative hypothesis: there will be significant relationship between the aggression of normal weight and obese girls.

Third alternative hypothesis: there will be significant relationship between the educational performance of normal weight and obese girls.

Table 2- The results of multivariate variance (MANOVA) on the scores of disorder in sleep quality, aggression and educational performance of obese and normal weight girls

test	Ratio	Df	Df error	F	P
Pillai's trace	.069	3	196	4.84	.003
Wilks' lambda	.931	3	196	4.84	.003
Hotelling trace	.074	3	196	4.84	.003
Roy's largest root	.074	3	196	4.84	.003

As observed in table 2, the significance level of all the tests indicates that, there is between-group difference in at least one of the dependent variables (disorder in sleep quality, aggression and educational

performance (F=4.84 and p=.003). Therefore, the first hypothesis is confirmed. In order to further investigate this difference, the results of univariate variance analysis in MANOVA have been presented in table 3.

Table 3- The results of univariate variance analysis on the scores of disorder in sleep quality, aggression and educational performance of obese and normal weight girls

Variables	Sum of squares	df	Mean of squares	F	P
Disorder in sleep quality	954.84	1	954.84	4.33	.022
Aggression	684.50	1	684.50	4.09	.044
Educational performance	22.11	1	22.11	7.28	.008

As observed in table 3, there is significant difference between normal weight and obese girls in disorder in sleep quality ($F=5.33$ and $p=.022$). Therefore, the first alternative hypothesis is confirmed. It can be concluded that, obese girl's rate higher in disorder in sleep quality as compared to their normal weight peers.

Moreover, there is significant difference between normal weight and obese girls in aggression ($F=44.09$ and $p=.044$). Therefore, the second alternative hypothesis is confirmed. It can be concluded that, obese girl's rate higher in aggression as compared to their normal weight peers.

Furthermore, there is significant difference between normal weight and obese girls in educational performance ($F=7.28$ and $p=.008$). Therefore, the third alternative hypothesis is confirmed. It can be concluded that, obese girl's rate lower in disorder in educational performance as compared to their normal weight peers.

DISCUSSION & CONCLUSION

The present research aimed to draw a comparison of disorder in sleep quality, aggression and educational performance between obese and normal elementary-school female students in Ahvaz. The results will be discussed in detail.

Based on the results of the present research, there is significant difference between obese girls and normal weight girls in disorder in sleep quality and it can be concluded that, obese girl's rate higher in disorder in sleep quality as compared to their normal weight peers. This finding is in line with the results of the research by Moore et al., (2009)¹³, Gangwisch et al., (2005)¹⁴ and Park et al., (2008)¹⁵.

In the explanation of this hypothesis, it can be said that, childhood obesity can be one of the most profound effects of sleeping disorder including sleeplessness and decrease of sleep quality. On the other hand, gaining weight itself can be a significant factor leading to the emergence of sleeping disorders especially respiratory deficiencies while sleeping. Blockage of respiratory tracts can be considered one of the most important sleep dysfunctions resulting from obesity that can deprive the child of deep and adequate sleep and cause awaking during the nights

and feeling lethargic during the days¹⁶.

Moreover, it was observed that obese girls rate higher in aggression as compared to their normal weight peers. This finding is in line with the results of the research carried out by Moradi et al., (2007)⁹, Mulvanney et al., (2006)¹⁸, TerBogt (2006)¹⁹, and Erermis (2004)²⁰.

In the explanation of this hypothesis, it can be concluded that obese patients are emotionally disturbed that consider their overeating as a coping strategy against emotional issues²¹. Children overeat as a strategy to decrease their stress and mental pressure; however, obesity and the social stigma attached to that increase these children's emotional and behavioral problems. Studies indicate that, psychological problems (social and behavioral problems, depression, lack of self-confidence and aggression) rate higher among clinically obese adolescents as compared to non-clinically obese adolescents⁹.

Another finding of this research revealed between-group difference between obese and normal weight girls in educational performance. This result is in harmony with research findings of Perez-Chada (2007)²².

In the explanation of this finding, it can be said that, childhood obesity especially the constant one during studying in the elementary school can negatively affect emotional and social health and educational performance. Unfortunately, the main reason is still unknown but it seems that, the society has negative attitude toward obesity and such children are often stigmatized by society as ugly, incompetent, lazy, inefficient, not very gifted and bright, etc. This negative attitude can seriously affect children's academic performance Lanter et al., (2005)²³. Experts suppose that being overlooked by teachers and slow function in brain activity may prevent such children's academic achievement²⁴. This might be responsible for obese children's poor performance in lessons such as mathematics. On the other hand, these children are sometimes called as idle, disobedient and naughty. Such name-calling unconsciously affects children's mind and soul. The effects of obesity on the development of mind, the probability of developing disability, and disorder

in sleep can be directly related to their efficiency at school. However, this effect is not observed in all the educational levels and facing such problems has a higher rate in the elementary and junior high schools as compared to other educational levels.

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Ethical Clearance: The ethics of recording data, the right of respondents to end involvement in the research, the disclosure by respondents of sensitive material, the ethics of ethnographic fieldwork, the ethics of the research interview, and ethics in the use of questionnaires, is respected all ethics principles research.

Conflict of Interest: Not observed.

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An Ideal Oral Iron Preparation for Treatment of Iron Deficiency Anaemia in Indian Children in Clinical Practice

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ABSTRACT

Presently, the market is flooded with different oral iron salt preparations. Most formulations marketed in India as hematinics contain not just iron, folic acid, vitamin B₁₂, and vitamin C, but also other B complex vitamins and trace elements. The rationality of such combinations is questionable. The purpose of this article is to help clinicians in choosing an ideal iron preparation for treatment of iron deficiency anemia. Therefore, we extensively reviewed various index journals. It was found that, still the conventional iron preparations are the best cost effective choice with tolerable side effect for treatment of IDA in clinical practice.

Keywords: Iron salts, iron deficiency anemia, treatment, children

INTRODUCTION

Iron deficiency anemia is highly prevalent in children particularly between 6 and 24 months of age more so in the developing world with incidence of 79%.¹ It is associated with a high risk of long-term psychomotor impairment, lower scores in IQ test, lack of concentration, short attention span, poor school performance and increased risk of febrile seizures.²⁻⁵ Particularly worrying is that the developmental deficits associated with iron deficiency anemia have been shown to be irreversible.⁶ Iron deficiency also affects the immune system thus making these children vulnerable to recurrent infections.

MATERIALS AND METHODS

We extensively reviewed various index journals, grey literatures, electronic database and references from previous reviews. Hematinic formulations listed in Indian Drug Review (2014 – 15) were also analyzed for the elemental iron content and iron salts of different formulations. In addition, the Cochrane

database of Systematic Reviews was also searched.

Iron Preparations

Iron salts can be divided into three types. 1) Salts of iron either ferrous or ferric form. 2) Chelates or complexes of iron. 3) Novel forms such as pure metallic form, micronized form etc.

Ferrous salts

All dietary iron has to be reduced to ferrous form to enter the mucosal cells. Hence bivalent iron salts have been preferred over ferric salt preparations. Ferrous sulfate (FS) (20% elemental iron) has a bioavailability of 10% in noniron deficiency states. Ferrous Fumarate (FF) (33% elemental iron) has a similar efficacy and GI tolerance to ferrous sulphate. One of the important drawbacks of FS is its acute poisoning potential. FS can cause teeth staining and gastrointestinal side effects due to its free radical action. It has a salty astringent taste which is not palatable for most children.

In Ferrous ascorbate presence of vitamin C increases the iron absorption. When it combines with ascorbic acid, ferrous ascorbate is formed which increases the bioavailability, reduces side effect due to reduced free radicals in the intestine. It also facilitates incorporation of iron into haemoglobin.⁷ However the

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molecule is not totally free of GI side effects. Its safety profile is also like that of FS. It has potential to cause acute toxicity in large doses.

Ferric salts

Ferric salts are not preferred over ferrous salts as the ferric ion has to be reduced to ferrous form in the intestinal lumen and its bio-availability is 3 to 4 times less than that of ferrous sulphate. Ferric salts have the advantage of a poor poisoning potential. Ferric ammonium citrate (18% elemental iron) is the most commonly used of these salts.

Iron Amino-acid chelates

Iron amino-acid chelates are conjugates of the ferrous or ferric ion with amino-acids. Most of studies are based on ferrous bis-glycinate (20% elemental iron content). Higher stability of amino acid chelate prevents the molecule from being destroyed in the gut, produces less GI irritation. Ferrous bisglycinate has greater efficacy than conventional iron, and has high bioavailability and regulation,^{8,9} but are very costly.

Iron III polymaltose complex (IPC):

It is a non-ionic iron and polymaltose in stable form. Being a ferric iron preparation it has very poor bioavailability but has better tolerability. As there are less free radicals, gastrointestinal side effects are also less. There is lesser incidence of teeth staining. However a major limitation of IPC is its inability to bring up the hemoglobin consistently.¹⁰

Colloidal iron: Colloidal iron forms are very popular in India. They are economical in syrup formulations. These are ferric hydroxide compounds which get soluble in hydrochloric acid and then absorbed. Though the elemental iron content of colloidal iron is high (50%) there is scarcity of data on bioavailability, safety and adverse effect.

Carbonyl iron: These are very small micronized particles of pure metallic iron. This iron in pure form is made soluble by the action of hydrochloric acid from stomach and then absorbed. Due to slow absorption rate acute toxicity potential is less than FS. However for the same reason there is reduction in bioavailability, which is 70% of FS. Side effect profile is similar to FS with lesser incidence of teeth

staining.

DISCUSSION

The choice of iron salt to be used for replacement therapy should be based on bioavailability, side effects and cost effectiveness of various iron salts. The superiority of ferrous salt over ferric salts has been reported by Santiago. Current data shows that slow-release ferrous sulphate preparations remain the established and standard treatment of iron deficiency, irrespective of the indication, given their good bioavailability, efficacy, and acceptable tolerability demonstrated in several large clinical studies.¹¹

A study by Ali Aycicek¹² showed that ferrous fumarate plus zinc and vitamin C drugs were significantly more expensive [average 50%] than ferrous sulfate. This drug had similar side effects compared with ferrous sulfate and therefore is not ideal for treatment of IDA in children.

A comparative study was performed by Chaudhari et al in adults to find out the efficacy & tolerability of carbonyl iron over ferrous sulfate. At follow up after 4 weeks and 8 weeks, the mean rise in Hb from baseline was significantly higher in case of ferrous sulfate than Carbonyl Iron. (p value < 0.02 and < 0.05 respectively). On comparison with carbonyl Iron, the incidence of adverse effects was higher with ferrous sulphate.¹³ No studies in children were found on Medline search.

Bopche et al conducted a randomized clinical trial in 118 children to compare the clinical response and side effects of ferrous sulfate (FS) and Iron polymaltose complex (IPC). They found equal bioavailability in FS and IPC group. However increase in hemoglobin was 98.1% in FS group as compared to 71.7% with IPC, as well as the level of rise in mean hemoglobin was significantly more (9.44 ± 0.67 g/dL) in FS group compared to IPC (8.67 ± 0.73 g/dL). But gastrointestinal side effects were 2.5 times more common in FS group as compared to IPC group.¹⁴ This was also supported by another trial conducted by Yasa et al.¹⁵

In different studies ferrous bis-glycinate has shown a greater efficacy than FS, in the form of higher bioavailability (90.9% and 26.7%) in reducing iron deficiency anaemia.¹⁶ But these formulations are very

costly in short-term treatment with significant low doses. In another comparative study between ferrous bis-glycinate and ferrous ascorbate in iron-deficient adult women, absorption of Fe bis-glycinate chelate was better than ferrous ascorbate (52% versus 40%).

Gangly et al compared ferrous ascorbate and

colloidal iron and found ferrous ascorbate effectively increases the Hb level as compared to colloidal iron (mean rise in Hb 3.24 gm% versus 1.42 gm%) when given for a duration of 12 weeks. Responder rate in children receiving ferrous ascorbate was significantly higher (53.57% versus 10.34% in colloidal iron group).¹⁷

Table 1: Randomized Control Studies Comparing the Clinical Efficacy of Various Iron Salt

Sl. No.	Author	Salts	Result	Conclusion
1.	Santiago 2012	Ferrous versus ferric iron formulations	Ferrous salts are superior to ferric salts	FS are the treatment of choice given their high effectiveness, acceptable tolerability, and low cost.
2.	Aycicek A 2015	FS and FZ	FS and FZ are well tolerated and equally efficacious	FZ is expensive, has similar side effects compared to FS
3.	Chaudhari et al 2012	Ferrous sulphate and carbonyl iron	Mean rise in Hb is similar with CI and FS. Adverse effects was higher with FS	Efficacy of FS is higher than CI.
4.	Bopche et al. 2009	FS and IPC	Rise in Hb was higher in FS than IPC. GI side effects are more in FS	FS has better clinical response as compared to IPC
5.	Pineda O 2001	Fe bis-glycinate and FS	ferrous bis-glycinate showed a greater efficacy and higher bioavailability than FS	ferrous bis-glycinate has high bioavailability and good regulation
6.	Gangly et al 2012	Fe ascorbate and colloidal iron	Mean rise in Hb was significantly higher in ferrous ascorbate as compared to colloidal iron	ferrous ascorbate effectively increases the Hb level as compared to colloidal iron

CONCLUSION

Oral iron supplementation is the standard treatment for children with iron deficiency. Ferrous salts and in particular prolonged release FS preparations are the treatment of choice given their high effectiveness, acceptable tolerability, and low cost.

Preparations with iron III hydroxide polymaltose generally display poorer bioavailability and their clinical efficacy is yet to be established. Ferrous bis-glycinate has shown a greater efficacy than conventional iron. It helps in IDA with a shorter course of treatment at a significant low dose. It has high bioavailability and regulation but is very costly. Ferrous ascorbate increases hemoglobin more and is better tolerated by patients with less side effects as compared to FS but cost of therapy is three times more as compared to ferrous sulphate.

The newer preparations do have less side effects, but are very costly. Thus conventional iron preparations still can be considered as the best cost effective choice with tolerable side effects for treatment of iron deficiency anaemia. However, if cost is not a constrain newer iron preparations can be used.

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Ethical Clearance - Since the above research was not conducted on either human subjects or animals, ethical clearance is not applicable.

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A Study on Delay in Procurements of Cath Lab Stores and Resulting Stock Outs due to Red Tape in a Tertiary Care Teaching Hospital in India

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ABSTRACT

Red tape is an idiom that refers to excessive regulation or rigid conformity to formal rules that hinders or prevents action or decision-making. The study has been carried out in cath lab stores of Nizam's Institute of Medical Sciences, a tertiary care teaching hospital in Hyderabad. An empirical study of the data during the period of April 1, 2013 to March 31, 2014 has been done to identify situations which are causing increase in the administrative lead time. Personal interviews were conducted with all the personnel of cath lab stores and surgical stores. Files of purchases were reviewed. The indent date, date of PO and delivery date were noted. The following were observed.

Administrative lead time - 10 days to 20 days

Supplier lead time – 1 day to 5 days

Instances of stock outs that occurred during the study period- 85

Number of items experiencing stock outs – 28

Background : NIMS is a 1300 bedded autonomous super specialty teaching institute. Its procurement policies are framed by the top management. Cath lab stores is a sub store in NIMS. It has no direct purchasing capability. Procurement is done through the main stores.

There are 3 main stores

- Surgical stores (includes Nursing stores)
- Lab stores (includes general stores and stationary stores)
- Medical stores

Keywords: Red tape , Lead time, Stockout , Cathlab

INTRODUCTION

A study conducted by the Department of Personnel and Administrative Reforms in India has revealed that not only does the quantity of medicines received fall short of the requirement but also the supply is often erratic. Even common medicines are out of stock and remain so for a considerable period.⁹

Inventory control in hospital pharmacy is very essential in a developing country like India. As resources are limited, it is essential that the existing resources be appropriately utilized ¹⁰

Red tape is an idiom that refers to

excessive regulation or rigid conformity to formal rules that is considered redundant or bureaucratic and hinders or prevents action or decision-making. It is usually applied to governments, corporations, and other large organizations¹. Another definition is the "bureaucratic practice of hair splitting or foot dragging, blamed by its practitioners on the system that forces them to follow prescribed procedures to the letter"².

Inventory is a part and parcel of every facet of business life ⁶. Supply costs are of particular concern, and according to, a typical hospital spends 25-30% of its budget on medical supplies and their handling⁷.

Lead time is defined as “Whatever the time that elapses between recognition and need”³.Administrative lead time is defined as, “The time that elapses between recognition of need to placement of order”⁴.A variety of studies illustrate that reducing replenishment lead time may lower the safety stock, reduce the stock out loss, and improve the customer service level, which results in lower expected total costs ⁵Time and cost are the most important competitive factors in business⁵Harrington proposes by eliminating the non-value adding activities from the processes and streamlining the information flow significant optimization results can be realized⁸Further, it has been shown that lead time is correlated with financial performance indicators, such as ROI (Return of Investment) or average profit¹¹

METHODOLOGY

An empirical study of the data during the period of April 1, 2013 to March 31, 2014 has been done to identify situations which are causing increase in the administrative lead time. Personal interviews were conducted with all the personnel of cath lab stores and surgical stores. Files of purchases were reviewed. The indent date, date of PO and delivery date were noted

OBSERVATIONS

Based on the stock available in the cath lab stores, indent for a particular item is filled by the secretary assistant in the cath lab stores.

The indent is sent to the concerned main stores for processing the order.

If it is a general indent (used for common items which are used by multiple departments), stock is verified in the main stores and based on availability and quantity indented, it is immediately processed and given to the cath stores.

If it is a buy and supply indent (used for items specific to a particular department) the following procedure is followed:

- After receipt of the indent, Note file is prepared by the secretary assistant mentioning the supplier name and price mentioned in Rate Contract, the stock indented and the stock on hand. The note file is attached of the purchase file of the particular

product.

- The note file is reviewed and signed in a sequential order by the following for its approval.
 - o Asst. Registrar
 - o Asst. Controller
 - o Associate Controller
 - o Controller
 - o Finance Dept
- Asst. finance controller
- Finance controller
- Finance Advisor
- o Director – for final approval
- After approval of the director a draft Purchase order (PO) is prepared in the main stores.
 - The draft PO is sent to the finance dept which allots a concurrence no to the PO and sends it back to the stores.
 - The final PO mentioning the concurrence no is resent to the finance dept for approval.
 - After approval the file is sent back to the stores where it is signed by the Asst Registrar and the controller.
 - The supplier is intimated regarding the purchase. He comes to store to collect the PO and then processes the dispatch of the stock.
 - Stock is received, inspected and verified by the receipts dept of the store. Cath lab stores is intimated about the receipt who send their personnel to collect the stock.

The following were observed:

Administrative lead time - 10 days to 20 days

Supplier lead time – 1 day to 5 days

Table no 1: Stock outs in cath lab stores

S.no	Item Name	No. of Times	Duration
1.	Guide wires AES	1	20 days
2	IABP balloons	3	5 days
3	Inoue balloons	3	35 days
4	Indiflators	1	4 days
5	Mullins sheath	1	24 days
6	Micro catheter	4	46 days
7	Pigtail catheter	1	26 days
8	Sheaths (all sizes)	1	11 days
9	Septal puncture needle	1	47 days

Cont...Table no 1: Stock outs in cath lab stores

10	Trans radial sheaths	2	7 days
11	Two way ports	2	21 days
12	Wedge pressure	3	12 days
13	Bandages	1	21 days
14	Cotton and gauze	2	3 days
15	Dynaplaster	14	30 days
16	ECG electrodes	4	5 days
17	ECG jelly	5	39 days
18	Gloves	2	4 days
19	HBS Ag kits	7	95 days
20	Omnipaque	9	15 days
21	Plaster	2	14 days
22	Three ways	1	7 days
23	Transducer	1	6 months
24	Tincture benzion	5	35 days
25	Inj.Vissipaque	4	11 days
26	Xylocaine gel	2	14 days
27	TMT paper	2	10 days
28	ECG GE paper	1	2 days

Procurements of few items having negotiations and prolonged administrative lead time due to various reasons have been taken as examples. Other procurements have comparatively lower lead times.

Table 2: IABP balloons – Lead time 10 days for 10 nos and 30 days for remaining quantity.

28/10/13	Indent placed. Stock on hand – 4 Quantity indented – 40 (3 months requirement)
31/10/13	Indent received
1/11/13	Controller asked for utility
4/11/13	Stock out of the item in cath lab
5/11/13	Utility submitted along with request by HOD for emergency procurement
7/11/13	Quantity of 10 approved for immediate procurement.
10/11/13	Quantity of 20 approved (45 days requirement) subject to negotiations as instructed by director.
14/11/13	Negotiation committee meets and negotiates for 2 % discount.
25/11/13	Purchase at negotiated price approved by the director
28/11/13	PO approved.
31/11/13	Arrival of stock

Table 3: Septal Puncture Needle –Lead time is 25 days

11/06/13	Indent placed Stock in hand – 0 Quantity indented -5
11/06/13	Indent received
22/06/13	Cardiology HOD asked to verify on the required brand.
25/06/13	HOD states the required brand
01/07/13	Approved by controller (final approval)
04/07/13	PO approved
06//713	Arrival of stock

Table 4: Transradial kits – Lead time is 17 days for 500 nos and 2 months for remaining 500 nos.

05/08/13	Indent placed Stock on hand- 150 Quantity indented – 1000 (3 months requirement)
05/08/13	Indent received
19/08/13	500 quantity approved and utility asked for before procurement of remaining 500
22/08/13	Stock of 500 arrived.
24/09/14	Note file prepared for remaining 500 after receipt of utility.
28/09/14	Approved by controller (final approval)
02/10/14	PO approved
03/10/14	Arrival of stock

Table 5: PTCA guide wires – Lead time is 24 days

23/11/13	Indent placed Stock in hand – 04 Quantity indented- 1610
23/11/13	Indent received
18/12/13	Negotiation called for by the Director
03/01/14	Negotiated for 2 % discount
11/12/14	Approved (delay due to change of distributor of the product)
12/12/14	PO approved
17/12/14	Arrival of stock

Table 6: PTCA balloons – lead time is 15 days for 10 nos and 50 days for remaining

03/01/14	Indent placed Stock on hand – 12 Quantity indented – 91
03/01/14	Indent received
18/01/14	10 nos procurement approved for emergency purposes Negotiation called for remaining
06/02/14	Negotiated for discount of 200 rs. Another supplier refused to offer any discount
17/02/14	Approved by Director
20/02/14	PO approved
25/02/14	Arrival of stock

Table 7: Microcatheters – Lead time is 36 days.

08/10/13	Indent placed Stock on hand – 0 Quantity indented- 5 (3 months requirement)
08/10/13	Indent received
17/08/13	Utility asked for by the controller
01/11/13	Negotiation asked for by the director
10/11/13	Negotiation done. No discount offered.
14/11/13	Purchase of 2 nos approved by director
18/11/13	PO approved
21/11/13	Arrival of stock

Table 8: Indiflators – Lead time is 2 months and 20 days.

04/03/14	Indent placed Stock on hand – 4 Quantity indented – 20
15/03/14	Negotiation called for by controller
26/03/14	Negotiation committee formed by director
03/04/14	L1 (supplier) absent for negotiation
17/04/13	Note file put up to invite L2 and L3 for negotiation.
22/04/13	Negotiated for a discount of Rs 200 per piece
20/05/13	Negotiated price approved by director
24/05/13	PO approved
26/05/13	Arrival of stock

Based on the above study the following observations have been made

1. The average internal lead time for procurement at NIMS is ranging between 15-20 days.
2. The average external lead time is 2- 4 days.
3. The Payments are unduly delayed and the hospital is taking 3- 6 months to settle the bills.
4. Since there was a change in the top management during the second half of the year 2013, resulted in changes in procurement policies.
5. Earlier the stores used to raise quarterly indents. Presently stores indenting changed to 45 days.
6. The monthly requirements are decided by the cath lab stores personnel based on the past consumption. No standard procedures are being followed.
7. The indents being raised by the stores are being pruned by the approving authorities indiscriminately.
8. There are multiple levels through which the file passes before final approval is taken.
9. The file is referred to the finance dept 3 times resulting in duplication of work which can be avoided in most cases.
10. The purchase dept is taking 2-3 days to place the order from the date of final approval of the purchases by the top management.
11. In certain instances it is noticed that delays are occurring while transmitting the indent to the surgical stores
12. There is no delegation of power at any level.
13. Prior to mid 2013, only non RC items and expensive items were needed the approval of the top level of the management. Once hospital entered into Rate contract the departmental head was releasing the purchase orders based upon demand.
14. Now top management approves all purchases irrespective of items being under rate contract or otherwise.
15. NIMS Rate Contract 2012-2014: The rate

contract which was originally for a duration of 2 yrs has expired, still the procurement is based on past rate contracts. Due to advancements in technology and expiry of NIMS RC many new products require calling of a new tender. Rarely, few suppliers refuse to supply at the old price mentioned in the RC.

16. Since the payment to suppliers is taking 3 to 6 months some suppliers have backed out causing temporary hold ups in operations of the hospital. A new tender notification has to be called for in the above circumstances. Time given for a normal tender notification is 21 days and for a short tender notification is 7 days (based on emergency need of procurement)

17. In the event of negotiations a committee is constituted from the Senior members of the hospital which takes normally 1 week time to meet and approve the proposals. This is increasing lead time.

18. In some instances Utility (usage) is being asked (mentioning the patient details where the earlier stock was used). The file again goes back to the cardiology dept. The utility is prepared in the dept. It is signed by the cardiology HOD and sent to surgical stores where the whole process is again repeated. This is leading to a delay of 3 – 5 days.

19. In some instances clarification was asked regarding the brand and the vendor of the purchase, the file has to be sent to the cardiology HOD and after clarification returned to the stores where the whole process is repeated.

20. For some items stock outs have been seen in cath lab stores due to indents raised after the stock levels reached zero levels or at times not taking into consideration the lead time.

CONCLUSION

Based on the analysis the following procedures to reduce the administrative lead time are suggested

1) Earlier there were orders delegating financial powers to different officers at different levels for procurement of materials. This delegation of powers has gone into oblivion with the efflux of time.

2) It is now suggested a committee may be constituted and decide the financial powers for different officers to approve the purchases.

3) By the time the file reaches the final approving authority, there are many stages through which the file has to be processed which can be avoided in most cases.

4) The file goes to the Finance section 3 times till it is finally approved. This can be lowered to 1 time.

5) Utility certificate is being asked on few instances. This leads to an additional delay. A format for utility can be prepared and it can be made mandatory with all buy and supply indents above a particular value.

6) Presently there is no proper verification of the utility submitted by the user dept. A system may be put in place where this is looked into.

7) Negotiations have been resorted successfully on certain instances, but the additional time being consumed should be looked into and also the new guidelines issued by Central Vigilance Commission may have to be kept in mind before resorting negotiations.

8) The management and concerned stores personnel can meet together once in a week to clear all the purchases.

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Detection of Extended-spectrum Beta-lactamases in AMPC Co-producing Bacteria by Disc Diffusion Method in Clinical Isolates of Enterobacteriaceae

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ABSTRACT

Background: Extended-spectrum beta-lactamases (ESBL) may not always be detected in routine susceptibility tests. This study reports the performance of the cefepime-clavulanate compared with cefotaxime-clavulanate disc diffusion method for the detection of extended-spectrum β -lactamases in AmpC coproducing Enterobacteriaceae.

Materials & Methods: Consecutive non-duplicate isolates of *Escherichia coli*, *Klebsiella pneumoniae*, and *Proteus mirabilis* isolated from clinical samples were tested for ESBL by both the standard CLSI double-disk diffusion method using ceftazidime and cefotaxime disks and compared with cefepime/cefepime-clavulanate. Isolates were also tested for the presence of AmpC beta-lactamase by AmpC disk test and MBL was detected by EDTA disc potentiation test.

Results: Among the 100 clinical isolates tested, ESBL production was seen in 34 (34%), Amp C production in 36 (36%), ESBL in Amp C coproduction in 24 (24%) of the isolates, MBL production in 8 (8%) isolates.

Conclusion: The study emphasizes the high prevalence of multidrug resistant enterobacteriaceae producing beta-lactamase enzymes of diverse mechanisms. Thus proper antibiotic policy and measures to restrict the indiscriminate use of cephalosporins and carbapenems should be taken to minimize the emergence of this multiple beta-lactamase producing pathogens.

Keywords: AmpC β -lactamases, extended spectrum β -lactamases, coexistence, prevalence, Gram negative bacteria.

INTRODUCTION

Members of the Enterobacteriaceae commonly express plasmid-encoded β -lactamases (e.g. TEM-1, TEM-2, and SHV-1) that confer resistance to penicillins, but not to cephalosporins with oxyimino side chains. Resistance to these extended-spectrum cephalosporins appeared initially in a limited number of genera (*Enterobacter cloacae*, *Citrobacter freundii*, *Serratia marcescens* and *Morganella morganii*) that

could hyper-produce AmpC β -lactamases.^{1,2} Such β -lactamases are typically encoded on the chromosome where their expression may be inducible. When induced or derepressed, they hydrolyze cephamycins (cefoxitin and cefotetan) as well as third-generation cephalosporins (cefotaxime, ceftriaxone and ceftazidime) and monobactams (aztreonam) but are poorly inhibited by β -lactamase inhibitors such as clavulanic acid. ESBL producing isolates are most commonly found in *Klebsiella pneumoniae* and *Escherichia coli*^{1,5}.

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AmpC β -lactamase is primarily chromosomal and plasmid-mediated and are resistant to β -lactamase inhibitors such as clavulanic acid but can hydrolyze

cephamycin^{4,6}. However, in isolates that co-produce both ESBL and AmpC β -lactamase, high-level expression of AmpC may mask recognition of ESBL by the inhibitor-based method.^{4,5} Cefepime, a fourth-generation cephalosporin, is known to be a poor substrate for AmpC β -lactamases making this drug a more reliable agent for ESBL detection in the presence of an AmpC enzyme⁷.

Carbapenems are one of the antibiotics of last resort for many bacterial infections such as *E. coli* and *K. pneumoniae* producing AmpC and extended spectrum β -lactamase but the emergence of carbapenemase which have versatile hydrolytic capacities have the ability to hydrolyze penicillins, cephalosporins, monobactams and carbapenems⁸

The spread of these resistant bacteria in hospitals all over the world, conferring multiple antibiotic resistances in the treatment and management of life threatening infections necessitate this study. With the increase in occurrence and types of these multiple β -lactamase enzymes, early detection is crucial, the benefits of which include implementation of proper antibiotic therapy and infection control policy.

Recently, a disc diffusion method based on clavulanate synergy with cefepime has been reported to be a valuable supplement to current methods for detection of ESBLs in Enterobacteriaceae. The aim of this study was to devise a single-plate, disc diffusion method for the detection of ESBLs and AmpC β -lactamases (derepressed and inducible), alone and in combination, in unidentified isolates of Enterobacteriaceae.

MATERIALS & METHODS

A total of 100 consecutive, non-repetitive clinical isolates of enterobacteriaceae isolated from various clinical samples such as pus (34), urine (28) sputum(25), Ear swab (6), body fluid (4), blood (3) were included in this study. All the isolates were identified biochemically by the standard methods (14) and were stored at 4°C in 0.2% semisolid agar until used.

Antimicrobial susceptibility testing

The antibiogram of the isolates were determined by the standard Kirby Bauer's disc diffusion method

(3). The following antibiotics discs (Hi-Media, India) were used such as, ampicillin (10 μ g), amikacin (30 μ g), gentamicin (10 μ g), co-trimoxazole (25 μ g), ciprofloxacin (5 μ g), cefotaxime (30 μ g), ceftazidime (30 μ g), ceftriaxone (30 μ g), ceftazidime (30 μ g) and imipenem (10 μ g). The zone diameters were interpreted as per Clinical Laboratory Standards Institute (CLSI) recommendations (9). *Escherichia coli* ATCC 25922 strain was used for quality control.

1. Detection of ESBL production

Isolates which were resistant to third generation cephalosporins were tested for ESBL production

by combination disk method using cefotaxime (30 μ g), cefotaxime/clavulanic acid (10 μ g), ceftazidime (30 μ g) and ceftazidime/clavulanic acid (10 μ g). A ≥ 5 mm increase in diameter of inhibition zone of cephalosporin+clavulanate disc when compared to cephalosporin disc alone was interpreted as evidence of ESBL production.⁴

2. Detection Of Esbl in Amp C Production

Disc diffusion method by using cefotaxime +clavulanate and cefepime & cefepime+clavulanate were applied. A ceftazidime disc (30 μ g) was then applied by forceps so that it was 15 mm (centre-to-centre) from the cefotaxime and cefotaxime/clavulanate discs that were adjacent to each other as described by Helen Derbyshire et al. After overnight incubation, zone diameters between cefotaxime/clavulanate and cefotaxime, cefepime/clavulanate and cefepime, and cefepime/clavulanate and cefotaxime/clavulanate were calculated. The zone difference of ≥ 5 mm around cefepime & cefepime- clavulanate indicated ESBL production in Amp C co- producer^{6,7}

Detection of AmpC production

AmpC disk test: Isolates that yielded a ceftazidime zone diameter less than 18 mm and resistant to 3GC (screen positive) were tested for AmpC enzyme production by AmpC disk test (7). Briefly, 0.5 McFarland suspension of ATCC *E. coli* 25922 was inoculated on the surface of Mueller-Hinton agar plate. A 30 g ceftazidime disc was placed on the inoculated surface of the agar. A sterile plain disc inoculated with several colonies of the test organism was placed beside the ceftazidime disc almost touching

it, with the inoculated disk face in contact with the agar surface.

After overnight incubation at 37°C, the plates were examined for either an indentation or a flattening of the zone of inhibition, indicating enzymatic inactivation of ceftioxin (positive result), or the absence of a distortion, indicating no significant inactivation of ceftioxin (negative result).^{7,8}

Detection of MBL production

Metallo β -lactamase production was detected by Meropenam-EDTA disk test. Two 10 μ g Meropenam disks were placed on the plate, and appropriate amounts of 10 μ l of 0.5M EDTA solution were added to one of them to obtain the described concentration (750 μ g). The inhibition zones of Meropenam and Meropenam-EDTA disks were compared after 16 to 18 hours of incubation in air at 35°C. If the increase in inhibition zone with Meropenam and EDTA disk was ≥ 5 mm, then the Meropenam disk alone was considered to be the MBL producer. Carbapenemase production was further confirmed by modified Hodge test (MHT)⁴

RESULTS

Antimicrobial susceptibility testing

Out of the 100 total isolates tested, 57(57%) were resistant to 3GC (cefotaxime, ceftazidime, ceftriaxone), while 43 (43%) strains were susceptible. Majority of the Klebsiella, E.coli and Enterobacter isolates showed multidrug resistance. They were resistant to at least one non-lactam antibiotic (amikacin, gentamicin, co-trimoxazole, and tetracycline). All of the *Providencia* and *Morganella* tested were susceptible to all the antibiotics used.

ESBL, AmpC and carbapenemase producing isolates

Out of the 100 isolates screened for ESBL production, 34 were confirmed to produce ESBL giving an overall prevalence of 34%. The highest prevalence of ESBLs was found in *E. coli* (17%), followed by *K. pneumoniae* (12%) *Enterobacter spp* (2%), *P. mirabilis* (1%) *P.vulgaris* (1%) and had the least ESBL prevalence of 34% (Table 1), (figure1)

Table 1- Prevalence of ESBL, AmpC and carbapenemase producers among Enterobacteriaceae.

SN	Bacterial Species	No of isolates screened	ESBL Positive (%)	AmpC positive (%)	MBL positive (%)
1	<i>E. coli</i>	48	17	8	2
2	<i>K. pneumoniae</i>	30	12	5	6
3	<i>Enterobacter</i>	6	2	1	-
4	<i>Citrobacter</i>	9	1	-	-
5	<i>P. mirabilis</i>	5	1	1	-
6	<i>P. vulgaris</i>	2	1	1	-
Total		100	34	16	8

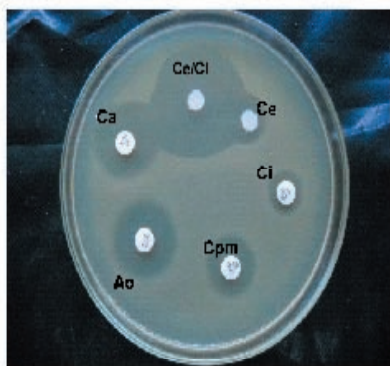


Figure 1- ESBL detection

The susceptibility of the isolates to ceftioxin disc showed that 21 isolates equivalent to (46.3%) were found to be either resistant or showed reduced susceptibility to ceftioxin. The overall prevalence of AmpC β -lactamases was 16%. Similar to ESBL, *E.coli* had the highest prevalence of (8%), followed by *K. pneumoniae* (5%), *Proteus spp* (2%), and *Enterobacter* (1%).

Among the AmpC producers, 10% showed indentation (high production of AmpC enzyme) while 6 % showed flattening (low production of AmpC enzyme). (Figure 3)

Table 2. ESBL detection in AmpC co producers.

SN	Bacterial Species	No of isolates screened	ESBLPositive (%) using cefotaxime-clavulanate	ESBLPositive (%) using cefepime-clavulanate
1	E. coli	48	17	28
2	K. pneumoniae	30	12	17
3	Enterobacter	6	2	4
4	Citrobacter	9	1	3
5	P. mirabilis	5	1	2
6	P. vulgaris	2	1	2
Total		100	34	56

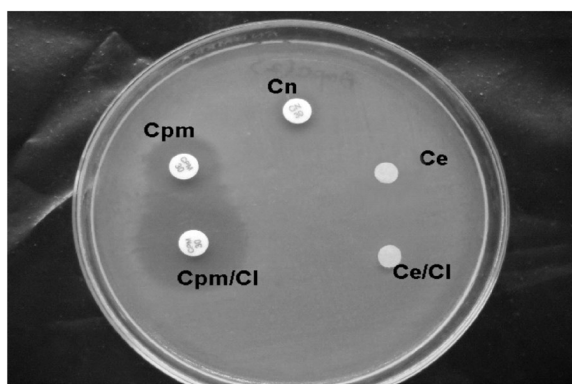


Figure 2-ESBL production in AmpC

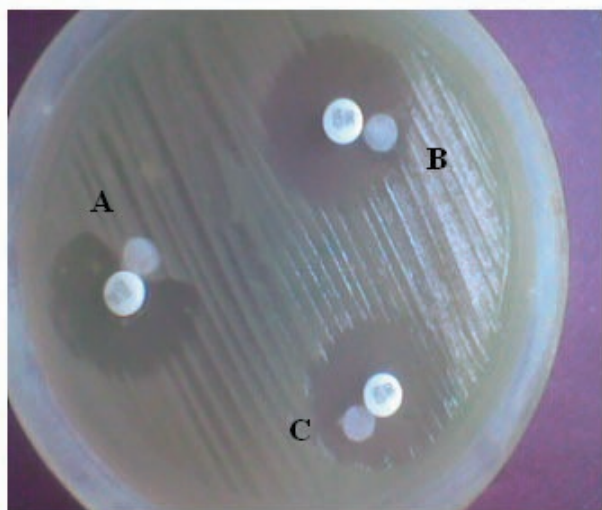


Figure 3. AmpC disk test: Presence of blunting towards cefoxitin disk indicates test positive (A) absence of blunting indicates test negative (B and C).

Furthermore, ten out of the hundred isolates (10%) produces carbapenemase. The highest prevalence of carbapenemase producers was in K. pneumoniae (6%) and E. coli (2%) (Figure 4).

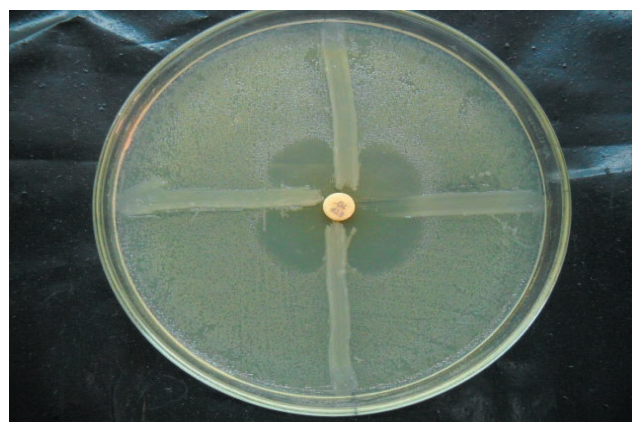


Figure 4- MBL detection

DETECTION OF ESBL IN AMP C PRODUCTION

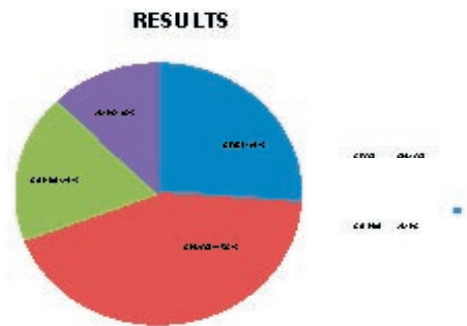
The present study showed cefotaxime-clavulanate detected ESBL production in 34 isolates only whereas cefepime-clavulanate detected ESBL production in 56 isolates. Cefepime-clavulanate detected ESBL production in additional 22 isolates. Cefepime-clavulanate demonstrate the synergy arising from inhibition of ESBL by clavulanate in the presence of Amp C enzyme. However, their strength lies in the fact that the combination can detect ESBLs in the presence of AmpC b-lactamases (Table 2) (figure2)

Co-Production of ESBL, AmpC, MBL and carbapenemase

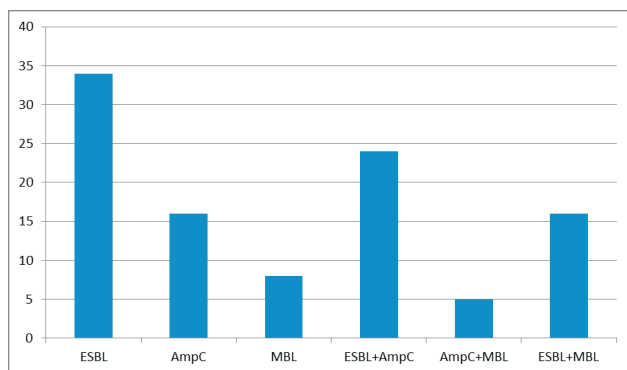
The co-production of ESBL, AmpC and MBL was also observed among the isolates. Various combinations of different types of enzymes were found particularly in E. coli and K. pneumoniae (Table 3) (Figure 5, 6)

Table 3. Different β-lactamase mediated resistance mechanism in AmpC producing Enterobacteriaceae (n = 100).

ESBL+MBL (%)	AmpC +ESBL (%)	AmpC +MBL (%)
16	24	5



[Figure-5]: -Distribution of different β - lactamases



[Figure-6]: -Distribution of β - lactamases

DISCUSSION

The infections which are caused by multidrug-resistant gram negative bacilli that produce various β lactamase enzymes have been reported with an increasing frequency and they are associated with a significant morbidity and mortality [9]. Pathogens that produce ESBL or AmpC β lactamases along with carbapenemases are particularly challenging for clinicians and are major threats worldwide.

In our study, the prevalence of various β lactamases in the gram negative bacteria, which included the Enterobacteriaceae, was 69 %, which was alarmingly high. The ESBL production was (34%) found to be maximum as compared to the other β lactamases^{7,10}. According to the mentioned studies, it seems that the prevalence of beta-lactamases producing Enterobacteriaceae in different parts of the world can be varied from 0% to over 70%. This difference could be due to the factors such as differences in the type and mode of antibiotic consumption that cause genetic mutations in bacteria and producing the mentioned enzymes^{9,12}.

Out of the 21 (21%) of the isolates showing resistance to cefoxitin in the present study, only 16 (16%) were AmpC producers. Cefoxitin resistance in this type of AmpC negative isolates could be due to a decreased permeability of porins¹⁶. It was 17.3% in Kolkata¹⁶ and 22.9% in a study which was done by Bandekar et al¹³ in burn patients, whereas a study which was done by Bhattacharjee et al showed 22% AmpC producing *Pseudomonas aeruginosa*¹⁷. In our study, 8% of the isolates were MBL producers. Several studies from India have shown a prevalence rate of 8-10% of *Enterobacteriaceae* isolates being carbapenemase producers.^{20,21}

The coexistence of ESBL and MBL was reported in 16% isolates, whereas the AmpC and the MBL co production was shown by 5% isolates and the AmpC and the ESBL co production was shown in 24% isolates. A study which was done by Arora et al reported the AmpC and MBL coproduction in 46.6% isolates and the ESBL and AmpC co production in 3.3% isolates¹⁵.

The present study demonstrated that cefepime-clavulanate was the most sensitive in detecting ESBL, especially in isolates producing AmpC -lactamase. Presence of ESBLs can be masked by the expression of AmpC -lactamase, which can be generated by chromosomal (eg. in most *Enterobacter*, *Serratia*, *C. freundii*, *Morganella*, *Proteus* and *Pseudomonas* species) or plasmid genes (mostly in *E. coli* and *Klebsiella*)¹⁵. In our study, dominant AmpC production also covered and masked underlying ESBL production in 22 additional strains of *E. coli* and *Klebsiella* spp. which were initially labeled as ESBL negative by the CAZ-CLA and CTX-CLA. Cefepime, a fourth-generation cephalosporin, is a more reliable detection agent for ESBLs in the presence of an AmpC -lactamase, as this drug is stable to AmpC -lactamase and will thus demonstrate the synergy arising from the inhibition of ESBL by clavulanate in the presence of AmpC enzyme¹¹.

Similarly, in another study²⁰, two *K. pneumoniae* isolates out of 100 consecutive isolates of *E. coli* and *Klebsiella* were positive by the double-disk synergy test for ESBL with cefepime only, but not with any of the other third-generation cephalosporins used. With regard to the detection of ESBLs by Etest, Stürenburg *et al.* [12] evaluated the performance of the

cefepime-clavulanate ESBL Etest to detect ESBLs in an Enterobacteriaceae strain collection. The cefepime-clavulanate was observed to be the best configuration for detection of ESBLs, particularly where inducible chromosomal AmpC β -lactamase can interfere with clavulanate synergy^{12, 18, 19}

CONCLUSION

The results of the study indicate that the current methods to confirm ESBL enzymes by conducting clavulanate synergy tests with ceftazidime and cefotaxime may be insufficient for ESBL detection in clinical isolates of *E. coli* and *K. pneumoniae* since these organisms often produce multiple β -lactamases. In such situations, where AmpC β -lactamase can interfere with clavulanate synergy, the new cefepime-clavulanate could be a more sensitive alternative for the detection of ESBL-producing organisms. Thus, in our opinion, cefepime-clavulanate is a suitable substitute to test for ESBL production, especially in organisms producing AmpC β -lactamase. Optimum identification of ESBL-producing isolates would allow clinical microbiologists and infectious disease specialists to formulate policies for empirical antimicrobial therapy, especially in high-risk units where infections due to these organisms are common. It also helps in monitoring the development of antimicrobial resistance and in the implementation of proper hospital infection control measures. source of funding- self conflict of interest- nil ethical clearance - not needed.

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A Study of the Oxidative Stress and the Role of Antioxidants in ATT Induced Hepatotoxicity in Tuberculosis Patients

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ABSTRACT

Introduction: Tuberculosis is an infectious disease caused by mycobacterium tuberculosis which primarily affects the lungs to cause pulmonary tuberculosis. One of the major adverse effects of anti-tubercular treatment is hepatotoxicity. The anti – tubercular drugs known to cause hepatotoxicity are isoniazid, rifampicin and pyrazinamide. The frequency of hepatotoxicity is increased when these drugs are used in combination as they are used now-a – days in DOTS regimen (directly observed treatment short course). VIT-E and VIT-C have hepatoprotective effect due to their anti- oxidant property.

Objective: To study the level of markers of oxidative stress in patients of TB suffering from ATT induced hepatotoxicity & to observe the role of exogenously administered antioxidants like VIT – E and VIT-C in such patients

Methodology: This is an open label, randomized comparative study.

Five groups of 8 patients each were taken.

Group 1- Normal healthy volunteer.

Group2-Newly diagnosed patients of pulmonary tuberculosis

Group 3 –[HT] Patients with diagnosis of ATT induced hepatotoxicity. No intervention.

Group4-[HTE] Patients with diagnosis of ATT induced hepatotoxicity. VIT-E given.

Group5- [HTEC] Patients with diagnosis of ATT induced hepatotoxicity. VIT-E + VIT-C given.

Estimation of liver function tests of all patients (Serum bilirubin, SGOT, SGPT, Alkaline phosphatase [ALP])

Estimation of markers of oxidative stress glutathione peroxidase (GPx), Super Oxidedismutase (SOD), Glutathione (GLT), Malonaldehyde (MDA), catalase (CAT).

Results: All patients were reviewed weekly. Their LFTs were performed at weekly interval. The markers of oxidative stress were assessed on diagnosis of hepatotoxicity and upon resolution of hepatotoxicity. In the end, all the patients in each group completed the study and results were analysed statistically for these patients. There has been a significant change when oxidative stress markers and liver function tests were repeatedly measured post intervention positively.

Conclusion: Vit E & Vit C administration induces reduction in oxidative stress in patients of hepatotoxicity indicated by increased level of anti-oxidant enzymes.

Keywords: Tuberculosis, ATT, DOTS, Hepatotoxicity, Antioxidant, Oxidative Stress

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INTRODUCTION

Tuberculosis (TB), an infectious disease caused by *Mycobacterium tuberculosis*, primarily affects the lungs to cause pulmonary tuberculosis. Despite efforts at eradicating tuberculosis, the disease still remains a

major cause of morbidity and mortality worldwide. About 33% of the world population infected with *Mycobacterium tuberculosis* resides in developing countries¹.

In India, directly observed treatment short course (DOTS) chemotherapy regime is followed for anti-tubercular treatment (ATT), of which one of the major adverse effects is hepatotoxicity². Incidence of Hepatotoxicity varies from 10-25%, although patients with suspected liver disease, malnourished, elderly and children are more prone to develop hepatotoxicity^{3,4}.

The exact mechanism of ATT induced hepatotoxicity is unclear⁵. Toxic reactive metabolites generated during hepatic biotransformation of some of the anti-tubercular drugs are thought to covalently bind with cellular macro-molecules to generate free radicals which in turn bring about oxidative stress^{6,7}. Mycobacteria, too, induce free radical production by activated phagocytes enhancing oxidative stress⁸.

Some studies conducted on rats have shown that in ATT induced hepatotoxicity there is evidence of oxidative stress as indicated by the decrease in plasma levels of anti-oxidant enzymes like superoxide dismutase (SOD), Glutathione Peroxidase, Glutathione and Catalase and an increase in lipid peroxidation (LP) products like malondialdehyde (MDA), indicating the role of oxidative stress in ATT induced hepatotoxicity^{5,9}. It has also been seen in certain studies that malnutrition further increase the oxidative stress and propensity of hepatotoxicity in animals who are given ATT¹⁰.

At present, there is no specific treatment for ATT induced hepatotoxicity. However, since it is a reversible condition, the treatment consists of stopping the offending drugs till such time there is complete and spontaneous resolution of the hepatic damage. Subsequently these drugs are gradually reintroduced and the treatment regimen is completed^{11,12}.

As a biological anti-oxidant and as a free radical scavenger, Vit. E, Vit. C and b-carotene have been studied in various conditions of oxidative stress, but available literature is insufficient to come to any definitive conclusion^{13,14}. Hence in this study we will compare the oxidative stress in patients of TB who have ATT induced Hepatotoxicity and study the role

of antioxidants in alleviating the organ toxicity (ATT induced Hepatotoxicity).

OBJECTIVES OF THE STUDY

1. To study the levels of markers of oxidative stress in patients suffering from TB.
2. To study the level of markers of oxidative stress inpatients of TB suffering from ATT induced hepatotoxicity
3. To observe the role of exogenously administered antioxidants like Vit E and Vit E&C.

MATERIALS & METHOD

This open-label, randomized, comparative study was conducted in Department of Pharmacology, Department of Biochemistry and Chest Clinic (Tuberculosis), Saraswathi institute of medical sciences, Hapur during a period of December 2013 to April 2015, after obtaining ethical approval and with written informed consent of participants.

The subjects were randomly allocated into 5 groups (n = 8 per group).

1. Group 1: Normal Healthy volunteers
2. Group 2: Newly diagnosed patients of TB, followed up with DOTS after 4 weeks.
3. Group 3: Patients with ATT induced hepatotoxicity, no intervention but followed up till resolution of hepatotoxicity.
4. Group 4: Patients with ATT induced hepatotoxicity, provided Vit. E in doses of 600mg/day, followed up till resolution of hepatotoxicity.
5. Group 5: Patients with ATT induced hepatotoxicity, provided Vit. E 600mg/day and Vit C 500mg/day, followed up till resolution of hepatotoxicity.

Newly diagnosed TB patients (ages 18-70 years) who would be receiving ATT would be included. Hepatotoxicity would be defined as patients having greater than three times the normal upper limit of LFT's along with an increase in serum bilirubin levels. Subjects with Pre-existing liver disease, evidence of any infectious hepatitis, Chronic alcoholism, History of intake of other hepatotoxic drugs, Concurrent

illness and Pregnancy would be excluded from the study.

The various biochemical parameters assessed were:

1. Liver function tests: assessed using a semi-automated analyzer
 - a. Serum bilirubin
 - b. AST
 - c. ALT
 - d. ALP
2. Markers of oxidative stress:
 - a. Superoxide Dismutase, assessed by RANSOD kit, RANDOX Lab, UK
 - b. Glutathione peroxidase, assessed by RANSEL kit, RANDOX Lab, UK.
 - c. Glutathione, assessed by Ernest Beutler’s method¹⁵.
 - d. Catalase, assessed by Hugo Aebi method¹⁶.
 - e. Malon-dialdehyde, assessed by Ashakawa & Matshushita¹⁷.

For the estimation of markers of oxidative stress, 5ml of venous blood was collected in EDTA vials after taking suitable precautions. Glutathione and catalase estimation were done immediately. For glutathione estimation, 0.2 ml and for catalase estimation, 1 ml

blood was collected. Blood for superoxide dismutase (0.5ml) and for glutathione peroxidase (0.5ml) were centrifuged at 3000rpm for 15 min. plasma and leucocytes were removed and the erythrocyte sediments were stored in deep freezer to be done later on using kits.

After the completion of study period, a master cart was made to compare all the results of subjects enrolled in various groups. The comparisons made were:

1. The changes in oxidative stress and LFTs at baseline and at the end of study.
2. Duration of hepatotoxicity in each group.
3. Severity of hepatotoxicity in each group by weekly analysis of LFTs.

RESULTS

The present study enrolled 40 subjects under 5 groups to evaluate changes in oxidative stress in patients experiencing ATT induced hepatotoxicity. All patients were reviewed weekly. Their LFTs were performed at weekly interval. The markers of oxidative stress were assessed on diagnosis of hepatotoxicity and upon resolution of hepatotoxicity. In the end, all the patients in each group completed the study and results were analysed statistically for these patients.

Table 1: Descriptive analysis of the study sample

Group	Age (yrs)	Gender		Development of Hepatotoxicity (days)	Weight at baseline (kg)
Group 1	28±1.14	6 (Male)	2 (Female)	NA	NA
Group 2	33.50±5.08	5	3	NA	47.12±2.02
Group 3	39.37±3.94	5	3	10.87±0.51	46.25±2.2
Group 4	45.87±4.69	4	4	11.25±1.19	50±1.96
Group 5	39.92±3.88	5	3	11.37±0.94	49.5±2.47
	p-value < 0.05	p-value < 0.05		p-value < 0.05	p-value < 0.05

Table 1 shows the baseline characteristics of the study sample. There was no statistical difference among the groups except for the study variable.

Table 2: Weight chart of the study sample:

Group	Mean \pm SEM(kg)					p-value
	0 week	1 week	2 week	3 week	4 week	
Group 2	47.12 \pm 2.02	47.37 \pm 2.07	48.37 \pm 2.16	49.37 \pm 2.04	50.25 \pm 2.08	<0.05
Group 3	46.25 \pm 2.2	46.50 \pm 2.17	46.75 \pm 2.01	48.3 \pm 1.97	Followed up to 3 weeks	<0.05
Group 4	50 \pm 1.96	51 \pm 1.94	51.50 \pm 1.91	53.7 \pm 1.81	Followed up to 3 weeks	<0.05
Group 5	49.5 \pm 2.47	50.37 \pm 2.24	51.50 \pm 2.09	51.60 \pm 3.12	Followed up to 3 weeks	<0.05

Table 2 shows the weight chart of the study groups. The improvement in weight in all the 4 study groups (except in Group 1), seemed to improve with advancement of DOTS regime (p-value < 0.05).

Table 3: Study parameters at baseline:

		Group 1	Group 2	Group 3	Group 4	Group 5
Liver function test	S.Bil. (mg/dl)	0.42 \pm 0.05	0.66 \pm 0.07	3.66 \pm 0.21	4.43 \pm 0.25	4.12 \pm 0.14
	AST (U/L)	18.37 \pm 4.40	22.75 \pm 2.42	108.62 \pm 8.33	107.8 \pm 16.77	87.63 \pm 10.73
	ALT (U/L)	18.25 \pm 1.47	22.00 \pm 1.55	102.75 \pm 7.33	96.75 \pm 12.03	93.37 \pm 13.80
	ALP (U/L)	43 \pm 7.54	66.25 \pm 6.14	216.62 \pm 18.75	229 \pm 20.20	197.62 \pm 14.56
Markers of oxidative stress	SOD (U/mL)	301.25 \pm 20.47	80.75 \pm 23.48	46.72 \pm 10.59	27.60 \pm 5.98	43 \pm 8.79
	GPx (U/L)	9651.45 \pm 851.02	3298 \pm 861.26	2019.07 \pm 358.30	2194.71 \pm 417.91	2655.92 \pm 660.50
	Glt (mg%)	54.45 \pm 4.81	35.60 \pm 0.77	26.97 \pm 1.27	24.88 \pm 3.78	21.60 \pm 3.16
	Cat (k/g hb)	372.25 \pm 20.55	225 \pm 11.95	185.12 \pm 11.64	140.87 \pm 10.78	131.62 \pm 21.96
	MDA (nmol/ml)	2.95 \pm 0.62	5.11 \pm 0.59	6.42 \pm 1.06	6.83 \pm 1.06	7.18 \pm 0.92

Table 3 and Table 4 shows study parameters at baseline and post intervention. There has been a significant change when oxidative stress markers and liver function tests were repeatedly measured post intervention (paired-t test).

Table 4: Study parameters pre and post evaluation:

	Week	Group 2		Group 3		Group 4		Group 5	
		Mean	Change (%)	Mean	Change (%)	Mean	Change (%)	Mean	Change (%)
Bil. (mg/dl)	Pre	0.66 \pm 0.07	\uparrow 27.27	3.66 \pm 0.21	73.7%	4.43 \pm 0.25	\downarrow 75.16%	4.12 \pm 0.14	\downarrow 72.57%
	Post	0.84 \pm 0.08		0.96 \pm 0.07		1.10 \pm 0.15		1.13 \pm 0.02	
AST (U/L)	Pre	22.75 \pm 2.42	\uparrow 6.37	108.62 \pm 8.33	68.97%	107.8 \pm 16.77	\downarrow 66.6%	87.63 \pm 10.73	\downarrow 62.34%
	Post	24.20 \pm 3.12		33.7 \pm 2.55		36 \pm 4.95		33 \pm 0.94	
ALT (U/L)	Pre	22.00 \pm 1.55	\uparrow 25.00	102.75 \pm 7.33	72.06%	96.75 \pm 12.03	\downarrow 68.26%	93.37 \pm 13.80	\downarrow 63.90%
	Post	27.50 \pm 2.63		28.7 \pm 1.78		30.7 \pm 1.95		33.7 \pm 3.56	
ALP (U/L)	Pre	66.25 \pm 6.14	\uparrow 15.47	216.62 \pm 18.75	53.74%	229 \pm 20.20	\downarrow 41.44%	197.62 \pm 14.56	\downarrow 45.80%
	Post	76.30 \pm 9.06		100.20 \pm 4.30		134.1 \pm 10.41		107.1 \pm 1.13	

Cont... Table 4: Study parameters pre and post evaluation:

SOD (U/mL)	Pre	80.75±23.48	↑ 44.73%	46.72±10.59	↑ 51.69%	27.60±5.98	↑80.65%	43±8.79	↑146.51%
	Post	116.87±27.06		70.87±13.66		49.86±12.74		106±23.45	
GPx (U/L)	Pre	3298±861.26	↑ 19.58%	2019.07±358.30	↑ 40.28%	2194.71±417.91	↑49.76%	2655.92±660.50	↑29.44%
	Post	3944.7±207.23		2832.50±531.63		3286.86±383.10		3437.95±627.47	
Glt (mg%)	Pre	35.60±0.77	↑ 14.74%	26.97±1.27	↑ 37.04%	24.88±3.78	↑30.14%	21.60±3.16	↑59.86%
	Post	40.85±0.81		36.96±1.36		32.38±3.32		34.53±3.49	
Cat (k/g hb)	Pre	225±11.95	↑ 26.66%	185.12±11.64	↑ 39.77%	140.87±10.78	↑45.34%	131.62±21.96	↑31.05%
	Post	285.62±7.98		258.75±6.03		204.75±9.36		172.50±19.77	
MDA (nmol/ml)	Pre	5.11±0.59	↓ 12.72%	6.42±1.06	↑ 22.89%	6.83±1.06	↓ 26.64%	7.18±0.92	↓40.66%
	Post	4.46±0.51		4.95±0.55		5.01±0.63		4.26±0.63	

Table 5: Statistical evaluation of percentage change in evaluation parameters among the intervention groups

	Group C (HT)	Group D (HT E)	Group E (HT EC)
S.Bil	↓73.7%	↓75.16%	↓72.57%
AST	↓68.97%	↓66.6%	↓62.34%
ALT	↓72.06%	↓68.26%	↓63.90%
ALP	↓53.74%	↓41.44%	↓45.80%
p-value > 0.05 (not significant)			
SOD	↑51.69%	↑80.65%	↑146.51%
GPx	↑40.28%	↑49.76%	↑29.44%
Glt.	↑37.04%	↑30.14%	↑59.86%
Cat	↑39.77%	↑45.34%	↑31.05%
MDA	↓22.89%	↓26.64%	↓40.66%
p-value > 0.05 (not significant)			

Table 5 shows the statistical analysis of the percentage changes in the evaluation parameters among the interventional groups.

DISCUSSION

The incidence of hepatotoxicity is not an uncommon issue in the treatment of Tuberculosis. Anti-tubercular drugs, such as Isoniazid, Rifampicin and Pyrazinamide are the mainstay of hepatotoxicity. However, studies have shown that the incidence of toxicity in clinical situation with the use of these three drugs together is low¹⁸. It has been learnt that with metabolic oxidation, stimulated phagocytosis and selective drugs, free radicals exert a damaging oxidative effect on tissues¹⁹.

Most of these free radicals are normally removed from the body by various anti-oxidant defense mechanism including enzymes like SOD, Glutathione peroxidase, Glutathione and Catalase. Under condition of oxidative stress and during ATT, these free radicals are not removed quickly or antioxidant defense mechanisms are inadequate and so, these free radicals cause destruction to tissues and cells^{8,20}.

Vit. E and Vit.C are the antioxidants studied in various condition of oxidative stress. Protective action of Vit E in hepatotoxicity caused by Isoniazid, Rifampicin and pyrazinamide administration to albino rats for 14 days has also been postulated²¹.

The present study involved similar clinical parameters done on 5 groups of 8 subjects each. There

had been a few key findings through this study. First, the levels of Liver function parameters and oxidative enzyme levels decrease in untreated tuberculosis patients as compared to normal healthy volunteers indicating increased oxidative stress in patients of tuberculosis, this has been supported by previous literature⁸.

Second, the levels of anti-oxidant enzymes gradually increase with the treatment but were however, significantly lower than that in normal healthy volunteers at all points of time during treatment, again supported with existing literature²².

In most patients of hepatotoxicity who were administered Vit.E along with Vit.C, the weight increased during the resolution of hepatotoxicity, a combination of Vit.E and Vit.C also helps in reducing the oxidative stress in patients of hepatotoxicity despite their poor nutritional status and may help in clinical improvement by virtue of their anti-oxidant property if given in hepatotoxicity patients¹³.

Though a positive improvement was seen among the sample subjects, but a major lacunae observed was that of no significant difference in interventional and non-interventional groups in terms of clinical parameters, indicating that hepatotoxicity is purely reversible.

A major reason for the current findings could be attributed to the small sample size as the limitation, as individuality might influence the outcome of the study. Also, patients were followed up only till the resolution of hepatotoxicity and not the complete treatment.

A further detailed research is thus warranted to evaluate the complete functionality and effect production of Vit E & Vit C administration to similar study subjects. Studies should be conducted by administration of antioxidants Vit.E and Vit.C as prophylaxis to all the patients of tuberculosis and comparing the development of hepatotoxicity.

CONCLUSION

A significant amount of oxidative stress is present in tuberculosis patients, due to reversible hepatotoxicity induced by ATT. Vit E & Vit C administration induces reduction in oxidative stress even in patients of hepatotoxicity having poor

nutritional status indicated by the increased levels of anti-oxidant enzymes. Studies should be conducted by administration of antioxidant like Vit.E and Vit.C as prophylaxis to all the patients of tuberculosis and comparing the development of hepatotoxicity.

Conflict of Interest: None

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Ethical Clearance: Taken

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Psychometric Properties of Morisky Medication Adherence Scale (MMAS) in Known Diabetic and Hypertensive Patients in a Rural Population of Kolar District, Karnataka

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ABSTRACT

Introduction: The World Health Organization (WHO) defines adherence as “the extent to which a person’s medication-taking behaviour, following a diet and/or executing lifestyle changes, corresponds with agreed recommendations from a healthcare provider”. Adherence is a multi-factorial phenomenon and although various methods are available for the assessment of medication adherence, there is still no gold standard for the measurement of medication adherence. **Objectives:** To examine the psychometric properties of eight-item Morisky Medication Adherence Scale (MMAS-8) among diabetics and hypertensives. **Methodology:** The study was conducted at villages in Lakkur PHC, Malur taluk, Kolar district. Patients aging 18 years and above with a confirmed diagnosis of hypertension and diabetes, using antihypertensive and antidiabetic medications for the last six months were enrolled in the study. The translated version of the 8-itemed MMAS was administered by face-to-face interview. Pill count was used as a gold standard for validation and verified using empty blister packs. The data was analyzed using standard statistical software. **Results:** The mean \pm SD of MMAS scores were 4.23 ± 0.9 . The instrument demonstrated good internal consistency (Cronbach’s alpha =0.7). MMAS sensitivity and specificity, with positive and negative predictive values, were 80.2%, 88.5%, 83.6% and 85.9%, respectively. **Conclusion:** Results from this validation study conclude that the MMAS is a reliable and valid measure of medication adherence.

Keywords: Adherence, Validation, Morisky Medication Adherence Scale (MMAS), Psychometric properties

INTRODUCTION

Adherence to medication is generally defined as the extent to which patients take medications as prescribed by their health care providers.¹ The word “adherence” is preferred by many health care providers, because “compliance” suggests that the patient is passively following the doctor’s orders and that the treatment plan is not based on a therapeutic alliance or contract established between the patient and the physician². Despite the tremendous efforts

of pharmacists and other health care providers, medication non adherence remains a major public health problem², such that it has been called an invisible epidemic.^{3,4}

Barriers to medication adherence are numerous and include the prescription of complex medication regimen, failing to explain the benefits and side effects of a medication adequately, not giving consideration to the patient’s lifestyle or the cost of the medications, and having poor therapeutic relationships with their patients. Common barriers to adherence are under the patient’s control, so that attention to them is a necessary and important step in improving adherence. These factors are particularly prevalent among chronic diseases such as hypertension and diabetes placing them at an increased risk of

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medication non-adherence.⁵

Medication adherence for those with chronic conditions is generally poor; often around 50%.⁶A recent Cochrane review suggested that improving adherence may have a greater impact on overall health than any treatment itself.⁷ No matter how appropriate and effective patient's antihypertensive therapy may be; poor clinical outcomes will be the end result if medication adherence becomes an issue.

The World Health Organization (WHO) defines adherence as "the extent to which a person's medication-taking behaviour, following a diet and/or executing lifestyle changes, corresponds with agreed recommendations from a healthcare provider". Although various methods are available for the assessment of medication adherence¹, there is still no gold standard for the measurement of medication adherence.^{8,9} Biological assays, pill counts, electronic monitoring, self-reported questionnaires, pharmacy records and prescription claims are usually applied for measurement of adherence.¹⁰ Adherence is said to be good by pill count if the patient is taking the prescribed drugs and /or is following the advice at least 80% of the time. Amongst them, self-reported questionnaires are more frequently used because they are low in both cost and time expenditure and provide a reasonably accurate estimate of adherence. Within this context, the Morisky Medication Adherence Scale (MMAS) is one of the most widely used tools in health and social research. Originally developed by Morisky et al (1986) as a 4-itemed scale¹¹, the scale was modified to 8 items in 2008. The new scale was developed as the previous scale was considered accusatory in nature, isolating and often evoked defensiveness from patients.¹

Because of the profound acceptance of the MMAS in measurement of medication adherence in health and social sciences, this study aimed to translate and validate the Kannada version of the MMAS-8 in Indian population. Prior researches has documented the Psychometric properties of MMAS mostly in urban areas and no studies were done to assess the validity of MMAS in rural areas and in India no studies were done. This study will examine the psychometric properties of the recently developed eight-item MMAS (MMAS-8) among diabetic and hypertensive patients in a rural population of Kolar

District, Karnataka.

OBJECTIVES

To examine the psychometric properties of eight-item Morisky Medication Adherence Scale (MMAS-8) among diabetics and hypertensives.

METHODOLOGY

The study was conducted at villages in Lakkur PHC, Malur taluk, Kolar district. Patients aging 18 years and above with a confirmed diagnosis of hypertension and diabetes, using antihypertensive and antidiabetic medications for the last six months were enrolled in the study. Socio-demographic and disease-related data of the patients was obtained. The translated version of the 8-itemed MMAS was administered by face-to-face interviews. Pill count was used as a gold standard for validation and verified using empty blister packs. Drug consumption pattern was supported by empty blister packs. A standard "forward-backward" procedure of translation was used to translate the English version of MMAS into Kannada. The translated version was then validated on hypertensive and diabetic patients in a rural population of Kolar District, Karnataka (villages of Lakkur). We calculated the sample size of 180 based on the sensitivity and specificity of previous studies (60% and 80%). 90 patients who are adherent as per pill count and 90 people who are non adherent as per pill count were taken for the study.

A structured interview schedule was used to collect relevant data from the respondents.

The interview schedule had three parts:

Part 1 – Socio-demographic Profile

Part 2 – Details about history of diabetes and hypertension

Part 3 – Adherence

Part1 includes Demographic details and the study variables: Name, age, Literacy level, Occupation, Income, Marital status, possession of BPL card, Type of family, No of family members, Financial dependence. Part2 includes details about history of diabetes and hypertension: This is to assess the treatment profile of diabetes and hypertension. Part3 includes details on Adherence: Total number of days

for which drugs were prescribed (a), Total number of tablets prescribed per day (b), Total number of tablets prescribed ($c=a*b$), Total number of tablets consumed was then calculated. Pill count was then calculated by Total number of tablets consumed / Total number of tablets prescribed *100. The translated version of the 8-itemed MMAS was then administered

Institutional ethical committee approval was taken prior to the study. After establishing rapport with the patient, the purpose and procedure of the study were explained. Informed written consent from the patient was taken. Questionnaire was administered to the patient.

STATISTICS AND ANALYSIS OF THE DATA

The data were coded and entered in Microsoft Excel and analysed using SPSS version 16. Adopting the recommended scoring method, the mean \pm SD of MMAS scores and the internal consistency using Cronbach's alpha was calculated. The MMAS sensitivity and specificity, with positive and negative predictive values were also calculated. Frequencies and chi square tests were used to analyze data. We considered p value as significant when p value is less than 0.05. When more than 20 % of cells in tables have value less than 5, then we considered Fisher's exact test for significance.

RESULTS

The study was conducted in six villages – Anchemuskur, Jagadenalli, Kalkere, Bargur, Arasanahalli and Kodur located in Lakkur Primary Health Centre (PHC) area under Malur Taluk, Kolar district, Karnataka. Adults who were known diabetics and hypertensives residing in the study area continuously for more than one year in the villages were included in the study after excluding those who were seriously ill, or unable to give information accounting to a total of 180 study subjects.

Table 1 presents the results of the demographics of the patients. A total of 180 patients were enrolled and the mean age of participants was 59.09 ± 10.97 years. Majority of study population were in the age

group of more than 60 years 85(47.2%) with females 104(57.8%) representing the higher proportion. Of the 180 people, 56(31.1%) were uneducated, 48(26.7%) were educated till class 1-4 and the majority 53(29.4%) were in the agricultural sector.

Out of 180, 159(88.3%) were Hindus by religion and 101(56.1%) of study population were from joint family and 140(77.8%) possess BPL card. According to Modified BG Prasad Socioeconomic status 117 (65.0%) belong to socio economic class III.

Of the patients studied 126(70.0%) had diabetes 121(67.2%) had hypertension and 43(23.9%) had both diabetes and hypertension. Of the 180 people studied, of the 121 hypertensives -27(15.0%) were on lifestyle Changes and 90(50.0%) were on anti hypertensives. Of the 126 diabetics, 26 (14.4%) were on lifestyle Changes, 78 (43.3%) were on OHAs and 15 (8.3%) were on insulin.

The 8-itemed Morisky Medication Adherence Scale (MMAS) was used to assess the medication adherence among diabetics and hypertensives. Using the recommended cut-offs, 59.4% (107 of 180) and 40.6% (73 of 180) of them were in the poor and good adherence categories respectively.

Medication adherence was supported by empty blister packs and pill count was done in addition to MMAS scale. i.e. Total number of days for which drugs were prescribed (a), Total number of tablets prescribed per day (b), Total number of tablets prescribed ($c=a*b$), Total number of tablets consumed was then calculated. Pill count was then calculated by Total number of tablets consumed / Total number of tablets prescribed *100 (More than 80% was considered as good adherence). By pill count, 76 (42.3%) had good adherence and 104 (57.7%) had poor adherence.

Table 1: Socio-demographic profile of the study population

Sl. No.	Variable	Category	No	%
1	Age (in Years)	30-45	16	8.9
		46-60	79	43.9
		>60	85	47.2
2	Gender	Males	76	42.2
		Females	104	57.8
3	Education (Highest education attained)	Uneducated	56	31.1
		Class 1-4	48	26.7
		Class 5-7	29	16.1
		Class 8-10	25	13.9
		Class >10	22	12.2
4	Occupation	Agricultural worker	53	29.4
		Homemaker	82	45.6
		Unemployed/ Retired	19	10.6
		Business and others*	19	10.6
		Daily wage labourers	7	3.8
5	Socio-economic status	Class I	2	1.1
		Class II	27	15.0
		Class III	117	65.0
		Class IV	32	17.8
		Class V	2	1.1

*Other occupations include drivers, animal rearing, government and private jobs.

Table 2: Details about history of hypertension and diabetes

Sl. No.	Variable	Category	No	%
1	Disease	Hypertension present	121	67.2
		Diabetes present	126	70.0
		Both hypertension and diabetes	43	23.9

Table 3: Distribution of hypertensives on lifestyle Changes and anti hypertensives in both the groups

Sl. No.	Variable	Category	No	%
1	Hypertensives	On Lifestyle Changes	27	15.0
		On anti hypertensives	90	50.0
2	Diabetics	On Lifestyle Changes	26	14.4
		On OHA	78	43.3
		On insulin	15	8.3

Table 4: Medication adherence among the study population

Sl. No.	Variable	Category	No	%
1	Medication adherence using MMAS score	Poor adherence	107	59.4
		Good adherence	73	40.6
2	Medication adherence using Pill count	Poor adherence	104	57.7
		Good adherence	76	42.3

The instrument demonstrated good internal consistency (Cronbach's alpha =0.7). Specificity, specificity, Positive and negative predictive values for the MMAS was evaluated.

Table 5.1 Contingency table

	Pill count		
		61	12
MMAS scale	(True Positives)	(False Positives)	
	15	92	107
	(False Negatives)	(True Negative)	
	76	104	180

Table 5.2 Psychometric properties

No.	Psychometric property	%
1	Sensitivity	80.2%
2	Specificity	88.5%
3	Positive predictive value	83.6%
4	Negative predictive value	85.9%

Table 6 Reliability analysis of the MMAS

We analysed the internal consistency using cronbach's alpha

Items in Questionnaire	Mean ± SD	Cronbach's alpha (if item is deleted)	Sensitivity (%)	Specificity (%)
Do you sometimes forget to take your pills?	0.40 ± 0.51	0.580	43.2	67.8
People sometimes miss taking their medications for reasons other than forgetting. Thinking over the past two weeks, were there any days when you did not take your medicine?	0.70 ± 0.35	0.623	46.4	66.2
Have you ever cut back or stopped taking your medication without telling your doctor, because you felt worse when you took it?	0.61 ± 0.30	0.656	56.3	62.8

Cont... Table 6 Reliability analysis of the MMAS

When you travel or leave home, do you sometimes forget to bring along your medication?	0.55 ± 0.85	0.633	77.4	78.8
Did you take your medicine yesterday?	0.88 ± 0.35	0.601	47.2	65.4
When you feel like yours is under control, do you sometimes stop taking your medicine?	0.74 ± 0.34	0.698	91.3	68.9
Taking medication every day is a real inconvenience for some people. Do you ever feel hassled about sticking to your treatment plan?	0.75 ± 0.35	0.652	87.3	65.7
Do you have difficulty remembering to take all your medicine?	0.85 ± 0.45	0.76	77.8	55.3

MMAS sensitivity and specificity was measured as 80.2% and 88.5% respectively. Positive and negative predictive values for the MMAS were 83.6% and 85.9% respectively. There were statistically significant differences among age, education, occupation and MMAS score ($p < 0.05$). No statistical difference was noted in other study variables. We also evaluated the reliability of each question in MMAS scale.

DISCUSSION

The aim of this study was to examine the psychometric properties of the eight-item Morisky Medication Adherence Scale (MMAS-8) among diabetics and hypertensives. This is the first study that has demonstrated the validation of MMAS in the Kannada language. MMAS has been translated and validated into other languages including for the study of diabetic patients in Thailand and Malaysia, HIV positive patients in Sweden and patients with inflammatory bowel diseases in the USA. However, there are some differences among internal consistency and values. The Urdu version of MMAS¹² had internal consistency (Cronbach's alpha = 0.501) as compared to our study. One possible reason for this is the small sample size in that study. Internal consistency of the 8-item scale was assessed using Cronbach's alpha with corrected item-total correlations, and Intra-class correlation (ICC) was used to assess test-retest reliability. According to Nunnally,¹³ the newly developed measures can be accepted with Cronbach's alpha of more than 0.5, otherwise 0.70 should be the

threshold. It has been noted that when a corrected item-total correlation coefficient value is less than 0.2, it indicates that the item contributes very little to the homogeneity of the scale.¹⁴ ICCs were interpreted using the following criteria: ICC<0.4 = poor; 0.4<ICC<0.75 = fair or good, ICC>0.75 = excellent.¹⁵

Differences in the level of awareness among study participants, cultural dissimilarities and patients claiming more adherence than actual, can be accountable for this deficiency. The study findings are similar to those reported by Al-Qazaz et al. (2010) in their study in diabetic patients. Results from this validation study conclude that the MMAS is a reliable and valid measure of medication adherence.

CONCLUSION

The MMAS-8 is an important scale which permits healthcare and social researchers to take the initial step in determining non-adherence to medication. The MMAS-8 is a simple and efficient way of determining adherence that can also prove to be cost-effective. From the results of this study, it is concluded that the Kannada version of the MMAS-8 proved to be an authentic instrument for the measurement of medication adherence.

Source of Support: Nil

Conflict of Interest: Nil

Acknowledgement - Nil

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An Epidemiological Study Analyzing Functional Outcome of Primary Malignant Tumors of Femur in Mohan Dai Oswal Cancer Hospital, Ludhiana, Punjab

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ABSTRACT

Introduction: Amputation was generally considered the standard treatment for most primary malignant tumors of femur. In recent years with the significant advances in the management of malignant bone tumors (better understanding of the histological criteria for diagnosis, better clinical staging procedure, improved surgical techniques, neo adjuvant & adjuvant chemotherapy and radiotherapy and improved techniques of Oncological reconstruction), there is increased trend towards limb salvage surgery.

Aims and objectives: 1) To study functional outcome of primary malignant tumors of Femur.

Materials and methods: This study was a retrospective as well as prospective study involving 25 patients having primary malignant tumour of femur coming to department of Orthopaedics at Mohan Dai Oswal Cancer Treatment & Research Foundation, Ludhiana from January 1999 to December 2005.

All the patients were evaluated in terms of complete clinical presentation (onset of symptoms, progression and duration). Various signs and symptoms (pain, swelling, pathological fracture, deformity, limb length discrepancy) were noted thoroughly.

Treatment included Surgical management (Limb sparing surgery or amputation), Chemotherapy, Radiotherapy wherever indicated. Functional assessment using MSTs criteria was done.

Conclusion: 25 patients of primary malignant tumours of femur were studied in the Department of Orthopaedics at Mohan Dai Oswal Cancer Hospital, Ludhiana from January 1999 to December 2005. Average age was 22.68 years. There were 21 male patients and 4 female patients. The major histopathological diagnosis was osteosarcoma (84%) followed by spindle cell sarcoma (8%) and chondrosarcoma (8%). Distal end of femur was predominantly involved (84%) and pain was the commonest presenting complaint (92%). Majority of patients (68%) presented after 60 days of onset of symptoms.

In 19 patients skin was normal and in 6 patients it was involved (fungating in 4 and adherent in 2). 2 patient had palpable inguinal group of lymph nodes which were histologically proven for local metastasis. These 2 patients were treated by hip disarticulation with inguinal lymph node dissection.

12 patients were treated by limb salvage surgery with either endoprosthetic implant or autograft. Remaining 13 patients were treated by primary amputation surgery. They were either non-responder to neo-adjuvant chemotherapy or had fungation of growth or had distant metastasis at initial presentation.

Neoadjuvant chemotherapy was given to 11 patients, out of which 8 responded and 3 did not respond. So mutilating surgery was done in these 3 patients. 17 patients had taken adjuvant chemotherapy.

Till date 14 patients are having a disease free survival of 2-3 year. 6 patients are having survival with disease of 2-3 year. Out of remaining 5 patients, 2 patients who were having survival with disease were lost to follow up after 1 year. 2 patient were lost to follow up within 1 year and 1 patient died of disease. When MSTs criteria were applied to those patients who were treated with amputation of limb, the results were calculated as poor due to need of a walking aid or prosthesis to make them ambulatory.

Keywords:: Primary malignant tumors, Femur, functional outcome

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INTRODUCTION

Amputation was generally considered the standard treatment for most primary malignant tumors of femur. In recent years with the significant advances in the management of malignant bone tumors (better understanding of the histological criteria for diagnosis, better clinical staging procedure, improved surgical techniques, neo adjuvant & adjuvant chemotherapy and radiotherapy and improved techniques of Oncological reconstruction), there is increased trend towards limb salvage surgery.

Important factors in making this decision are the age, skin condition, functional status of the patient, the nature & grade of the lesion, the presence or absence of metastasis, status of neurovascular bundle, extent of osseous destruction & the extent of soft tissue involvement.

Generally the reconstructive techniques used after resection are applicable to adolescent and older patients with closed epiphyses.

Major complications that have been reported in association with limb sparing procedure includes infection, nerve palsy, wound dehiscence and loosening of the prosthesis. The most serious of these is infection. The loosening of the implant can be greatly minimized by paying careful attention to the selection of patient and to operative technique. Relative contraindications to a limb sparing resection includes pathological fracture with large hematoma, poorly placed biopsy scar with extensive contamination, neuro-vascular involvement, infection, fungating tumors and extensive soft tissue involvement.

Aims and objectives

2) To study functional outcome of primary malignant tumors of Femur.

MATERIALS & METHODS

This study was a retrospective as well as prospective study involving 25 patients having primary malignant tumour of femur coming to department of Orthopaedics at Mohan Dai Oswal Cancer Treatment & Research Foundation, Ludhiana from January 1999 to December 2005.

All the patients were evaluated in terms of complete clinical presentation (onset of symptoms,

progression and duration). Various signs and symptoms (pain, swelling, pathological fracture, deformity, limb length discrepancy) were noted thoroughly.

Histopathological evaluation was done using FNAC and incisional biopsy. Treatment included:-

1. Surgical management(Limb sparing surgery or amputation)
2. Chemotherapy
3. Radiotherapy wherever indicated.

Once the decisions for surgery were taken, consent was taken from patient in written. If prosthesis is indicated, size of prosthesis was determined pre-operatively using x-ray and CT scan. Prosthesis was then ordered as required. Patients were followed for a minimum period of one year. These patients were called every month for the first 3 months and then every three monthly for next 9 months and 6 months thereafter. At each visit evaluation of these patients was done for :-

1. Any signs of radiological/clinical union.
2. Any signs of local recurrence/distant metastasis.
3. Any implant/graft related problem.
4. Functional assessment using MSTTS criteria was done.

OBSERVATION

Table -1: Age Incidence

Age	No. of patients	Percentage of patients
10 – 20 years	14	56%
20 – 30 yrs	7	28%
30 – 40 yrs	-	-
40 – 50 years	2	8%
50 – 60 years	2	8%
60 – 70 years	-	
> 70 years	-	
Total	25	100

Table-2: Localization

Site	No. of patients	Percentage
Diaphyseal	3	12%
Metaphyseal	-	-
Proximal Femur	1	4%
Distal Femur	21	84%

The maximum no. of patients were having primary malignant tumors of distal femur (84%). This was followed by diaphyseal area of femur (12%).

Table-3 Histopathological diagnosis

Histopathological Diagnosis	No. of patients	Percentage
Osteosarcoma	21	84%
Chondrosarcoma	2	8%
Spindle cell sarcoma	2	8%

Osteosarcoma was the histopathological diagnosis in majority of patients (84%), followed by chondrosarcoma and spindle cell sarcoma in 2 patients (8%) each.

Functional assesment at last follow up (MSTS criteria)

Table-4 SUPPORT

Grade	No. of patients	Percentage
5	8	32%
4	3	12%
3	1	4%
2	-	-
1	-	-
0	13	52%
Total	25	100%

- 13 Patients in our series were walking with Exo-prosthesis.

- 3 Patient were walking with occasional use of support

- 8 Patients were walking without any support.

Table-5: Walking ability

Grade	No. of patients	Percentage
5	11	44%
4	2	8%
3	12	48%
2	-	-
1	-	-
0	-	-
Total	25	100%

- 11 Patients had unlimited walking ability (same as pre-operative).

- 12 Patients had limited walking ability (significantly less).

- 2 Patients were in the intermediate range.

Table-6 GAIT

Grade	No. of patients	percentage
5	-	-
4	12	48%
3	-	-
2	-	-
1	2	8%
0	11	44%
Total	25	100%

- 48% of patients had minor alteration in gait.

- 8% had a minor cosmetic alteration.

- 44% were major handicapped (major functional deficit).

Table-7: Function

Grade	No. of patients	Percentage
5	-	-
4	12	8%
3	-	-
2	2	8%
1	11	44%
0	-	-
Total	25	100%

- 48% had intermediate restriction of function

- 8% had minor disability (recreational

restriction)

- 44% had major disability (partial occupational restriction)

Table-8 : Overall Results (Lower Limb)

Result	No. of patients	Percentage
Excellent	-	-
Good	12	48%
Fair	-	-
Poor	13	52%
Total	25	100%

DISCUSSION

In our series of 25 patients; the average age ranged from 13 years of age (youngest patient) to 55 years of age (oldest patient), average age being 22.68 years. R. Capanna et al (1994) reported average age of 23 in a series of 95 patients, which is comparable.

In our series of 25 patients, 21 patients were male (84%) & 4 patients were female (16%).

In our series distal femur was the most common site of lesion (84%) followed by proximal femur (12%). In study of Fredrick R. Eliber (1984) 100% patients presented with tumors involving distal femur. In the study of Florian-Wolf 88.85% of primary malignant tumours of femur were located in distal femur and 8.5% were located in proximal femur.

In our series 72% of patients had both pain and swelling. Pain was the presenting complaint in 20% of patient & 8% of patients presented with swelling alone. So 92% of patients in our series had pain on presentation. In series of Dahlin et al. pain was the most common presenting complaint followed on by swelling.

In our series osteosarcoma was the major histopathological diagnosis (84%) followed by chondrosarcoma and spindle cell sarcoma in (8%) each. Frederick R Elber et al (1984) in their series reported 69% intra medullary high-grade osteosarcoma, 13.5% patients with chondrosarcoma, 2.4% patients with Ewing's sarcoma & 8.4% patients with miscellaneous sarcoma. Our study was almost comparable with the consensus stating that most common prevalent primary malignant tumor of femur is osteosarcoma.

In our series 5 patients (20%) presented at stage 1A for which limb salvage surgery using autogenous

cortico-cancellous graft was done. 7 cases (28%) presented at stage 1B for which resection of tumour & limb salvage using endoprosthesis was done (40%) 10 cases presented at II B stage for which disarticulation of hip joint was done. 3 cases (12%) presented at III B stage (with metastasis) for which mutilating surgery was done (Palliative care). In the series of Franklin .H.Sim, all patients who had primary malignant skeletal tumour in stage 1A & stage 1B were treated by limb saving resection. While stage 111-B patients had undergone palliative cure.

Remaining 13 patients were treated by primary amputation surgery. They were either non-responder to neo-adjuvant chemotherapy or had fungation of growth or had distant metastasis at initial presentation due to which limb salvage surgery was not possible in these 13 patients.

Functional evaluation of these patients was done by MSTS criteria. These criteria were mainly applicable to limb salvage surgery patients whereas when these criteria were applied to amputation surgery results were poor.

Supports

Eight patients (32%) were walking without any support. All these eight patients had endoprosthetic replacement. Three patients (12%) were walking with occasional use of support. All these three patients had undergone limb salvage surgery by tumour resection and limb reconstruction by autograft. So results in limb salvage surgery patients were good in terms of support criteria. Remaining thirteen patients (52%) who had previously undergone mutilating surgery were using either exo-prosthesis or crutch support for walking always. The functional results are poor when MSTS criteria are applied to amputation because amputation patients were using either crutches or prosthesis for support always.

Walking ability

Eleven patients (44%) who had undergone limb salvage surgery were having limited walking ability (as per MSTS criteria) whereas remaining twelve patients (48%) who had undergone mutilating surgery were having significantly limited walking ability. This is because energy expenditure is more when prosthesis is used. 2 patients (8%) were having intermediate restriction of function as they were using brace for walking more often.

Gait

Twelve patients (48%) had minimal alteration in gait whereas remaining thirteen patients (52%) who had undergone mutilating surgery were having significant alteration of gait.

Function

Twelve patients (48%) had minor restriction of function. All these twelve patients had undergone limb salvage surgery. Whereas remaining thirteen patients (52%) who had undergone amputation surgery was having major disability.

Overall functional results were good in twelve limb salvage surgery patients while overall functional results were poor in thirteen mutilating surgery patients.

CONCLUSION

Average age was 22.68 years. There were 21 male patients and 4 female patients. The major histopathological diagnosis was osteosarcoma (84%) followed by spindle cell sarcoma (8%) and chondrosarcoma (8%). Distal end of femur was predominantly involved (84%) and pain was the commonest presenting complaint (92%). Majority of patients (68%) presented after 60 days of onset of symptoms.

In 19 patients skin was normal and in 6 patients it was involved (fungating in 4 and adherent in 2). 2 patient had palpable inguinal group of lymph nodes which were histologically proven for local metastasis. These 2 patients were treated by hip disarticulation with inguinal lymph node dissection..

12 patients were treated by limb salvage surgery with either endoprosthetic implant or autograft. Remaining 13 patients were treated by primary amputation surgery. They were either non-responder to neo-adjuvant chemotherapy or had fungation of growth or had distant metastasis at initial presentation..

Neoadjuvant chemotherapy was given to 11 patients, out of which 8 responded and 3 did not respond. So mutilating surgery was done in these 3 patients. 17 patients had taken adjuvant chemotherapy.

Local recurrence was present in only 1 patient who

was treated by re-wide excision and chemotherapy.

Local complications were present in 6 patients who had undergone limb salvage surgery. This included gaping of wound in 3 patients, vascular injury in 1 patient and recurrent hematoma in 3 patients.

Till date 14 patients are having a disease free survival of 2-3 year. 6patients are having survival with disease of 2-3 year. Out of remaining 5 patients , 2 patients who were having survival with disease were lost to follow up after 1 year. 2 patient were lost to follow up within 1 year and 1 patient died of disease. When MSTS criteria were applied to those patients who were treated with amputation of limb, the results were calculated as poor due to need of a walking aid or prosthesis to make them ambulatory.

Conflict of Interest : Nil

Ethical approval : Ethical approval was obtained from National Board of Examination, New Delhi wide letter no. PR/NBE/MDOCTRF/5520 and accepted by National Board of Examinations wide letter no.NBE/83/June-07/20966 dated 16.5.07

Abbreviations

Govt.: Government of India

OA: Osteoarthritis

QOL: Quality of Life

SES: Socio-economic status

WHO: World Health Organization

Competing Interests: The authors declare that they have no competing interests

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Women-decision Making How Apt it is?

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ABSTRACT

Women are expected to be emotionally expressive, dependent, passive, cooperative, warm, and accepting of subordinate status in marriage and employment. The principal aim of the study is to understand decision making choices of women with reference to health and family planning. Data was collected through a cross-sectional survey in and around Visakhapatnam during March to December. The data was further analysed and interpreted for results. Results of the study reveal the fact that women in rural areas are deprived of decision on family planning and have minute awareness on the use of contraceptives. On the other hand women have articulated many health problems but deny being sick. In this study it has been observed that even though people suffer from access to safe drinking water, clean air and food insecurity, they perceive their health status to be good overall. The study concludes that awareness regarding health and use of contraceptives is to be increased to motivate women voluntary decision making in leading a healthy life.

Keywords: Women, health, contraceptives, decision making.

INTRODUCTION

As quoted by Julia Serano¹ "Being a woman is always defined in opposition to a man ... and so being a woman becomes living up to other people's expectations".

World says that women are the backbone of every family. They play a major role either directly or indirectly in each and every moment our lives. But while thinking on that, the first thing that strikes our mind was "Is it true?" From childhood to old age on each and every aspect women have to depend on the family, father, husband, children. Women don't have any decision-making even in small things.

Women are expected to be emotionally expressive, dependent, passive, cooperative, warm, and accepting of subordinate status in marriage and employment. Competitiveness, assertiveness, anger, and violence are viewed as unfeminine and are not generally tolerated as acceptable female behavior².

Inequality between men and women runs across the board, including in education, economic opportunities, representation in governance, and

other state and private institutions. In role of women's health and decision making there is an importance to introduce and to study the Women health, Method of family planning and Use of contraceptives.

Health is complex and dependent on a host of factors. The dynamic interplay of social and environmental factors has profound and multifaceted implications on health. Women's lived experiences as gendered beings result in multiple and, significantly, interrelated health needs³. Women have a broad range of health needs that evolve over the course of their lives. In their younger years, health concerns related to reproductive and sexual health are priorities. As they age, management of chronic health problems takes on a larger role. Women's health needs and connections to providers are major factors in how they use health care⁴.

While observing from last few decades, importance of women, women studies, women employment, and empowerment are comparatively in enhanced situation. But decision making of women is still governed by various factors that affect the health and life of women. The exclusion of women

from some sensitive family discourse, such as family planning, family size and access and use of maternal health facilities, is usually hinged on cultural beliefs and values designed and sustained by men in order to maintain their domination and subjugation of women⁴. In the present study we have focussed on the decision-making of women in two important situations like family planning and health.

METHODOLOGY

Study Area

Visakhapatnam is a major port and the second largest city in the state of Andhra Pradesh and the third largest city on the east coast of India after Kolkata and Chennai, with a population of approximately 1.3 million. It is located 625 kilometres east of state capital, Hyderabad. The city is nestled among the hills of the Eastern Ghats and faces the Bay of Bengal to the east.

Subjects and Study design

Data were collected using a convenience sample of men and women in and around the city of Visakhapatnam. During a three months period, from December to March, the investigators collected the data. The survey included a demographic data sheet and two questionnaires. The mode of data collection was a personal interview with the respondents. This gave a chance to the investigators to have an insight to their perception towards the issues of the study and also to gather additional information, apart from clarifying any doubts regarding the questionnaire when dealing with less educated women. The interviews were conducted for about 15- 20 minutes for each respondent. A total of 400 surveys were fully complete and subsequently used for data analysis.

Research Instruments

Data was gathered using a structured questionnaire which was developed based on previous studies on Family planning and Women health. It consisted of three parts:

1. The first part of the questionnaire consisted Medical history and Health Perception by women
2. The second part of the questionnaire consisted perceived Health Problems by women.

3. The third part comprised of questions regarding attitude toward family planning and barriers for not practicing family planning

The design of the instrument was guided by findings reported in the literature. The content validity of the questionnaire was ensured by using standardized health tools as a guide while preparing the questionnaire. The questionnaire was pre-tested with 20 adult women (they were excluded from the study) and refined according to feedback.

RESULTS

Figure – 1 point up the health status of the respondents. 42.13% of the women suffer from fatigue, whereas 11.68% of them have unexplained fevers. As is evident from the table 86.80% of them are immunized and the remaining 12.18% of them are currently under medication. 71.57% of them articulated that the health services received were satisfactory. 91.37% of the women perceive their health to be good.

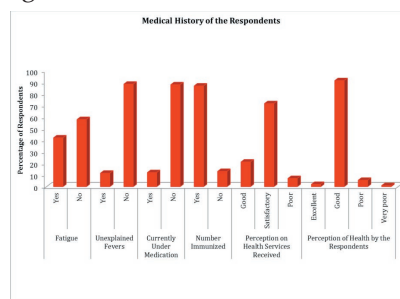


Figure – 1 Medical history and Health Perception by the Respondents

Common chronic conditions (Figure – 2) included headaches, arthritis, back pain and urinary incontinence. Pain prevented from performing most activities. Along with Anemia 23.35%, Back pains13.71%, Body pains 6.09%, Fatigue 21.32%, Gastritis 21.32%, Gyaenic problem 14.72%, Hypertension11.17%, Head ache18.78%, Joint pains 9.64%, Thyroid 9.14%, Diarrhea 23.86%.

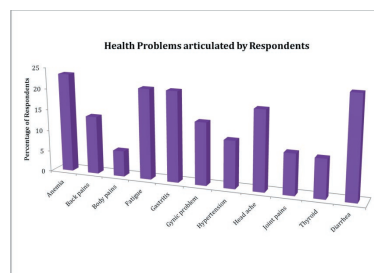


Figure – 2 Health Problems Articulated by the Respondents

Barriers for not Practicing Family Planning

Obvious from the previous result very few in urban were not practicing family planning. When asked for reasons 69.5% of articulated it to be lack of knowledge and 16% as traditional belief and opposed to family planning respectively.

The intention of the research was to find out whether or not people take an active role in spreading awareness regarding family planning. For this question 42% of them responded positively as they usually talk to their friends and 58% of them did not. Out of the positive respondents only 51.5% were voluntary in trying to change the attitudes of others who were unaware or opposing to family planning but 48.5% of them did not try in this direction. When questioned for the possible reasons 36% of them articulated they were shy talking about it. A trifling number quoted the reason to be culture, religion and others (Figure – 3).

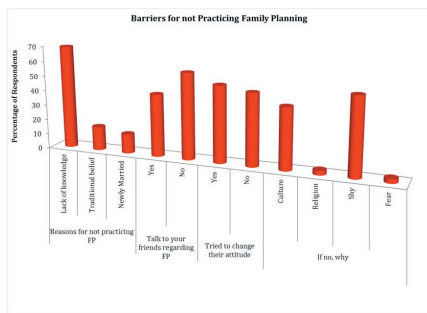


Figure – 3 Barriers for not Practicing Family Planning (in Percentage)

DISCUSSION

The present study deals with the perception health status and barriers for planning of women in around Visakhapatnam city. The health status is reflection of the social well being and economic strength of the people it is lighted by various factors, such as the level of income, standard of living, housing, sanitation, occupation, education, employment, health care delivery services, religious belief and cultural acts. Therefore, the word socio-economic includes various meaning of social and economic characteristics which affect human behavior in all respects.

Women’s health is affected by various social, economic and demographic factors such as level of education, social position, economic affluence, age at marriage, caste based tradition etc. amongst these, age at marriage is one of the major which directly

affects the fertility behaviour of women. According to study⁵ about 92.6% Musalers are illiterate people.

Health status of women is one of the most important factors affecting the socio-economic development of a country. In the present study the variables like education, social status of the women are poor. The social myth also indicates that women were basically interior and their labours, efforts, social right, role in decision making are less valuable than men⁶.

In India the nutrition and health status of women is abysmally low. The survey done by National Nutrition Monitoring Bureau (NNMB)⁷ in 1990 in India shows that women’s calorie requirement after the age of 10 years is not adequately met. The poor health status of women in India is mainly due to patriarchy and other socio-cultural constraints leading to her secondary status at home and poor health. It is a bitter reality that in India women’s health and nutrition is inextricably linked to social, cultural and economic factors.

The results from the health perception of the women can be concluded that women were actually not aware of the general health problems that they have. It has been a imbibed attitude in most of the women that they would not seek a doctors advice or their health condition is not perceived as poor until and unless they are bed ridden. This is in correlation with the other studies that have reported previously. Apart from poverty, other contributing factors to poor health among the urban poor, is the low awareness and malpractice of recommended health practices. The high cost of health care and low accessibility victimizes the poor⁸.

Despite the concentration of health-care facilities in urban areas, the access of the urban poor to basic health services is hampered by several factors. The cost of travel may be prohibitive, women may not have anyone to leave young children with and/or slum dwellers may be treated shabbily or overtly discriminated against in health centers. Where free health services are not available, the cost of care may be unaffordable. Access must therefore be broadly defined to encompass its physical, social, cultural and economic dimensions⁹.

There are multiple cultural barriers and social evils that influence health which operate at the household and individual levels. These relate to class, caste, ethnicity, religion and gender inequalities. Gender issues are especially important and in India, women and girls face severe discrimination in personal rights and access to personal services such as education, health facilities and family planning services¹⁰. The intra household inequalities and discrimination impact the status of women.

It has been observed in the present study that even the women have articulated satisfactory health condition; they have reported the following major health problems associated with them like Anemia, Back pains, Body pains, Fatigue, Gastritis, Gynaecic problem, Hypertension, Head ache, Joint pains, Thyroid, Diarrhea.

It was witnessed that till date the reason for not practicing family planning among most of the respondents remain to be lack of awareness. Organized family planning programs have a 40-year track record of success in helping hundreds of millions of couples choose the number and timing of their pregnancies. The barriers for the family planning remain to be culture, tradition and shy. Indeed, surveys show that more than 200 million women in developing countries who would like to delay their next pregnancy, or stop bearing children altogether, must rely on traditional, less effective methods of contraception (64 million) or are using no method because they lack access or face other barriers to using contraception (137 million)¹¹. These barriers include cultural values that support high fertility, opposition to use of contraception by family members, and fears about health risks or side effects of contraception¹².

In some areas, women are subjected to repeat childbearing at short intervals either to satisfy their husbands' quest for large family size or as a means of adjusting to the very high infant morbidity and mortality in the continent¹³. The preference for sons in many East and South Asian societies has deep social, economic, and cultural roots. Son preference in India originates from the idea that economic and social benefit of sons is higher compared to daughters¹⁴.

CONCLUSION

A person's health is influenced by four factors

i.e. income, lifestyle, environmental population and occupational risks and the quality of available health care¹⁵. In this study it has been observed that even though people suffer from access to safe drinking water, clean air and food insecurity, they perceive their health status to be good overall. From the articulated facts of barriers to contraceptives it is understood that women have very less role in the decision making for family planning and also access to health care. List of health issues articulated by women are not taken seriously, mostly because they won't articulate ill health and second they still have to depend on someone to visit a health care centre. From these results it can be concluded that women need to get awareness regarding issues related to health to lead a healthy family.

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A Cross-sectional Study on Enzyme Patterns in Liver Diseases and their Correlation to Metabolic Syndrome

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ABSTRACT

Prevalence of Non-alcoholic fatty liver disease (NAFLD) has dramatically increased due to the rapid rise of the metabolic syndrome. NAFLD also has the potential to progress to hepatocellular carcinoma (HCC) or liver failure. A cross-sectional study was conducted on 63 liver disease patients from Visakhapatnam. All subjects underwent biochemical tests and anthropometric evaluations. Maximum respondents are from age group 41-50 years. 74.6% hail from urban areas. 55.5% cases were associated with diabetes. The abnormalities in liver function were in the following order: Bilirubin - 57.1%; SGOT - 52.3%; SGPT - Males - 47.0% and Females - 100%; ALP - 34.9% and PT - 25.3%. NAFLD is strongly linked to caloric overconsumption, physical inactivity, insulin resistance and genetic factors. Multivariate analysis has shown that age, demographic location, hypertension, kidney abnormalities and diabetes were independently associated with liver diseases. Our results suggest a significant association between liver diseases and metabolic syndrome and further emphasize that metabolic syndrome is becoming closely associated with liver diseases.

Keywords: Liver disease, NAFLD, Metabolic syndrome, Oxidative stress, Multivariate analysis.

INTRODUCTION

According to WHO data published in April 2011

^[1] Liver disease deaths in India reached 208,185 or 2.31% of total deaths. The age adjusted death rate is 23.59 per 100,000 of population, ranks India #27 in the world. Urbanization, sedentary lifestyle, fatty foods, uncontrolled blood sugar and obesity is leading Indians towards higher incidence of that is Non Alcoholic Fatty Liver Disease (NAFLD) and making India the “world capital of liver diseases” by 2025. NAFLD of late has been recognized as a major public health problem, affecting 9-32% general population in India ^[2]. NAFLD includes a wide range of liver disorders, from steatosis to Non-alcoholic

Steatohepatitis (NASH) and advanced fibrosis and cirrhosis ^[3].

NAFLD is precipitated by the interaction of genetic and environmental factors ^[4]. Steatosis occurs when the rate of import or synthesis of fatty acids by hepatocytes exceeds the rate of export or catabolism ^[5]. Adipose tissue releases many biologically active products including mediators of carbohydrate metabolism (leptin, adiponectin and resistin), lipid metabolism (apolipoprotein E and lipoprotein lipase) and adipocytokines (TNF α , IL-6 and TGF β). This activates I κ B kinase β (I κ B β) and inhibits phosphorylation of insulin receptor substrates (IRS-1 and IRS-2). This in turn leads to failure of insulin-mediated suppression of hormone-sensitive lipase and increased release of LCFA into the circulation ^[4]. An explanation for the strong association between central obesity, characterized by predominant fat deposition in omental and mesenteric stores and steatosis is that high concentrations of LCFAs are released directly into the portal circulation. This coupled with TNF α -mediated up regulation of

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hepatic fatty acid translocase [6] leads to enhanced uptake by the liver, increased denovo hepatic LCFA and TG synthesis.

Similarly, rising glucose levels activate de novo hepatic lipid synthesis via carbohydrate response element-binding protein (ChREBP) [7]. Hyperglycemia and elevated insulin levels promote GLUT4-mediated uptake of plasma glucose by adipocytes, synthesis of lipid stores and inhibition of lipolysis in adipose tissue. Once steatosis has developed, the liver is 'sensitized', and an inflammatory response may be precipitated by a variety of stimuli. Oxidative stress has been implicated as an aetiological factor in many liver diseases and exposure to toxins such as carbon tetrachloride [8]. The presence of biological markers of oxidative stress has been demonstrated in patients of steatohepatitis [9].

When production of ROS exceeds antioxidant capacity of the cell, nuclear and mitochondrial DNA damage, phospholipid membrane disruption by lipid peroxidation and release of pro-inflammatory cytokines occur [10, 11]. Mitochondrial damage further induces loss of cytochrome c disabling the electron transport chain [8]. Lipid peroxidation of polyunsaturated fatty acids generates toxic aldehyde by-products that are more persistent than ROS and damage more distant intracellular organelles and cause cell death. These products directly activate fibrogenic hepatic stellate cells and are chemotactic

for neutrophils, recruiting immunologically active cells into the inflammatory process [12].

Metabolic syndrome is characterized by the presence of at least 3 of the 5 criteria, namely obesity, diabetes mellitus, hypertension, low HDL and high triglycerides according to adult treatment panel III. It was reported that 21 - 68% of patients were with at least one criteria of metabolic syndrome. A step-wise logistic regression analysis showed BMI, fasting blood glucose and fasting insulin level to be independent predictors of NAFLD [13].

Our aim was to investigate the major manifestations of liver diseases, their prevalence and correlation with other common metabolic disorders. The study was undertaken in a cross section of the population in Visakhapatnam by multivariate analysis.

MATERIALS & METHODS

When diagnosing liver disease a liver biopsy, liver function tests, an ultrasound, a computed tomography scan, and/or a magnetic resonance imaging scan may be requested depending upon the symptoms exhibited by the patient. In this study liver function tests – SGOT, SGPT, ALP, Total Bilirubin and Prothrombin time are performed. To study the correlation of liver diseases with other metabolic disorders blood glucose, creatinine, complete blood picture and blood pressure were included.

Liver Function Tests

Test	Method	Reference	Normal Value
Bilirubin	Diazo method of Pearlman & Lee	14	0.1 – 1.2 mg/dl
Serum SGOT	International Federation of Clinical Chemistry Method (IFCC)	15	Males Up to 29IU/L at 30°C Women 32 IU/L at 30°C
Serum SGPT	-do-	15	Males Up to 5 - 34 IU/L at 30°C Women 3 - 22IU/L at 30°C
Serum Alkaline Phosphatase	-do-	16	20 – 50 Yrs Female 37 – 103 IU/L Above 50 Yrs 60 – 143 IU/L 20 – 50 Yrs Men 50 – 126 IU/L Above 60 Yrs 57 – 111 IU/L
Prothrombin time	Manual Method	17	11 – 15 Seconds

Other Tests

Test	Method	Reference	Normal Value
Serum Creatinine	Jaffe's Method	18	Males 0.9 – 1.5 mg/100ml Females 0.8–1.3 mg/100ml
Blood Glucose	GOdPOd Method	19	70 – 110mg/100ml
Blood Pressure	Sphygmo Manometer	-	120 / 80 mm/Hg
Heamatological Tests			
Heamoglobin	Heamoglobinometer	-	Male 13 – 17g/100ml
Total Cell Count	Cell Counter	-	9700 cells / cumm
Total RBC		-	4.5 – 6.5 millions/cumm
Total WBC		-	4,500-10,000 cells/ cumm
Platelet Count		-	1.5 – 4.5 lakhs/cumm

These tests were performed in fully auto analyzer (ERBA CHEM – 7) and semi auto analyzer (ABA – 1).

RESULTS

Demographic and biochemical characteristics of 100 study participants were carried out in the Department of Biochemistry, GITAM University, Visakhapatnam. Among 100 patients who were referred for clinical diagnosis 63 were positive and 37 were negative for liver diseases. The resolved clinical data and other lab investigation reports were recorded and summarized.

80.9% were males with only 19.0% females. Maximum respondents were from age group 41 – 50 (20.6%). 74.6% hail from urban and 22.2% from rural background (Table – 1).

Table 1 Demographic data

Parameter	Deviation= 63	%	
Male	51	80.9	
Female		12	19.0
Age Group	10 – 20	09	14.2
	21 – 30	12	19.0
	31 – 40	10	15.8
	41 – 50	13	20.6
	51 – 60	12	19.0
	61 – 70	06	0.90
	71 – 80	02	0.03
Rural		14	22.2
Urban		47	74.6

Patients with NAFLD had significant differences in terms of ALT, AST, ALP, BT, PT, KFT, FBS, TC, DC, PLT, Hb and blood pressure compared with controls (Table –2). Further analysis was done if liver diseases are associated with other metabolic disorders. 55.5% cases were found associated with diabetes, none with kidney diseases and 30.1% are associated with hypertension (Table –3). An increase in total count (TC) and marked decrease in platelet number was seen in maximum number of cases identified positive for liver diseases.

The abnormalities in liver function and discrepancies in the normal values of biochemical parameters were in the following order: Bilirubin - 57.1%; SGOT – 52.3%; SGPT – Males – 47.0% and Females – 100%; ALP – 34.9% and PT – 25.3%.

Table 2: Liver Function Tests

Parameter	Deviation =63	%
Total Bilirubin	36	57.1
SGOT	33	52.3
SGPT	24 (M) + 6 (F)	47.0 + 100
ALP	22	34.9
PT	16	25.3

Table – 3 Association with other diseases

Disease	Deviation= 63	%
Blood Pressure	19	30.1
Diabetes	35	55.5
Kidney diseases	02	0.03
Blood Parameters		
Hb	27 (M) + 5 (F)	52.9 + 83.3
TRBC	25	39.6
PLT	22	34.9

DISCUSSION

There are over 100 types of liver diseases, and because of more than 200 functions that the Liver plays, many can be life-threatening unless treated. Liver disease was traditionally known to occur in association with excessive alcohol intake but now the non-alcoholic variant is reaching epidemic proportions in the developed and developing countries.

According to the study maximum respondents are from the age group 41-50 years. Risk factors associated with NAFLD are age, above 40 years, males, elevated fasting blood sugar, blood pressure and high AST and ALT levels [20]. Despite compensatory cell hypertrophy, in response to the decreased number of hepatocytes seen with ageing, liver size reduces by 25% between the age of 20 and 70, with a 33% reduction of hepatic blood flow in over 65 year olds.

Activity in hepatic cytochrome P450 oxidation is reduced with age, as is the protective enzyme superoxide dismutase, both of which may contribute to increased sensitivity of hepatocytes to xenobiotics. A reduction in protective enzymes, a decline in response to growth factors and a theoretical risk of increased pathogen load from the gut all put the aged liver at increased risk of disease [21].

In general, men are 2-fold more likely to die from chronic liver disease and cirrhosis than are women [22]. 81% of the cases in the present study are males, the reason may be attributed to alcoholism or other occupational hazards. Urbanization and changes linked with sedentary lifestyle, fatty foods, uncontrolled blood sugar, obesity and smoking is leading Indians towards higher incidence of fatty liver

disease [10]. This is in correlation to the findings of our study as 75% of the cases were from urban region.

We found that 55.5% diabetic patients had evidence of fatty liver on ultrasound. Patients with underlying diabetes can present with abnormal liver chemistries, which can represent findings as benign hepatic steatosis or severe cirrhosis of the liver. Epidemiologically, there seems to be a correlation between diabetes mellitus and hepatitis C.

At times of hepatic fatty acid overload and mitochondrial dysfunction, these pathways increase the hepatocyte ROS load. The increased mitochondrial oxidative stress provides the second hit, facilitating progression from steatosis to steatohepatitis and fibrosis through three main mechanisms, lipid peroxidation, cytokine and Fas ligand induction.

Hypertension as with diabetes is less common with non-cirrhotic NAFLD presenting with raised transaminases. 30% of patients in our study showed association with elevated blood pressure. An increase in total count (TC) and marked decrease in platelets was seen in maximum number of cases.

When the liver gets damaged, the liver cells release certain enzymes in the blood. These enzymes are used as blood markers to diagnose the condition.

1. Serum Bilirubin: Bilirubin is water insoluble and is known as indirect or unconjugated Bilirubin. In the liver bilirubin is conjugated to glucuronic acid to form direct bilirubin.

TOTAL BILIRUBIN = INDIRECT BILIRUBIN + DIRECT BILIRUBIN

Total bilirubin is elevated by pre-hepatic causes such as hemolytic disorders or liver diseases

resulting in impaired entry, transport or conjugation within the liver. Direct or soluble bilirubin is elevated by hepatic and post hepatic causes.

2. Alkaline phosphatase (ALP): The main site of synthesis of this enzyme is hepatocytes adjacent to biliary canaliculi and active osteoblast. It is known that response of the liver to any form of biliary tree obstruction is to synthesize more ALP. Increase in ALP activity may often be the first indication of hepatotoxic action of therapeutic drugs and intra hepatic or extra hepatic obstructions in liver.

3. Alanine transaminase (ALT): Blood levels of ALT are increased when these hepatocytes are damaged due to hepatitis, cirrhosis, carcinoma, viral or toxic hepatitis and obstructive jaundice. Decreased levels may be observed in renal dialysis patients and those with vitamin B₆ deficiency.

4. SGPT: Increased levels are associated with liver diseases or damage, myocardial infarction, muscular dystrophy and cholecystitis. Decreased levels are observed in patients undergoing renal dialysis and those with B₆ deficiency. Monitoring the change in levels over a period of time is beneficial to the physician evaluating myocardial infarction or following chronic or resolving hepatitis.

Overall serum transaminase levels have a poor correlation with histological severity in patients with NAFLD. Patients with elevated ALT levels may not exhibit histological NASH and normal ALT levels do not rule out severe disease. As with other chronic liver diseases NAFLD / NASH may be asymptomatic initially and may precipitate as cryptogenic cirrhosis.

None of the tests mentioned above are able to determine an overall measure of liver function, individually. Collectively, all the values help to determine the chances of suffering from liver disease like NAFLD and its severity.

TREATMENT

The pharmacological treatment of patients with NAFLD is still developing. Treatment of liver disease depends on the type, symptoms and cause of liver disease. Various treatment modalities include lifestyle changes such as weight loss and exercise, diet modifications, treating risk factors like diabetes mellitus, hypertension, hyperlipidemia and use of

insulin sensitizing agents, antioxidants and various hepatoprotective agents.

Unfortunately, there is no awareness about liver failure and diseases. Liver failure - due to cancer or cirrhosis - is a leading cause of death among Indians. A kidney transplant is a life-changing operation but a liver transplant, on the other hand, is a life-saving one.

CONCLUSION

NAFLD fatty liver is now one of the most common causes of chronic liver disease. This condition increases the risk of NASH often a silent liver disease. It resembles alcoholic liver disease but occurs in people who drink little or no alcohol. Fatty liver and NASH have been found in all age groups, including children. However, it is more common between the age group of 40 to 49 years. If the diseases linked with fatty liver are timely diagnosed, then they can be treated with lifestyle modifications and risk factors elimination.

From the present study it is concluded that Liver disease is more prevalent in the age group of 41- 50 years followed by 21 – 30 and 51 – 60 years. The disease is most commonly seen in males than females. In all the cases there was a marked increase in bilirubin levels followed by alkaline phosphatase and SGOT. Prothrombin time was determined in some of the patients. Liver diseases are sometimes associated with hypertension and diabetes.

Early diagnosis using the bio markers however mild the symptoms are, and to resent urban life style and taking proper preventive measures while suffering from other metabolic disorders will go a long way in preventing NAFLD to become a life threatening liver disease.

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Conflict of Interest - Authors declare that there is no conflict of interest

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Correlation Study between Body Mass Index and Waist Hip Ratio with Cardiovascular Parameters in Sedentary Females

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ABSTRACT

Background:-Over weight is associated with increased sympathetic activity which represents one potential mechanism contributing to increased risk of cardiovascular complications. Obesity is associated with type-2 diabetes mellitus, infertility, osteoarthritis, breast and colo-rectal cancers. Visceral fat is more atherogenic effect.

Methods:-100 healthy sedentary female subjects were selected randomly from the general population of Davangere city. Depending upon the age subjects were divided into 3 groups for analysis

Anthropometric parameters such as weight, height, waist and hip circumference were measured. Body Mass Index, Waist Hip Ratio were calculated. Cardiovascular parameters such as pulse rate, blood pressure were recorded and compared between 3 groups. Correlation between body mass index and waist hip ratio with cardiovascular parameters was done.

Results:-Statistically significant increase in body mass index, waist hip ratio, pulse rate and blood. There was a positive correlation between body mass index, waist hip ratio with pulse rate, blood pressure in sedentary females.

Conclusion:-Sedentary life and obesity are associated with statistically increase in body mass index, waist hip ratio, blood pressure and pulse rate. There is a positive correlation between Body Mass Index, Waist Hip Ratio with Pulse Rate, Systolic and Diastolic Blood Pressure.

Keywords: *Body Mass Index, Obesity, Blood pressure, Sedentary lifestyle.*

INTRODUCTION

Currently over weight and obesity are classified by Body Mass Index (BMI) (weight in kilogram/square of the height in meter-kg/m²). In adults, overweight is defined as BMI of 25.0 to 29.9kg/m²; obesity is defined as BMI \geq 30 m¹.

Obesity can be defined as a state of excess adipose

tissue mass.²

Physical activity may be a critical target for the specific prevention of visceral fat accumulation and corresponding health risk in obese subjects.³

Visceral fat is more metabolically active than subcutaneous fat and hence may be more deleterious to health.⁴

Avoiding a sedentary lifestyle during adulthood not only prevents cardiovascular disease independent of other risk factors but also substantially expands the total life expectancy and the cardiovascular disease-free life expectancy for men and women.⁵ Body fat, 25% for men and 33% for women are suitable cut off

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threshold for defining obesity.⁶

Body Mass Index (BMI) has extremely high specificity but lower sensitivity compared to other tests for estimating fat content of the body. Ideal body weight is defined as a BMI of 18.5 to 24.9 kg/m². Overweight is defined >25 to 29.9 kg/m² and obesity is defined as BMI > 30 kg/m².⁷

Those who remain or become inactive are usually heavier than those who are physically active.⁸

Within a permissive environment, the more common genetic factors involved in obesity regulate the distribution of body fat, the metabolic rate with its response to exercise and diet, the control of feeding and food preferences.⁹

WHO has recommended body mass index (BMI) as a useful measure of obesity, which is calculated as weight (kg) divided by height (m²). BMI value of 25 and above indicates overweight, 30 and above indicates obesity.¹⁰

There is increased risk of metabolic complications for men with waist circumference \geq 102 cms and women with a waist circumference \geq 88 cms.¹¹

Aim and Objective of the study

To correlate body mass index with cardiovascular parameters in sedentary female subjects

METHODOLOGY

Present study was conducted in the department of Physiology, J.J.M. Medical

College, Davangere, after taking Institutional Review Board permission

The study was undertaken to correlate BMI with cardiovascular parameters in 100 healthy sedentary female subjects in the age group of 25 - 55 years. 100 Sedentary subjects were included. Females with BMI \geq 30 (kg/m²) were classified as obese. For the purpose of analysis subjects were divided into three groups depending upon the age.

Group – I (26-35 years) : 30

Group – II (36-45 years) : 37

Group – III (46-55 years): 33

The exclusion criteria in this study were

- Subjects suffering from endocrinal disorders
- Hypertensive individuals
- Subjects with renovascular and cardiovascular diseases.
- Pregnant and lactating

All the subjects gave consent after explaining the procedure of the non-invasive technique to

them. A brief personal history, childhood obesity, detailed history of exercise and a clinical examination of all the systems were done to exclude medical problems and to prevent confounding of results.

Statistical analysis: Comparisons were made between three group subjects. ANOVA test was used for comparison between the groups. Correlation analysis was done for assessing relationship between anthropometric and cardiovascular parameters by Pearson's correlation coefficient. A p-value of 0.05 or less was considered as statistical significance.

Physical anthropometry.

The circumference technique measures body shape using a flexible plastic measuring tape, subjects were required to wear minimal thin cloth, the measurement is typically conducted in the morning before eating and after emptying the bladder. Subjects were measured in standing position and they were asked to breathe normally and gently which prevents the subject from contracting their abdominal muscles.

Height was measured by a plastic measuring tape after marking the subject to stand straight against an even wall. A sliding wooden head piece was used for accurate work.¹²

Body weight of all the subjects was measured by using standardized weighing machine, which was calibrated in kilograms.

The body mass index (BMI) was derived by Quetlet's index from body weight (kg)/Height (m²).¹³

Waist Circumference (WC) was measured to the nearest centimeter with a plastic tape measure while the subjects were in the standing position at the end

of gentle expiration.

The following anatomical landmarks were used: laterally, midway between the lowest portion of the rib cage and iliac crest, and anteriorly midway between the xiphoid process of the sternum and the umbilicus.¹⁴

Hip Circumference (HC) was measured in centimeters(cms)in standing position with a plastic tape at the largest horizontal circumference around the buttocks.¹⁵

After completing the measurements, the waist circumference was divided by the hip circumference to determine the waist to Hip ratio(WHR).

RESULTS

There was statistically significant increase in Body Mass Index, as Pulse rate, Systolic and Diastolic blood pressure.

There was a positive correlation between BMI with PR, SBP, DBP(positive correlation. Table.4)

Table.1 :- Anthropometric parameters

Parameters	Mean ± SD
Weight (Kg)	63.36 ± 8.54
Height (cms)	115.19 ± 4.45
BMI (Kg/m ²)	26.32 ± 3.32
WC (cms)	90.53 ± 9.74
HC (cms)	97.46 ± 6.27
WHR	0.93 ± 0.03

Table. 2:- Comparison of Body Mass Index and Waist Hip Ratio in 3 Groups

Groups	BMI	WHR
Group-1(26-35yrs)	23.7± 3	0.93± 0.04
Group-2(36-45yrs)	27.3± 2.3	0.94± 0.04
Group-3(46-55yrs)	27.1± 2.5	0.95± 0.02
P- value	<0.001, HS	<0.001, HS

All values are expressed as Mean ± SD

BMI-Body Mass Index, WHR- Waist Hip Ratio,

HS-Highly Significant

Table. 3:- Comparison of Pulse Rate and Blood Pressure in 3 Group

Group	PR/min	SBP (mmHg)	DBP (mmHg)
Mean ±SD	Mean ±SD	Mean ±SD	
Group-1 (26-35yrs)	84.0± 4.3	123.3± 12.3	79.4± 9.3
Group-2 (36-45yrs)	81.7± 4.7	127.5± 11.5	82.0± 9.3
Group-3 (46-55yrs)	81.6± 3.4	135.7± 5.4	87.9± 2.8
P- value	<0.001, HS	<0.001, HS	<0.001, HS

All values are expressed as Mean±SD

PR-Pulse Rate, SBP- Systolic Blood Pressure, DBP-Diastolic Blood Pressure,

HS- Highly Significant

Table.4 :- Correlation between BMI, WHR with cardiovascular parameters

Parameters	r - value	p - value
BMI α SBP	+ 0.59	< 0.001, HS
BMI α DBP	+ 0.50	< 0.001, HS
BMI α PR	+ 0.36	< 0.05, S
WHR α SBP	+ 0.32	< 0.05, S
WHR α DBP	+ 0.30	< 0.05, S
WHR α PR	+ 0.31	< 0.05, S

Pearson's correlation coefficient

DISCUSSION

In our study there is statistically increase in BMI and WHR when compared between 3 groups. Recent studies in adolescents and adults have demonstrated significant relationship between physical inactivity and other adverse health practices, such as consumption of less-healthy foods or increased fat intake. Inactive individuals tends to consume more quantities of dietary fat. These data suggest that inactivity tends to cluster with other health behaviors that have adverse effect on the quantity and location

of body fat deposition which results in obesity.¹⁶

Modern life style associated with easy access to food, lack of exercise, sedentary life style, calories dense food, and excessive television viewing are among the identified contributors to the obesity epidemics.¹⁷

Visceral fat although influenced by calorie intake to a certain extent, visceral fat accumulation is a mechanism which is determined also by estrogen deficiency (post menopausal hypertension) or enhanced corticoid influences. It is hypothesized that excess catecholamine triggers various adverse processes which, if persist, can lead or aggravate hypertension and insulin resistance. Visceral fat but not peripheral fat mass was correlated with atherogenic effect.¹⁸

Heart rate increases with increase in percentage of body fat. A 10% increase in body weight is associated with a decline in parasympathetic tone accompanied by a rise in Mean heart rate and conversely, heart rate declines during weight reduction. This is important because higher heart rate is associated with increased mortality rates.¹⁹

Physical inactivity decreases the production of Nitric Oxide (NO) by the abnormal endothelium, which leads to changes in vessel diameter leads to vascular structural changes which results in hypertension.²⁰

Increase in blood pressure is greatest when the obesity is of abdominal distribution. Factors linking obesity to increase in blood pressure include

- 1) Direct effects of obesity on hemodynamics.
- 2) Mechanism linking obesity and an increase in peripheral vascular resistance: endothelial dysfunction, insulin resistance, sympathetic nervous over activity, substances released from adipocytes (IL-6, TNF- α).²¹
- 3) Obesity is associated with higher circulating levels of insulin (a consequence of insulin resistance) and consequently with enhanced renal retention of sodium, resulting in increased blood pressure.²²

Excess of adipose tissue augments cardiac output, stroke volume, left ventricular filling pressure and expands intravascular volume. There is increased

prevalence of high blood pressure associated with obesity results from a discrepancy between raised cardiac output and a relatively normal arterial capacity.²³

CONCLUSION

The conclusions of our study were:

- Sedentary lifestyle associated with statistically increase in anthropometric parameters

such as Body Mass Index, Waist Hip Ratio when compared between 3 groups.

- There was a positive correlation between Body Mass Index, Waist Hip Ratio with

Pulse Rate, Systolic and Diastolic Blood Pressure.

Further research is recommended to understand how genes and gene-environment interaction leads to changes in sedentary life. A better understanding of ethnic/racial differences in the development and progression of various complications in sedentary lifestyle is needed. Hormonal assay and lipid profile estimation along with fat parameters would have given a better understanding about sedentary life style and its consequences.

We need to evaluate the strategies and efficacy of physical activity in various diseases.

Those who are sedentary, an exercise program are an excellent way to significantly improve their health. Maintaining a healthy lifestyle, including exercise, will result in

increased energy levels throughout working period. The benefits of regular physical activity are numerous, people who exercise live longer and healthier.

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Ethical Clearance:- was taken from the institution

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A Cross-sectional Study to Determine Prevalence of Use of Tobacco among Male Medical Students in SIMS Hapur, U.P

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ABSTRACT

Objectives: To ascertain if use of tobacco is a major health problem among medical students and to find out the factors associated with the use of tobacco. **Materials and methods:** A cross-section study was done on 200 undergraduate male medical students using a pre-designed, pre-tested questionnaire to know about the problem and various correlates of the tobacco use. Data was collected and analyzed by using SPSS software. **Results:** Among the tobacco users (42.0%), smoking was found in 57.1% and tobacco chewing in the form of guttkha, khaini, gulmanjan (locally available forms of tobacco) in 15.5% of students as the predominant form of tobacco use. The mean age of our sample was 22.22 years. There was familial aggregation of the use of tobacco. The factors initiating the use of tobacco were usually peer pressure. **Conclusion:** tobacco use is a significant problem among the male medical students and we need to take steps to stop its use so as to prevent them from being exposed to its hazardous effects. This will also make their role in the advocacy of the smoking cessation activities more trustworthy.

Keywords: Medical student, smoking, tobacco.

INTRODUCTION

Use of tobacco is the second major cause of death in the world¹. Each year, tobacco products kill some 5 million people worldwide and this number is increasing. WHO estimates that, unless current smoking patterns are reversed, tobacco will be responsible for 10 million deaths per years, by the decade 2020-2030, with 70% of them occurring in developing countries. Scientific evidence has been accumulating since the early 1950's and more than 25 diseases are now known or strongly suspected to be casually related to smoking²⁻⁴.

Smoking and health are intimately related and thus, smoking among future health care personnel

such as medical students is an important issue. Medical students are generally in the age group 17-25 years. This is the time when lifestyle patterns, both healthy and unhealthy, are formed. Moreover, as future doctors, they are the role models for the lay persons in regard to smoking habits. As medical students, their behavior regarding the use of tobacco equals or even exceeds the rate in non-medical peer group. WHO has included prevalence of tobacco use among as physicians, nurses, other health workers, etc. among the indicators which should be monitored by each country⁵. Therefore, the purpose of present study was to evaluate the use of tobacco in the male medical students and to elucidate the factors associated with its use.

OBJECTIVES

To ascertain if use of tobacco is a major health problem among medical students and to find out the factors associated with the use of tobacco.

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MATERIALS & METHODS

A cross-sectional study was done among the male medical under graduate students of Saraswathi Institute of Medical Sciences. The students were briefed about the purpose of the study and verbal consent was obtained. The participants were administered pre-designed and pre-tested questionnaire in separate classes on different days. All the male college students of different classes present were selected for the study. Anonymity and confidentiality was assured. Two hundred and five (205) filled up questionnaires were received out of which five was rejected as they were not filled up completely, so 200 sample size was taken. The information regarding age, precipitating factor for the initiation, form of tobacco product used, pattern of tobacco use and use of tobacco by their family members, knowledge about tobacco health hazards was thus collected.

The following definitions were used: **Ever user** was defined as having used tobacco even once in their lifetime. **Never user** will be defined as having not used tobacco even once in life time.

Study period

The survey was conducted from August to September 2015.

Statistical analysis

The data collected was tabulated, coded and analyzed using Microsoft word and SPSS for windows version 8.1

OBSERVATION AND RESULTS

The results in the present study revealed that, out of total students (n = 200), 84 (42.0%) were found to be current tobacco users. The mean age of study subjects was 22.22

1. Demographic characteristics

Characteristic	Ever users	Non users
Age		
18-20	19(32.8)	39(66.2)
21-23	30(37.0)	51(63.0)
24-26	35(57.4)	26(42.6)
Total	84(42.0)	116(58.0)

2. Year wise distribution of current smokers

Characteristic	N=84	Percent (%)
First year	11	13.1
Second year	16	19.0
Third year	26	31.0
Fourth year	35	36.9

Among these 84 students who were current smokers, the percentage of using tobacco in any form varied from 13.1% to 36.9% from first year to final year.

3. Type of smoking

Characteristic	N=84	Percent (%)
Cigarette	48	57.1
Guttka/khaini	13	15.5
Both	23	27.4
Total	84	100

Among these 84 students, 48 students i.e. 57.1% were found to be consuming tobacco as cigarettes, while the use of smokeless tobacco in the form of guttkha/khaini was found in 15.5% and 27.4% were found to consuming tobacco in both form.

4. Reason for starting tobacco and family history of tobacco use

Characteristic	N=84	Percent (%)
Peer pressure	48	57.1
After seeing actor	15	17.9
To relive tension/stress	21	25
History of family member using tobacco		
Yes	48	57.1
No	36	42.9

An enquiry into the factors leading to the initiation of the use of tobacco revealed that it was mostly initiated due to peer pressure (57.1%). The factors responsible were reliving stress/tension and seeing actors i.e. 25% & 17.9%. [Table 4]

Familial aggregation of tobacco use was also quite evident in the present study, tobacco use was found to be more common among students belonging to families where tobacco use was prevalent. [Table 4]

5. Source of information

Characteristic	N=84	Percent (%)
Books/ newspaper	29	34.5
TV	19	22.5
Internet	12	14.3
All of the above	24	28.6

We also came to a significant conclusion through this study that every student knew about the health hazards of tobacco use. Mostly gained this knowledge from books/newspaper, T.V and internet.

DISCUSSION

Various efforts have been made in the direction of assessing the effect of various factors on the smoking behavior among the medical students in different parts of the world. With the increasing use of the smokeless forms of tobacco as well, it has become important to bring out the data regarding the overall use of tobacco and its various correlates. Therefore, we have tried to find out the overall burden of tobacco use among the medical students, who may serve as the role model for the patients with respect to the smoking cessation activities.

The proportion of current tobacco users in our study sample was found to be 42.0%, with the smoking constituting 57.1%. In the present study, overall prevalence of smokers was 24%. The overall prevalence of current use of tobacco in the population above 10 years of age was observed to be 34.4% in Uttar Pradesh (50.0% among males and 9.1% among females), while that of current smoking was 18.0% (27.5% among males and 2.6% among females) in Uttar Pradesh⁶.

The percentage of current smoking in our study sample is comparable to that in the general population and is a matter of serious concern. The findings of present study were also comparable to results of similar study done in the neighboring country Pakistan, which revealed a 22.0% of smoking among male medical students⁷.

A report from the study in 15 medical schools from nine Asian countries revealed that the prevalence of daily smoking in males varied from 4 to 11% from first year to final year, of occasional

smoking 18 to 24%, respectively indicating that the use of tobacco does not respect international boundaries⁸. The figures obtained were a reflection of an average of all the nine countries and are therefore less specific and comparable with our study which is more localized. The corresponding figures of tobacco use is similar to studies done in Kerala (14.1%)⁹, Orissa (12.4%)¹⁰. The study carried out in West Bengal showed the prevalence only to be 3.2%¹¹. The low may be due to the fact that the study was conducted only for the newly admitted medical students and other unidentified factors.

In the present study, 57.1 % of the students developed smoking habit due to peer pressure. Some other studies have demonstrated a significant relationship between the presence of a smoker in the family and picking up the habit in the present as well as other studies^{7,12,13} further substantiating the familial aggregation of the tobacco use.

The overwhelming effect of peer pressure on the initiation of tobacco use is a matter of serious concern because it is very difficult to prevent the effect of this factor in an age group which likes the company of their friends as well as is influenced maximally by them, more so while living in a hostel away from their homes. The web of causation of this particular factor is very complicated and it has a direct as well as an indirect and synergistic effect with other factors.

The effect of an actor using tobacco products on TV or in a movie was also a significant contributory factor in the tobacco users with 38% answering in affirmative.

CONCLUSION

We took medical students as the focus of our survey, as the approach and credibility of future physician as treatment providers for smoking and tobacco related disease may be influenced by their smoking habits. The results in our study are discouraging and reveal that the medical knowledge regarding the ill effects of tobacco use has not been able to check its use. We need to reduce the use of tobacco among medical students so that the general public can accept them as their role models in the smoking cessation activities. The social acceptability of tobacco use contradicts the strong health education

and health promotion messages discouraging it. This may require legislative steps banning the use of tobacco in the college campus, but more importantly, specific training and counseling of the students on a regular basis to help them overcome the desire to indulge in this deadly habit.

Limitation: None

Conflict of Interest: None

Fund: None

Ethical Clearance: Taken

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Comparative Study between Dynamic Condylar Screw and Locking Compression Plate in Distal Femur Fractures in Adults

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Introduction - Distal femoral fracture accounts for 6% of all femur fractures.

Objective – to study the comparison between Dynamic Condylar Screw (DCP) and Locking Plate Fixation (LCP) in the treatment of distal femoral fractures

Methodology- 30 patients with distal femur fractures were made into two groups, one with DCP and other with LCP were assessed for outcome in terms of post-operative complications and analysed using neer score.

Observations – According to the Neer scale, out of the total patients; 11 patients (36%) achieved excellent score (>85 points) in which 7 patients were of DCS group and 4 cases belong to LCP group, 12 patients (40%) achieved good score (70-85 points) in which 5 cases belong to DCS group and 7 patients were of LCP group, 6 cases (20%) achieved fair score (55- 69 points) in which 2 cases belongs to DCS group and other 4 cases belong to LCP group and the rest 1 case (4%) landed in the poor score (<55 points) and the case was of DCS group

Conclusions- DCS can be used in distal femur fractures only when there is an uncomminuted bone stock of atleast 4 cm above the intercondylar notch.

Keywords: *Dynamic Condylar Screw, Locking Compression Plate, Distal Femur Fractures*

INTRODUCTION

Trauma is the greatest health hazard in modern era. High velocity vehicular traffic in this rapidly advancing modern age has resulted in broken bones in different patterns. Fractures of the shaft of femur are a major cause of morbidity and mortality in patients with lower extremity fractures. Fractures of the distal part of the femur are difficult to treat and present considerable challenges in management. Severe soft tissue damage, comminution, extension of fracture into knee joint and injury to the extensor mechanism lead to unsatisfactory results in many

cases whether treated surgically or non surgically. Because of the proximity of these fractures to knee joint, regaining full knee motion and function may be difficult. The presence of hinge joints at the knee and the ankle allows no adjustment for rotatory deformity after fracture. (Donald, 1996)

Distal femoral fracture accounts for 6% of all femur fractures. There is a bimodal distribution of fracture based on age and gender. Most high energy Distal femoral fractures occur in males between 15 and 50 years of age while most low energy fractures occur in osteoporotic women more than 50 years. The most common high energy mechanism of injury is traffic accident (53%) and the most common low energy mechanism is fall at home (33%). Distal femoral fractures are more likely in patients who have osteoporosis and in patients who have had prior Knee Replacement Surgery (peri-prosthetic). Such patients

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have bone which is often weaker than in normal patients and therefore is more likely to fracture.

AIMS AND OBJECTIVES

The present study will be undertaken to study the comparison between Dynamic Condylar Screw and Locking Plate Fixation in the treatment of distal femoral fractures with following aims and objectives:

1. To compare the rigidity of fixation achieved.
2. To compare the restoration of anatomical joint surface.
3. To compare clinical and radiological union in optimum position.
4. To compare complications encountered, if any.
5. To assess and compare the functions of the knee joint.

MATERIAL & METHODS

The present study was conducted on the patients of distal femoral fractures admitted to Department of Orthopaedics, at Government Medical College, Rajindra Hospital, Patiala. These distal femoral fractures were treated either with DCS or with Locking Compression Plate. Patients were evaluated in the emergency with attention to ABC of trauma care i.e. Airway, Breathing and Circulation. Primary survey of the patient was conducted regarding the presence of other associated injuries and complications. Primary treatment was given in the form of splintage, antiseptic dressing, antibiotics, analgesics, anti-inflammatory drugs and intravenous fluids. Complete biodata of the patients was recorded and detailed history was taken. Routine investigations were done and initial radiographs taken in anteroposterior and lateral directions.

Tibial pin traction was given in the emergency, till the patient is fit for surgery after complete medical and cardiology checkup.

Dynamic condylar screw was inserted proximal to the joint line at junction of anterior one-third and posterior two-third taking into account the 25-degree inclination of medial wall of medial condyle. Locking Compression Plate Fixation, In early postoperative period, the extremity was elevated on a splint. After 10 days patients were encouraged to carry out active movements, increasing them progressively. For the first 3 to 4 weeks attention was focused in gaining

the ability to extend the knee. After that flexion was increased gradually. At 6 weeks interval, patients were assessed clinically and radiologically. Active exercises and partial weight-bearing were advised. After that patients were assessed every 4 weeks for assessment of union and restoration of function. The final results will be assessed according to the criterion of Neer et al (1967).

RESULTS

In our study of 30 cases, we have two peaks at 41-50 years and more than 61 years with age range 21-60 years. In DCS group, most of our patients were in age group 41-60 years with 46% of patients in 41-50 years age group and 40% in 51-60 years age group. In LCP group, 40% of the patients were in age group more than 61 years. Out of 30 cases, there were 25 males and 5 were females (5:1). Most of the patients in both the DCS group (80%) and LCP group (87%) were males, which can be attributed to more outdoor activity of males. Most of the patients in DCS group (67%) and LCP group (60%) were of lower middle socioeconomic status. (Table 1)

16 patients (54%) had involvement of right femur and 14 patients (46%) had involvement of the left femur and they were evenly distributed in both the groups. Mode of injury in 27 patients (90%) was road side accident. In remaining 3 cases, mode of injury was fall from height and they were evenly distributed in both the groups. Most of the cases (74%) were of simple type of fractures. However, there were 8 cases (26%) who suffered compound type of fractures. Among 8 cases of compound fractures, 2 cases were in DCS group and 6 cases were in LCP group. (Table 2)

In our case series of 30 patients, 16 cases (54%) sustained A type and 14 cases (46%) suffered type C supracondylar fracture as per AO classification. In DCS group, most (80%) of the patients had A type of fracture. Among A type of fractures, 8 patients were in A1 subtype and 2 patients in each A2 and A3. and the rest 3 cases were of C type of fractures and all the fractures were of C1 subtype. In LCP group, most (75%) of the patients had C type of fractures. Among the C type of fractures 4 cases were of C3 subtype, 5 cases were of C2 subtype and 1 case was of C1 subtype the rest 4 cases had A type of fractures. Out of 4 patients, 2 cases were of A2 subtype and 1 case was in each A1 and A3 respectively.

14 patients (46%) were allowed partial weight bearing in 9-11 weeks, among these 14 patients, 8 cases belong to DCS group and 6 cases belong to LCP group. (TABLE 4)

As per the clinical and radiological studies, we were able to achieve bony union in all the patients except for 1 case (3%) of DCS group. There was sufficient callus in 20 patients (60%) and in 9 cases (27%) callus was present but it was not circumferential. As mentioned above, one case of DCS had insufficient callus and the case was finally labeled as non union. (TABLE 5)

As per final follow up, movements of knee joint showed that 7 patients (21%) had full (130° or above) knee movements in which 4 cases belong to DCS group and 3 cases belong to LCP group. (TABLE 6)

According to the Neer scale, out of the total patients; 11 patients (36%) achieved excellent score (>85 points) in which 7 patients were of DCS group and 4 cases belong to LCP group, 12 patients (40%) achieved good score (70-85 points) in which 5 cases belong to DCS group and 7 patients were of LCP group, 6 cases (20%) achieved fair score (55- 69 points) in which 2 cases belongs to DCS group and other 4 cases belong to LCP group and the rest 1 case (4%) landed in the poor score (<55 points) and the case was of DCS group. (TABLE 7)

DISCUSSION

In our study of 30 cases, we have two peaks at 41-50 years and more than 61 years with age range 21-60 years. The present study does show a biphasic age distribution of the patient population. (Bell et al, 1992). In DCS group, most of our patients were in age group 41-60 years with 52% patients in 41-50 years age group and 32% in 51-60 years age group. In LCP group, 40% of the patients were in age group more than 61 years. Age distribution in two groups is statistically significant (p 0.039**).

Time for initiation of partial weight bearing was different in all cases depending upon the implant used and the nature of fracture. In our case series of 30 cases; 14 patients (46%) were allowed partial weight bearing in 9-11 weeks. These patients were extremely cooperative in the post operative rehabilitation period and callus formation was seen in the x-rays. Among these 14 patients, 8 cases belong to DCS group and 6 cases belong to LCP group. Another

10 cases (30%) were allowed partial weight bearing in 12 to 14 weeks. Among these 10 cases 5 patients were in LCP group and 5 cases were in DCS group.

Regarding union in this series, bony union was achieved in all the cases except for 1 case in DCS group. 20 patients (60%) belonging to both the groups had sufficient circumferential callus with 9 other cases in which callus was present but it was not circumferential.

As far as knee movements are concerned in our study, 7 patients developed full (130 or above) knee movements, among these 7 patients 4 cases were belong to DCS group and 3 cases belong to LCP group. Another 11 patients had knee movements between 100-129, Out of these 11 cases 7 cases belong to DCS group and 4 cases belong LCP group. Another 7 patients had knee movements between 80 to 99. Out of these 7 cases 4 cases belong to LCP group and 3 cases belong to DCS group. In rest of the 5 cases, 4 cases had range of knee motion between 60 to 79 degrees and all the 4 cases belong to LCP group. And the last case which belong to DCS group had little range of motion as this case went into non union. The range of knee motion is achieved better in DCS than LCP. The reason is that most of the cases in LCP were comminuted fractures with intraarticular extension and comminution, 40% of the fractures were of compound type and 32% of the patients were elderly patients with osteoporotic bone. In our institute we used open technique with long parapatellar retinacular incision and this may have led to quadriceps adhesions resulting in knee stiffness with less range of motion of knee joint than DCS with plate. Statistically, when both the groups were compared as per table given below, p value is highly significant and it is 0.019.

According to the Neer scale, 7 patients had excellent score (>85 points) in DCS group as compared to 4 cases in the LCP group. We were able to achieve good results in 12 patients in which 5 cases were of DCS group and 7 cases were of LCP group. There were 6 patients in which we were able to get fair results. Among these 6 patients, 2 were of DCS group and 4 cases were of LCP group. The only one case with poor result belong to DCS group in which we were not able to unite the fracture due to deep infection as explained earlier. So, DCS group had better results than LCP for Neer score. Statistically when the two groups were compared with Neer scale, p value is

highly significant as per the table given below and p value is found to be statistically significant and value is 0.0266.

TABLE-1 BIO-SOCIAL CHARACTERISTICS

Bio-Social Characteristics	DCS Group (n=15) N (%)	LCP Group (n=15) N (%)
Age (in Yrs)		
21-30	1	3
31-40	1	2
41-50	7	2
51-60	6	3
Gender		
Male	12	13
Female	3	2
Socio-economic class		
Upper	2	1
Upper middle	2	3
Lower middle	10	9
Lower	1	2

TABLE-2: MECHANICS OF INJURY

Mechanics of Injury	DCS Group (n=15) N (%)	LCP Group (n=15) N (%)
Side involved		
Right	8	8
Left	7	7
Mode of injury		
Road side accident	13	14
Fall from height	2	1
Type of fracture		
Simple	13	9
Compound	2	6

TABLE 3: AO CLASSIFICATION OF FRACTURES IN DCS GROUP

Type of fracture	DCS Group (n=15) N (%)	LCP Group (n=15) N (%)
A1	8	1
A2	2	2
A3	2	1
B1	-	-
B2	-	-
B3	-	-
C1	3	2
C2	-	5
C3	-	4

TABLE 4: TIME FOR PARTIAL WEIGHT BEARING IN DCS GROUP

Weight bearing	DCS Group (n=15) N (%)	LCP Group (n=15) N (%)
9-11 weeks	8	6
12-14 weeks	5	5
14-18 weeks	1	4
>18 weeks	1	-

Table 5: BONY UNION (CLINICAL AND RADIOLOGICAL) IN DCS GROUP

BONY UNION	DCS Group (n=15) N (%)	LCP Group (n=15) N (%)
Sufficient circumferential callus	10	10
callus present but not all around	4	5
insufficient callus	1	0

TABLE 6: RANGE OF KNEE MOVEMENTS IN DCS GROUP

KNEE MOVEMENTS	DCS Group (n=15) N (%)	LCP Group (n=15) N (%)
Full (130 or above)	4	3
100-129	7	4
80-99	3	4
60-79	-	4
<60	1	-

TABLE 7: NEER SCORE IN DCS GROUP

Total score	DCS Group (n=15) N (%)	LCP Group (n=15) N (%)
Excellent(>85)	7	4
Good (75-85)	5	7
Fair (55-69)	2	4
Poor(55)	1	-

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CONCLUSION

LCP is the implant of choice in comminuted fractures of distal end of femur and in elderly patients with osteoporotic bone. The screw head gets locked to the plate and it acts as one construct, thus increasing the holding power of the implant, making it an implant of choice in osteoporotic bone and in comminuted fractures with little bone stock. In spite of the worst fracture anatomy of the comminuted fracture of distal femur and the poor quality of bone in elderly patients, this can provide better post operative range of knee motion with overall better Neer score, achieving bony union in all the cases. In contrast, DCS can be used in distal femur fractures only when there is an uncomminuted bone stock of atleast 4 cm above the intercondylar notch.

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Chronic Kidney Disease: Relation of Atherogenic Lipid Ratios with Disease Progression and GFR

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ABSTRACT

Background and objectives: Dyslipidemia contributes to the high risk of CVD in CKD. Measuring the ratios of LDL/HDL, TC/HDL and TG/HDL is better than just detecting dyslipidaemia, particularly when LDL levels are not elevated. Since a very large number of patients have early asymptomatic CKD, it is necessary to do a stage wise comparison of the atherogenic risk. This study was therefore carried out to study the relationship of the atherogenic lipid ratios with severity of CKD and the corresponding decline in GFR.

Methods: KFT, GFR and lipid profile were estimated in four age and sex matched groups i.e. 3 groups of CKD severity based on the decline in their GFR, having 19, 42 and 39 patients respectively; and a group of 100 healthy controls. Group comparison of the atherogenic lipid ratios was done. Correlation of plasma lipids and lipid ratios with KFT and GFR was obtained.

Results: CKD patients had significant dyslipidaemia, particularly hypertriglyceridaemia with reduced HDL, but no significant alteration in LDL. Atherogenic lipid ratios were increased in all stages of CKD compared to controls. Of these, TG/HDL was the most effective, showing significant difference in both the middle and the later stages from the earlier stages. GFR correlated positively with HDL and negatively with triglycerides, TG/HDL and TC/HDL.

Interpretation and conclusion: Risk of CVD is high even at the earlier stages of CKD and this risk is best measured by the TG/HDL ratio

Keywords: CKD, CVD, Dyslipidemia, Atherogenic lipid ratios

INTRODUCTION

Chronic kidney disease (CKD) is a major health problem worldwide^{1,2}, including in India³. In Bhopal, the average crude and age adjusted incidence rates of end stage renal disease was found to be 151 and 232 per million respectively⁴.

CKD includes a spectrum of differ pathophysiologic processes associated with abnormal kidney function and a progressive decline in glomerular filtration rate (GFR)⁵. The National Kidney Foundation, Kidney Disease Outcomes Quality Initiative (KDOQI) defined CKD as either kidney damage for ≥ 3 months or $GFR < 60\text{ml/min/1.73 m}^2$ for ≥ 3 months. Kidney damage manifests by either abnormality in kidney pathology or a marker

of kidney damage, mainly persistent proteinuria. CKD is classified into five stages of severity based on the decline in GFR⁶.

CKD is associated with dyslipidemia⁷, which contributes to the high risk of cardiovascular disease (CVD)^{8,9}. Deranged LDL levels are the primary target for treatment¹⁰, but lipid ratios identify increased risk in situations where LDL levels are below target range. Measuring the ratios of LDL/HDL and total cholesterol (TC)/HDL gives a better measure of the atherogenic risk^{11,12}. A higher ratio may be due to an increase in the atherogenic numerator or a decrease in the anti-atherosclerotic denominator, or both¹³. In addition, TG/HDL ratio has recently emerged as the most powerful independent predictor of CVD¹⁴.

Studies on the relationship of dyslipidaemia and atherogenic risk with severity of CKD and consequent decline of GFR are few. Lack of awareness in early asymptomatic CKD makes patients ignore their risk of CVD¹⁵. A stage wise comparison would reveal the risk of CVD at the early stages. This study was therefore carried out to study the relationship of atherogenic lipid ratios TC/HDL, LDL/HDL and TG/HDL with severity of CKD and the corresponding decline in GFR.

MATERIAL & METHODS

This study was conducted at L.N. Medical College and J.K. Hospital, Bhopal over a six month period from July to December 2014 after prior approval of the Institutional Ethical Committee. Informed written consent was obtained from all the study subjects. The subjects included 100 hospital patients of CKD along with 100 healthy controls without family history of kidney disease taken from the general population in the vicinity of the hospital. Sample size was calculated based on a previous study by Raju DSSK et al taking α error 5%, β error 20% and 80% power of the study¹⁶.

Diagnosis of CKD was established on the basis of history, examination and investigations. CKD patients with estimated GFR adjusted for age and sex < 100 ml per minute per 1.73 m² were included in the study. Patients of liver diseases, nephrotic syndrome, acute renal failure or azotaemia, CKD with abnormal cardiac function, CKD treated with renal transplantation, those on drug therapy that interferes with serum lipid levels and those with serum TG \geq 400 mg/dl were excluded from the study.

The staging guidelines of Kidney Disease Outcomes and Quality Initiative (KDOQI)⁶ were used to make three groups of CKD severity. The groups were - Group A-1 (including stage 1 & 2 having GFR \geq 60 ml/min/1.73m² (n=19)), Group A-2 (including stage 3 & 4 CKD with GFR 15-59 ml/min/1.73m². (n=42)) and Group A-3 (stage 5 CKD having GFR less than 15 ml/min/1.73m² or on dialysis (n=39)).

All the four groups i.e. three groups of CKD; A-1, A-2 and A-3 and control group B were age and sex matched. Overall, all four groups were between 21-65 years of age. A-1 had 11males and 8 females, A-2 had 25 males and 17 females, A-3 had 23 males and 16 females and B had 59 males and 41 females.

Early morning venous blood samples were collected after overnight fasting. Electrolytes were estimated by Roche electrolyte analyzer. All other parameters were measured using Accurex Kits on Biosystem's automated analyzer A25. HDL was measured by precipitation method and VLDL and LDL were measured by calculation. Early morning urine samples were tested by dipstick method for proteinuria. GFR adjusted for age, sex was estimated from the measurement of serum creatinine on an early morning sample as follows¹⁷-

$$\text{Estimated GFR} = 186 \times (\text{serum creatinine})^{-1.154} \times (\text{Age})^{-0.203} \times (0.742 \text{ if female}) \text{ (ml/min/1.73m}^2\text{)}$$

Statistical analysis was done using SPSS version 16. Student t test was used to compare KFT, GFR and lipid profile of CKD with controls. One way ANOVA was applied to compare mean values of atherogenic lipid ratios across all four groups i.e. healthy controls and three groups of CKD severity. Bonferrini correction was applied for multiple group comparison. Correlation of KFT and GFR with serum lipids & atherogenic lipid ratios were obtained.

RESULTS

Proteinuria by dipstick method was not detectable in controls, while it was detected in 3 cases in group A-1, 38 cases in group A-2 and all 39 cases in group A-3.

Serum creatinine, urea and potassium were significantly higher and GFR was significantly lower in CKD as compared to controls (Table 1). Serum sodium was not significantly altered. Serum cholesterol, triglycerides and VLDL were significantly higher and HDL was significantly less in CKD as compared to controls. LDL was not significantly altered.

The atherogenic ratios LDL/HDL, TC/HDL and TG/HDL were significantly higher in all three groups of CKD compared to healthy controls (Table 2). When one CKD group was compared to the other, TG/HDL was significantly higher in the middle and later stages compared to the earlier stages. TC/HDL ratio was significantly higher in A-3 versus A-1, while LDL/HDL did not show significant difference with severity of CKD.

TG/ HDL showed significant negative correlation with GFR and significant positive correlation with urea, creatinine and potassium (Table 3). TC/HDL showed significant negative correlation with GFR and significant positive correlation with urea. LDL/ HDL did not show any significant correlation. TG and VLDL had significant negative correlation with GFR and significant positive correlation with urea, creatinine and potassium. HDL had significant positive correlation with GFR and significant negative correlation with urea and creatinine. TC and LDL did not show any significant correlation.

DISCUSSION

Dyslipidemia is one of the important risk factors of CVD¹⁸ in CKD. In our study, CKD patients had significantly altered lipid levels, particularly hypertriglyceridaemia. Hypertriglyceridaemia is found early in CKD due to increased liver synthesis and decreased catabolism of TG rich lipoproteins. The impaired catabolism reflects the posttranslational modification of apolipoproteins by CKD-related oxidation, glycation, carbamylation¹⁵ and leads to highly atherogenic small dense LDL particles¹⁹.

Raju et al, like us, reported alterations of lipid profile in CKD without significant alteration in LDL¹⁶. Unlike the general population, in CKD, the overriding risk for greater CVD is not increased LDL¹⁵. Hence, risk assessment based exclusively on LDL is not optimal²⁰, particularly in individuals at intermediate risk²¹, where the atherogenic small dense LDL particles are found in association with high TG and decreased HDL²².

The anti-atherogenic effects of plasma HDL depend on its' ability to accept cholesterol and provide anti-oxidative and anti-inflammatory functions. CKD may confound the reverse cholesterol transport and derange enzymes and transfer proteins required for the anti-oxidative functions of HDL¹⁵.

High TG/HDL ratio, as in our study, is a high risk for CVD^{14,23}. Millan et al reported, like us, that the risk of CVD increases with hypertriglyceridaemia,

high TC/HDL and LDL/HDL¹¹. High TG generates more small dense LDL during lipid exchange and lipolysis¹⁹.

Di Angelantonio et al, like us, compared the risk of CVD in different stages of CKD but with coronary heart disease as the principle outcome event²⁴. Their prospective population based cohort study was demanding in terms of time and resources. Our study provided essentially similar finding with a convenient model.

In our study, atherogenic lipid ratios were all significantly higher than controls even at the earlier stages; and this difference became more pronounced with severity of CKD. Di Angelantonio et al reported similarly that events of CVD were significant even at the earliest stage of CKD²⁴.

In our study, TG/HDL was the best ratio for comparing CKD groups among themselves, as it was significantly higher in both the middle and later stages versus the earlier stages. Lemos da Luz et al reported that a TG/HDL ratio > 4 is a powerful predictor of CVD risk¹⁴. This ratio was higher than 4 even at the earlier stages of CKD.

The primary prevention risk level of the other ratios TC/HDL and LDL/HDL was reported in men by Millan et al to be greater than 5 and 3.5 respectively¹¹. In our study, TC/HDL was equal to 5 at the earlier stages, but LDL/HDL was 3.5 only in the later stage.

Unlike LDL/HDL, both TG/HDL and TC/HDL correlated significantly with GFR and urea. Zhang L et al reported similarly that TG/HDL correlates significantly with GFR²². Tsimihodimos et al reported that uremic patients have a predominance of the atherogenic small, dense LDL particles⁸.

In conclusion, we found that the risk of CVD is high even at the earlier stages of CKD and this risk is best measured by the TG/HDL ratio.

Table 1: Comparison of CKD overall with healthy controls

Test	Mean Grp A (CKD)	Mean Grp B (Control)	Mean difference	95% CI	p value (Sig)
Sr. Creatinine(mg%)	4.54	0.80	3.74	2.91 - 4.57	<.001 *
Sr. Urea(mg%)	103.7	30.5	73.2	60.3 - 86.2	<.001 *
Sr. Na+ (mEq/L)	139.1	137.7	1.4	-.18 - 2.9	.082
Sr. K+(mEq/L)	4.47	4.08	.39	.19 - .59	<.001 *
GFR (ml/min/1.73m ²)	29.6	99	-69.4	-74.75 - -64.1	<.001*
Sr. Cholesterol(mg%)	180.7	168.6	12.1	1.7 - 22.6	0.022 *
Sr. TG(mg%)	217.4	115.9	101.5	90.1 - 112.9	<.001 *
Sr. VLDL(mg%)	43.5	23.2	20.3	18.0 - 22.6	<.001 *
Sr. HDL(mg%)	33.3	48.9	-15.7	-17.8 - -13.5	<.001 *
Sr. LDL(mg%)	103.9	96.5	7.5	-1.3 - 16.2	.093

Sr= serum, sig*= significant

Table 2: Comparison of Atherogenic lipid ratios with severity of CKD

	B Control	A-1 (CKD) Stage I & II	A2 (CKD) Stage III& IV	A3 (CKD) Stage V	Group Comparison	Mean diff	95% CI	p value (Sig*)
LDL/HDL	2.0	2.9	3.3	3.5	B vs A1	-0.9	-1.7 to -.1	.012*
					B vs A2	-1.3	-1.9 to -.7	<.001*
					B vs A3	-1.5	-2.1 to -.9	<.001*
					A1 vs A2	-0.4	-1.3 to .45	1.00
					A1 vs A3	-0.6	-1.4 to .29	.480
					A2 vs A3	-0.2	-.85 to .53	1.00
TC/HDL	3.5	5.0	5.7	6.0	B vs A1	-1.5	-2.4 to -.5	<.001*
					B vs A2	-2.2	-2.9 to -1.5	<.001*
					B vs A3	-2.5	-3.2 to -1.8	<.001*
					A1 vs A2	-0.7	-1.8 to .3	.351
					A1 vs A3	-1.1	-2.1 to -.1	.039*
					A2 vs A3	-0.3	-1.2 to .5	1.00
TG/HDL	2.4	5.2	6.9	7.8	B vs A1	-2.8	-3.9 to -1.7	<.001*
					B vs A2	-4.5	-5.3 to -3.7	<.001*
					B vs A3	-5.4	-6.3 to -4.5	<.001*
					A1 vs A2	-1.7	-2.9 to -0.4	.004*
					A1 vs A3	-2.6	-3.9 to -1.3	<.001*
					A2 vs A3	-0.9	-1.9 to -0.1	.105

Sr= serum, multiple group comparison in One way ANOVA done with Bonferrini correction, sig*= significant

Table 3 : Correlation of KFT & GFR with serum lipids and atherogenic lipid ratios in CKD

	TC	TG	VLDL	HDL	LDL	LDL/HDL	TC/HDL	TG/HDL
Urea	.085 (.40)	.371 (<.001*)	.371 (<.001*)	-2.44 (.01*)	.047 (.64)	.156 (.12)	.210 (.04*)	.639 (<.001*)
Creatinine	.062 (.54)	.377 (<.001*)	.377 (<.001*)	-.203 (.04*)	.013 (.89)	.106 (.29)	.166 (.10)	.574 (<.001*)
Na+	-.073 (.47)	-.108 (.28)	-.108 (.28)	.007 (.95)	-.056 (.58)	-.019 (.85)	-.037 (.72)	.078 (.271)
K+	.002 (.99)	.223 (.03*)	.223 (.03*)	-.005 (.96)	-.053 (.60)	-.063 (.54)	-.024 (.81)	.269 (<.001*)
GFR	-.035 (.73)	-.438 (<.001*)	-.438 (<.001*)	.286 (.004*)	.016 (.87)	-.141 (.16)	-.219 (.03*)	-.799 (<.001*)

Results reported as Correlation coefficient r (p value), *= significant

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A Study on Clinical Profile and Outcome of Malaria Cases at Alluri Sita Ramaraju Academy of Medical Sciences, Eluru, Andhra Pradesh

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ABSTRACT

Background: India contributes about 70% of malaria in the South East Asian Region of WHO. Although annually India reports about two million cases and 1000 deaths attributable to malaria, there is an increasing trend in the proportion of Plasmodium falciparum as the agent. There exists heterogeneity and variability in the risk of malaria transmission between and within the states of the country as many ecotypes/paradigms of malaria have been recognized. **Objectives:** 1. To study the demographic profile of malaria cases. 2. To find the clinical features of malaria cases. 3. To determine the outcome in terms of recovery status of Malaria cases. **Materials and Methods:** The present Hospital based descriptive study was conducted at Alluri Sita Ramaraju Academy of Medical Sciences, Eluru, Andhra Pradesh, during the period from January 2014 to December 2014 by retrospectively. A total of 68 individuals were selected from the hospital records based on the full details available in the case sheet. Results were analysed and necessary statistical tests were applied. **Results:** Out of 68 individuals, 43 were males and 25 were females. Almost all the people presented with the fever. Among malaria cases, 39.7% patients were presented with vomiting and 33.8% were presented with headache in addition to fever ($P>0.05$). About 10.3% patients were diagnosed as malaria test negative but clinically positive Malaria and responded with malaria treatment and discharged. There was no mortality was observed in all the Malaria cases. **Conclusions:** Based on the above study results, Malaria cases means not only having symptoms fever with chills and rigors but also fever with other symptoms like vomiting and headache also can be considered for the screening of malaria. Mixed infection of different malaria species and also associated with Dengue fever is also increasing. Malaria test negative people also can be kept observation for malaria (when the patient is not responding to routine treatment). Our sample is less and there are many studies required for the support of our study findings.

Keywords: Age, Sex, Clinical features, Diagnosis, Complications.

INTRODUCTION

The term malaria comes from 'mal' 'aria', or bad air. The Romans noticed that they got sick when they took walks in the night air. Approximately 110 years ago, Dr. Ronald Ross, a British Medical Officer in Hyderabad, India discovered that mosquitoes

transmitted malaria. He first recognized that the black pigment associated with human disease was also present in the gut of the mosquito and later showed that when infected mosquitoes bit chickens the disease was indeed transmitted. For his studies he received the Nobel Prize in Medicine in 1902.

India contributes about 70% of malaria in the South East Asian Region of WHO. Although annually India reports about two million cases and 1000 deaths attributable to malaria, there is an increasing trend in the proportion of Plasmodium falciparum as the agent. There exists heterogeneity and variability

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in the risk of malaria transmission between and within the states of the country as many ecotypes/paradigms of malaria have been recognized¹. Drug resistance, insecticide resistance, lack of knowledge of actual disease burden along with new paradigms of malaria pose a challenge for malaria control in the country. Considering the existing gaps in reported and estimated morbidity and mortality, need for estimation of true burden of malaria has been stressed. Administrative, financial, technical and operational challenges faced by the national programme have been elucidated. Approaches and priorities that may be helpful in tackling serious issues confronting malaria programme have been outlined.

Malaria case management remains a vital component of malaria control strategies. The WHO guidelines for the treatment of malaria recommend chloroquines first-line treatment for uncomplicated P. vivax malaria with 14 days of primaquine for radical cure. The WHO guidelines for the treatment of malaria recommend that intravenous artesunate should be used for the treatment of severe malaria (falciparum and vivax) for a minimum period of 24 hours. Following initial parenteral treatment, once the patient can tolerate oral therapy, it is essential to continue and complete treatment with an effective oral antimalarial using a full course of an effective ACT (artesunate plus amodiaquine or artemether plus lumefantrine or dihydroartemisinin plus piperaquine) or artesunate (plus clindamycin or doxycycline) or quinine (plus clindamycin or doxycycline)².

The present study was done to evaluate the clinical manifestations and outcome in patients hospitalized with different varieties of plasmodium species of Malaria.

OBJECTIVES

1. To study the demographic profile of malaria cases.
2. To find the clinical features of malaria cases
3. To determine the outcome in terms of recovery status of Malaria cases

MATERIALS & METHODS

The present Hospital based descriptive study was conducted at Alluri Sita Ramaraju Academy

of Medical Sciences, Eluru, and Andhra Pradesh. During the period from January 2014 to December 2014 by retrospectively. A total of 68 individuals were selected from the Alluri Sita Ramaraju Academy of Medical Sciences hospital records based on the full details available in the case sheet. These Malaria patients records were followed with clinical features, diagnosis, complications and recovery status of the patients for the one year among the males and females. Information noted from the records included patient's age, sex, the presenting complaints, findings on clinical examination, hematological and biochemical investigations, treatment given, course in the hospital, and outcome of the disease. Results were analysed and necessary statistical tests like simple proportions and chi square tests were applied.

RESULTS

Table- 1: Age wise distribution of Malaria Cases:

Age	Males	Females	Total
< 15 yrs	5(83.33)	1(16.67)	6 (100%)
15-25 yrs	9(81.81)	2(18.19)	11(100%)
25-35 yrs	12(60.00)	8(40.00)	20(100%)
35-45 yrs	5(71.42)	2(28.58)	7(100%)
45-55 yrs	3(30.00)	7(70.00)	10(100%)
55-65 yrs	8(80.00)	2(20.00)	10(100%)
>65 yrs	1(25.00)	3(75.00)	4(100%)
Total	43(63.23)	25(36.77)	68(100%)

$\chi^2 - 11.4, 6df, p= 0.076$

Out of 68 Malaria patients, 43 (63.23%) were males and 25 (36.77%) were females. Maximum number of people (20) was in the age group of 25-35 yrs of age group.

Table- 2: Signs and symptoms in Malaria cases:

Signs & symptoms	Males	Females	Total
Fever	43(63.23)	25(36.77)	68(100%)
Chills and rigors	26(59.90)	18(40.10)	44(100%)
Rash	2(50.00)	2(50.00)	04(100%)
Vomiting	13(48.14)	14(51.86)	27(100%)
Diarrhoea	4(50.00)	4(50.00)	08(100%)
Body pains	9(64.28)	5(35.72)	14(100%)
Headache	12(52.17)	11(47.83)	23(100%)
Oliguria with ARF	16(76.19)	05(23.81)	21(100%)
Haematuria	5(62.50)	3(37.50)	08(100%)
Icterus	10(71.42)	04(28.58)	14(100%)
Gen.Weakness	10(66.66)	05(33.34)	15(100%)
Cold	04(57.14)	03(42.86)	07(100%)
Cough	06(60.00)	04(40.00)	10(100%)

Out of 68 individuals, almost all the (100%) people presented with fever, 64.7% (44) people were fever with chills and rigors and 39.7% (27) with fever with vomiting. About 33.8% (23/68) patients presented with headache and 5.8% (4/68) Malaria cases presented with rash and cough.

Table – 3: Diagnosis of type of Malaria and other associated illnesses:

Diagnosis	Males	Females	Total
P. Vivax Malaria	6(54.54)	5(45.46)	11(100%)
P. Falciparum Malaria	11(61.11)	7(38.89)	18(100%)
P.Vivax Malaria + P. Falciparum Malaria	6(66.66)	3(33.34)	9(100%)
P.Vivax Malaria + P. Falciparum Malaria + P. Malariae Malaria	10(66.66)	5(33.34)	15(100%)
Clinical Malaria with Sd Bioline Malaria antigen negative	5(71.42)	2(28.58)	7(100%)
P.Vivax + P. Falciparum + P. Malariae Malaria + Dengue	5(62.50)	3(37.50)	8(100%)
Total	43(63.23)	25(36.77)	68(100%)

$\chi^2 - 0.71, 5df, p= 0.09$

Among 68 individuals, 26.4% (18/68) patients were positive for P. falciparum alone, 16.1% were P.Vivax positive alone, 13.2% (9/68) were P. falciparum and P.Vivax and about 11.7% (8/68) patients were positive for P.vivax, p. falciparum, p. Malariae and Dengue.

Table – 4 : Complications in Malaria cases :

Complications	Males	Females	Total
Renal System : (Acute renal failure, Urinary tract infection, Haematuria, Oliguria)	21(75.00)	7(25.00)	28(100%)
Gastro-Intestinal System : (Hepato-Splenomegaly, Hepatitis, Gastritis, Epigastric pain, Anorexia)	20(68.96)	9(31.04)	29(100%)
Respiratory System : (Pleural effusion, Pneumonia, Wheeze, Dyspnoea, Chest pain)	15(71.42)	6(28.58)	21(100%)
Central Nervous System : (Meningitis, Vertigo, Altered sensorium, Epilepsy)	5(62.50)	3(37.50)	8(100%)
Cardio-Vascular : (Shock, Palpitations, Thrombophlebitis, CCF)57.14	7(58.33)	5(41.67)	12(100%)
Sepsis	4(57.14)	3(42.86)	7(100%)
Cerebral Malaria	3(60.00)	2(40.00)	5(100%)

$\chi^2 - 1.19, 5df, p= 0.94$

Out of 68 individuals, about 29 (42.6%) individuals were having gastro intestinal system complications followed by 28 (41.1%) were having renal system complications. Very less proportion of the people 11.7% (8/68) were having central nervous system complications.

Table – 5: Condition of the patient in the hospital

Status of Disease	Males	Females	Total
Recovered	37(67.27)	18(32.73)	55(100%)
Discharged at request	6(46.15)	7(53.85)	13(100%)
Died	0(0.00)	0(0.00)	0(0%)
Total	43(63.23)	25(36.77)	68(100%)

Out of 68 individuals, 80.85 (55/68) Malaria patients were recovered and mortality from the malaria was zero.

DISCUSSION

The present study was conducted at Alluri Sita Ramaraju Academy of Medical Sciences, Eluru, and Andhra Pradesh during the period from January 2014 to December 2014 by retrospectively. A total of 68 individuals were selected from the hospital medical records based on the full details available in the case

sheet. The main purpose of this study is to know the presentation of clinical features among Malaria individuals and also magnitude of different malaria species incidence in our area and also recovery status of such malaria cases in our study.

Out of 68 individuals, almost all the (100%) people presented with fever, 64.7% (44) people were fever with chills and rigors and 39.7% (27) with fever with vomiting. About 33.8% (23/68) patients presented with headache and 5.8% (4/68) Malaria cases presented with rash and cough. Severe and complicated malaria

is usually caused by *P. falciparum* but it has been increasingly observed that *P. vivax* malaria and mixed infection malaria can also cause similar complication and death in occasional patient. However, most of the studies are lacking in accurate malaria diagnosis by PCR and detection of co morbidities which are likely to influence the clinical course of illness. Moreover, no absolute severity criteria exist for *P. vivax* malaria, however, WHO criteria for *P. falciparum* malaria seems to be applicable and had been used by many previous studies from India, Brazil, Papua New Guinea, Indonesia and other parts of the world. The reported severe manifestations included cerebral malaria, hepatic dysfunction, renal dysfunction, severe anaemia³, ARDS, shock, pulmonary edema, haemoglobinuria, hypoglycemia and multiple organ involvement, along with thrombocytopenia which has also been included in many previous similar studies from all over the world^{4,5}.

Out of 68 individuals, about 29 (42.6%) individuals were having gastro intestinal system complications followed by 28 (41.1%) were having renal system complications. Very less proportion of the people 11.7% (8/68) were having central nervous system complications. Accurate identification of the malaria parasite species is important not only for successful treatment, but also to design and develop effective malaria control measures and accurate malaria-epidemiological monitoring. Since, there is only one clinical study which describes difference between clinical presentation, morbidity and mortality pattern of mixed infection *vs P. falciparum* and *P. vivax* monoinfection severe malaria, in which the diagnosis was confirmed by PCR, the present hospital based study using PCR for species diagnosis have specific relevance. This study revealed that mixed infection severe malaria patients had almost similar clinical and laboratory findings to those of severe *P. falciparum* and *P. vivax* monoinfection malaria. However, their subsequent clinical progression to severe illness including MODS and mortality was the highest of the three groups,

In our study, out of 68 individuals, 80.85 (55/68) Malaria patients were recovered and remaining 13 people were discharged on request. There were no deaths in any of the patients hospitalized with *P. vivax* malaria at any of the three centres. A mortality of 6% was noted in children in Bikaner, whereas it was 5% and 0.9% in adults in Bikaner and Mumbai, respectively⁴.

The limitations of this study are as follows: it is a retrospective study with a small sample size and uses data retrieved from the medical records. The problem of mixed infection has not been addressed adequately since this was a retrospective study and PCR is not done routinely at the three centres. A prospective multicentric study with an additional centre in Mumbai is under way and will no doubt clarify the picture better.

CONCLUSIONS

Based on the study results, however, these observations were statistically not significant presumably because of smaller sample size. The incidence of *p.falciparum* increasing and also mixed infection tendencies like malaria with all plasmodium species types except *p. ovale* associated with dengue is also increasing trend in our study. The knowledge of mixed infection is equally important for control measures as well as therapeutic options and future vaccine programme. Thus, every effort to reduce or eliminate malaria burden must also target *P. vivax* and mixed infection along with *P. falciparum* in regions where both these species coexist. No mortality was observed in our study. This important limitation requires a similar multicentric clinico-epidemiological study on a larger population before a general statement can be made firmly.

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Study on Effects of Exclusive Breastfeeding on Immunity of Infants

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ABSTRACT

Objectives: The main aim of this study was to assess the immunity among the infants with exclusive breastfeeding during first six months of the period of infancy by evaluating the pattern of their morbidity especially acute respiratory tract infection (ARI) and diarrhea.

Material and methods: A community based cross sectional study was conducted in the field practice area of Rural Health Center, Shahpur at Patna. A semi-structured questionnaire evaluating characteristic morbidity pattern during infancy and breastfeeding practices were asked to the mothers with infants aged between 6 months to 1 year. Statistical analysis was done by using proportions, mean, confidence interval (CI) and Chi-square test.

Results: 56.6% of the infants were reported to have at least one episode of ARI and 39.1% were reported to have an episode of diarrhea. Mean number of episodes of ARI and diarrhea were 3.46 (3.24 – 3.68, 95% CI), and 2.62 (2.4 – 2.84, 95% CI) respectively. 61.7% of the mothers exclusively breastfed their babies up to six months of their age. Significant relation was found between the lack of exclusive breastfeeding and occurrence of ARI (p value 0.028) and diarrhea (p value 0.007).

Keywords: acute respiratory tract infection, diarrhea, exclusive breastfeeding, infant

INTRODUCTION

Acute respiratory tract infection (ARI) and diarrhea are the common problems among infants. These morbidities account significantly causing 17% and 4% of total infant deaths in India, respectively.¹ The Lancet series on child survival has demonstrated that exclusive breast feeding (EBF) for the first six months and continued breastfeeding for second six months is a highly effective intervention against the three major causes for the child mortality (neonatal sepsis, diarrhea and pneumonia). If universalized, breastfeeding can prevent 13% of all child deaths.²

Infants under the age of one year who breastfed exclusively for at least four months, were less likely to be hospitalized for a lower respiratory tract infection, such as croup, bronchiolitis, or pneumonia, than were their formula-fed counterparts.³ Various morbidity surveys conducted in rural and urban areas in India revealed that ARI and diarrhea were the main cause of illness during the infancy accounting for around 62-68% and 15-43% of the total morbidity respectively.^{4,5} Similarly various prospective cohort studies conducted in both developing as well as developed countries have shown that breastfeeding significantly reduces the frequency, duration and rate of hospitalization of ARI and diarrhea during infancy. Exclusive breast feeding reduces the risk of serious morbidities including diarrhea, respiratory infection and decreased growth by about 70% even after adjusting for some confounding variables.^{6,7,8,9} The benefits can also be counted in terms of reduced

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costs and burden on health care system for infants and children.

In India, breastfeeding is almost universal, but the EBF rate is quite low. The third National Family Health Survey (NFHS III) in India reported that the rate of EBF is 46.3% at 5 months, although there is wide state wise and region wise differences.¹⁰ Health educational intervention targeting the health workers and the mother can greatly improve breast feeding practices in India. The present study aims to investigate the association of lack of exclusive breastfeeding and reduced immunity leading to increased infant morbidity specifically ARI and diarrhea.

MATERIAL & METHODS

A cross-sectional study was carried out in the field practice area of Rural Health Center, Shahpur at Patna. The study was carried out by house to house visit and 120 mother child pairs with a child aged between 6 months to one year from each village were included in the study. A semi structured questionnaire was designed which consisted of three parts: 1) basic characteristics of study population consisting of mothers age, parents educational and occupational status, household income, family type and size, place of delivery pertaining to the study child and parity of the mother, gender and birth weight of the child, 2) Morbidity characteristics of child during the infancy evaluating the total number of episodes of illness, duration of illness and treatment modalities, the clinical records of the infant were checked, 3) Infant feeding practices including initiation of breast feeding, practice of feeding colostrums and use of pre-lacteal feeds, history of exclusive breast feeding up to six month, duration of breast feeding. The purpose of the study was explained to the participants, and informed consent was obtained from all respondents. The statistical measures were means, confidence interval levels, and Chi-square values.

DEFINITIONS OF VARIABLES

Exclusive breastfeeding is defined when the infant receives breast milk only and no other solids or liquids with the exception of vitamins, minerals, medicines or oral rehydration solution. World Health Organization recommends that infants should be exclusively breastfed for the first six months of life.

Pre-lacteal foods refer to non-breast milk feeds given before breastfeeding is initiated such as honey, sugar or mustard oil etc.

Diarrhea is defined as the presence of three or more liquid or semi liquid stools per day accompanied or not by blood, mucus or fever. The total number had to exceed the usual number of daily bowel movements.

Acute respiratory infection is defined as the presence of runny nose or cough for at least two consecutive days plus one or more of the following signs independent of duration: erythematous mucosa, hoarse-cry, respiratory distress or fever.

RESULTS

The sample consists of 120 mothers and their babies with the age group between six months to one year. The basic characteristics were as follows –

Table I: Basic characteristics

Basic characteristics		Number	%age
Age of the mother	< 20 years	16	13.33
	20 – 25 years	72	60
	25 – 30 years	18	15
	> 30 years	14	11.67
Education of the mother	Illiterate	26	21.67
	Primary education	20	16.67
	High school qualification	42	35
	Intermediate	19	15.83
	Graduate	13	10.83
Socioeconomic status	Lower	24	20
	Lower middle	78	65
	Upper middle	18	15
Type of family	Nuclear	46	38.33
	Joint	74	61.67
Parity	Primipara	40	33.33
	Multipara	80	66.67
Place of delivery	Home	38	31.67
	Hospital	82	68.33
Gender of the child	Male	64	53.33
	Female	56	46.67
Birth weight	< 2.5 kg	45	37.5
	> 2.5 kg	75	62.5
Total		120	100

Table 1 shows the basic characteristics of the mothers and their babies of the sample group.

Table II: Morbidity pattern of the infants

Morbidity	Number	Percentage	Mean number of episodes with CI 95%	Mean duration of illness with CI 95%
ARI	68	56.66	3.46 (3.24 – 3.68)	4.26 (4.1-4.42)
Diarrhea	47	39.16	2.62 (2.4 – 2.84)	3.12 (3.02-3.22)

The morbidity patterns of the infants have been shown in the table II. ARI were found to be more frequent than diarrhea. 56.6% of the infants reported

to suffer from one episode of ARI and 39.1% of the infants reported one episode of diarrhea. Mean number of episodes and mean number of the duration of have been shown in the above table.

Table III: Breastfeeding practices of the mothers

	Breastfeeding practices	Number	Percentage
Initiation of breastfeeding	<1 hour	27	22.5
	1-24 hours	75	62.5
	>24 hours	18	15
Colostrum	Given	85	70.8
	Discarded	35	29.2
Pre-lacteal feeds	Yes	78	65
	No	42	35
Exclusive breastfeeding	Yes	74	61.7
	No	46	38.3

The above table (Table III) shows that only 22.5% of the mothers in the study population initiated breastfeeding within one hour of the delivery and 62.5% on the same day while 15% initiated from the next day onwards. More than 70% of the mothers had fed colostrum to their babies and only 29.2%

had discarded colostrum. 65% of the mothers had given pre-lacteal food to their infants. 61.7% mothers had given exclusive breastfeeding to their babies and 67.5% continued breastfeeding for more than one year. These findings are consistent with other studies on breastfeeding in Andhra Pradesh.¹¹

Table IV: Morbidity pattern among exclusive breastfed and non- exclusive breastfed babies

Morbidity		Exclusive breastfeeding	Non-exclusive breast feeding	Total	P value
ARI	Yes	27	41	68	0.028
	No	47	5	52	
Diarrhea	Yes	18	29	47	0.007
	No	56	17	73	
Total		74	46	120	

The above table (Table IV) shows the exclusive breast feeding practices of the mother and its association with the occurrence of ARI and diarrhea. Highly significant association was observed between lack of exclusive breastfeeding and occurrence of ARI

($p=0.028$). The association was also very significant in case of diarrhea ($p=0.007$).

DISCUSSION

The present study focuses on the association

between two important aspects of infant health in India, that is, breastfeeding practices and the immunity of the infants. The status of the immunity is reflected by the morbidity pattern among the infants. The commonest morbidity observed in the present study were acute respiratory tract infection with 56.66% of the infants suffering from at least one attack of ARI followed by diarrhea accounting for 39.16% of the morbidity. These findings are consistent with the other morbidity studies across India. The incidence rate of episodes of ARI was high compared with the diarrhea in our study which was also similar in other studies.^{4,5}

The present study supports the hypothesis that human milk strengthens immunity among infants and it protects against ARI and diarrhea. Two mechanisms may explain this protection: first is the classical immune protection provided by immunoglobulin A, G and M in human milk, as well as by a large array of other milk components that act as ligands for bacteria and viruses, and the factors that finely tune the interaction among these agents and that might also enhance the maturation of the infant's own immune potential. Secondly non breast milk fluids and foods are often contaminated with the pathogens which results in diarrhea and subsequent malnutrition.¹² Several studies demonstrated the protective effect of exclusive breast feeding on ARI and diarrhea^{6,7,8,9}

CONCLUSION

Our study supports the hypothesis that exclusive breastfeeding enhances the immunity of infants and protects against ARI and diarrhea, which are the leading morbidities among infants in rural area. Further explorative studies are required to explain the exact protective mechanism. Public health interventions are required for universal promotion of exclusive breastfeeding. Information, education, and training should be improved targeting exclusive breastfeeding in the community to improve infants' immunity thereby reducing the prevalence and subsequent morbidity due to ARI and diarrhea during infancy.

Acknowledgement: Nil

Conflict of Interest: None

Ethical Clearance: Taken

Source of Funding: Self

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A Cross Sectional Study of Socio-demographic Determinant of Diarrhea among Underfive Children of Rural Area of District-Hapur

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ABSTRACT

Introduction- Diarrhea constitutes one of the major causes of infant mortality and morbidity in developing countries. India is among top 15 countries in number of deaths in underfive children due to diarrhea.

Objective- To study the Socio-demographic determinant of diarrhea among under five children of rural area of district-Hapur

Material and Methods- By using Pre design semi structure questionnaire, a Cross Sectional Study was conducted on 200 children (200 mothers) of 0-5 year aged who attended OPD at RHTC in rural area of Hapur district between September–October 2015.

Result- A total 200 children's were surveyed. The study population comprised of 13 children of 0-12 month age, 68 children of 13-36 month age and 119 children 37–60 month of age. There were 36 children under the age of 5 year suffering from diarrhea within two week prior to the date of interview, thus the overall prevalence of diarrhea was 18%. Diarrhea among children 0-12 month age was 23.1%, 13–36 month age children was 22.1% and 37-60 month age children was 15.1%. Gender distribution show that diarrhea was more in male children 23.4% as compared to female children 11.8%. When enquired about the health seeking behavior during diarrheal illness, majority (47.2%) of cases took treatment by government doctor/hospital and 30.6% consulted unqualified practitioners (quacks). An important finding of the study was that only 2.8% of children took treatment from child specialist and 19.4% of the children were left to their fate and were not given any treatment. Only 33.3% of children received ORS.

Conclusion- Mothers' literacy, socioeconomic status, sanitation and hygiene practice were important determinants of diarrhea.

Keyword- Diarrhea, under five children, health seeking behavior, ORS

INTRODUCTION

Diarrhea is defined as the passage of three or more loose or liquid stools per day. Diarrheal disease

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is the second leading cause of death in children, and is responsible for killing 1.5 million children every year¹.

Diarrhea constitutes one of the major causes of infant mortality and morbidity especially in developing countries. 23% of all deaths among children under five in the South East Asian Region are caused by diarrhea. India is one of the top 15 countries ranked according to the number of deaths in under five due to diarrhea². India alone is responsible

for more than half a million diarrheal deaths. Among all child deaths each year, seven in ten of these deaths are due to diarrhea, acute respiratory infections, malnutrition or combination of these conditions². An estimated burden of diarrhea was 16.5% in under-6 year of children in rural area and mortality due to diarrhea in under 6 year children 9.1%³. Poor environmental sanitation and lack of safe drinking water result into high rate of infections and protein energy malnutrition⁴.

Mother's literacy, family income, feeding practices and environmental conditions are the important determinants of growth and health status of children under five. Diarrhea is one of the common childhood illness affecting growth and survival of Indian children.

It was estimated that about two-third of all deaths by diarrhea in children were attributable to acute watery diarrhea and thus could be prevented by ORT⁵⁻⁶. Moreover, it was advised that all children with diarrhea should be given more to drink than usual, to compensate for losses of fluid through loose stools and that feeding should not be stopped during diarrhea⁷⁻⁸.

So, present study was undertaken to establish the magnitude of diarrhea and to study some of the important determinants of diarrhea among children under five years of age in rural community.

AIMS AND OBJECTIVE

1. To determine the prevalence of diarrheal disease among the under 5 population in rural area of Hapur district.

2. To study the awareness of disease symptomatology and treatment seeking behavior for diarrhea in the study population.

3. To study the knowledge, attitude, practice of mothers regarding ORS and home-based management of diarrhea in under five children in rural area.

MATERIAL & METHODS

Study design-Cross sectional study.

Study duration- Sep – October 2015

Study area- Conducted at RHTC in Pilkhuwa

which is the rural field practice area of the Department of Community Medicine.

Target population: a) children under age 0-5 years living in study area and attending O.P.D.

b) Mothers of children under age 0-5 years living in study area and attending O.P.D.

Inclusion Criteria-

1. Children under 0-5 age living the study site

2. Mother of these children who gave valid informed consent.

Exclusion criteria-

1. Children >5 year of age, living the study site.

2. Mother of study child not giving informed consent.

Sample size and Methodology:All the children/mother of under-five years of age attending the O.P.D at rural field practice area of Department of Community Medicine which is situated at Pilkhuwa district-Hapur during September-October 2015. A total of 205 under five children/mother attended O.P.D, out of which five mothers didn't responded correctly so a total of 200 children were taken as sample size for the study.

Prior to onset of interpersonal face to face interview, written informed consent was obtained from mother of child. Information was obtained from the mothers of children age group 0-5 years giving informed consent by using predesigned semi structure questionnaire. As per the questionnaire, data regarding three parameters i.e. Diarrhea, Health seeking behavior and Knowledge, attitude and practices regarding ORS solution was obtained.

RESULT

A total 200 children's were surveyed. The study population comprised of 13 children of 0-12 month age, 68 children of 13-36 month age and 119 children of 37-60 month age group. There were 36 children under the age of 5 year suffer from diarrhea within two week prior to the date of interview, thus the overall prevalence of diarrhea was 18.0%. Diarrhea among Children 0-12 month age were 23.1% and 13-

36 month age children were 22.1% and 37-60 month age children were 15.74%. Gender distribution show that diarrhea was more in male children 23.4% as compare to female children 11.8%. [Table 1]

Table 1: Characteristics of study subjects

Variable	Characteristics	Diarrhea*present N=36	Diarrhea*absent N=102	Total N=200
Age	0-12 month	3(23.1%)	10(76.9%)	13
	13-36 month	15(22.1%)	8(77.9%)	68
	37-60 month	18(15.1%)	101(84.9%)	119
Gender	Male	25(23.4%)	82(76.6%)	107
	Female	11(11.8%)	82(88.2%)	93
Mother education	Illiterate	35(20.2%)	138(79.8%)	173
	Literate	1(3.7%)	26(96.3%)	27
Mother occupation	Housewife	35(17.8%)	162(82.2%)	197
	Working	1(33.3%)	2(66.6%)	3

*No of children having any diarrheal episode in last two week of the date of interview.

Socio-demographic status of mother-

86.5% of mothers were illiterate and mostly belonging to low socioeconomic status of the modified B.G Prasad classification and 98.5% were housewife, only 1.5% mothers were working. In the present study prevalence of diarrhea was more common in children of illiterate and working mother. Water was stored in an open container and very few uses filtration methods. [Table2]

Table 2: Socio-demographic status of mother

Characteristics	N (%)
Illiterate	173(86.5%)
Literate	27(13.5%)
Housewife	197(98.5%)
Working	3(1.5%)

Health-seeking behavior during diarrheal illness

When enquired about the health seeking behavior during diarrheal illness, majority (47.2%) of cases consulted government doctor/hospital and 30.6% were taking treatment by unqualified practitioner (quack). An important finding of the study was that in only 2.8% of children treatment was taken from qualified child specialist and 19.4% of the children were left to their fate and were not given any treatment. [Table 3]

Table 3: Health-seeking behavior during diarrheal illness (n=36)

S.N	Facility availed	N % n=36
1	Government hospital	17 (47.2%)
2	Unqualified practitioner (Quacks)	11(30.6%)
3	Child Specialist	1(2.8%)
4	No treatment	7(19.4%)

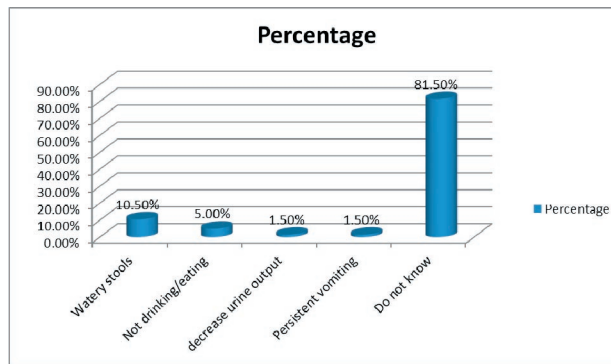
On asking regarding reason for not contacting any health personal majority mothers think diarrheal episode as use home remedies and mild nature of disease and. [Table 4]

Table 4: Reason for mother not contacting any health personal for acute diarrheal disease treatment

S.N	Reason	N (%)n=7
1	Mild nature of illness	2(28.5%)
2	Home remedies	3(42.8%)
3	Self-limiting	1(14.2%)
4	Poverty	1(14.2%)

Knowledge of mother regarding recognition of danger sign of diarrhea

When enquired about the danger sign of diarrhea, only 18.5% of mothers were aware of them, amongst the responses, pass many watery stools (10.5%) were the most prominent followed by not drinking/eating(5.0%), decrease urine output (1.5%) and persisting vomiting (1.5%). [Graph 1]



Graph 1: Knowledge of mother regarding recognition of danger sign of diarrhea

Table 6: Knowledge of Mother regarding Oral Rehydration salt solution and home available fluids

Do you know about ORS		N=200		
YES		68(34.0%)		
NO		132(66.0%)		
How to prepare ORS solution		N=68		
Correct method		33(48.5%)		
Incorrect method		35(51.4%)		
Knowledge about Home available fluids		N=200		
Present		110(55.0%)		
Absent		90(45.0%)		
What can be given		N=110		
Sugar salt solution 46.4%	Rice kanji 19.1%	Rice water 16.4%	Lemon water 12.7%	Cooked Pulse water 5.5%

Type of fluid giving

When asked regarding type of fluids giving during diarrheal episode, only 33.3% of child received ORS and 22.2% child received home available fluids. [Table 5]

Table 5: Type of fluid giving during diarrheal episode

S.No	Type of fluid	N (%)n=36
1	ORS	12(33.3%)
2	Home available fluid	8(22.2%)
6	No fluid giving	16(44.4%)
8	Total	36(100%)

Knowledge of Mother regarding ORS and home available fluids

Knowledge about ORS was in only (34.0%) of the mother and only 48.5% of the mothers were able to explain the correct method of its preparation. When enquired about home available fluids 55.0% of the mothers were familiar with them. [Table 6]

Sanitation and Hygiene Practices

Most of the mothers use tap water (57.5%) for drinking and cooking purposes and only 29.0% of mother use filtration method for drinking water. The toilet facility available was insanitary and open defecation. Majority of mothers used to wash hands before cooking and eating food i.e. 86.5% and only 39.5% of children wash hands before eating. [Table 7]

Table 7: Knowledge regarding sanitation and hygiene practices

Characteristics	N=200 N (%)
Source of water	
Tap water	115(57.5%)
Hand pump	49(24.5%)
Tube well	36(18%)
Filtration method used	
Yes	58(29.0%)
No	142(71.0%)
Toilet Facility available	
Insanitary	153(76.5%)
Sanitary	47(23.5%)
Mother wash hands before cooking/eating	
Yes	173(86.5%)
No	27(13.5%)
Children wash hands	
Yes	79(39.5%)
No	121(60.5%)

DISCUSSION

It is important to critically review approaches and activities designed to reach caregivers of children at risk of dying from diarrheal diseases to make such approaches more effective. Thus, there is a need for introspection of the health care with respect to acute diarrhea management to know as to where we stand today. The present study was planned and conducted in the light of the above mentioned facts to assess the prevalence, awareness of disease symptomatology, treatment seeking behavior and knowledge, attitude and practice of mothers in acute diarrheal illness. The prevalence of diarrhea in the present study was 18.0%. A study conducted in Uttar Pradesh reported a prevalence of 33% (Mishra et al., 1990). Moreover, the prevalence was more in infancy

(6-12 month) than in the 1-5 years age group. This finding is consistent with another study conducted in developing countries that has demonstrated a much higher incidence of diarrhea in the 6 to 12 months age group (Hall, 2000). This could be linked with several factors including poor feeding practices and personal hygiene of the caregiver, contaminated water, and bad sanitary conditions. In addition, this is also the period when the antibody transmitted through breast milk starts to wane and the child starts developing his/her own immunity.

The knowledge of danger symptoms of diarrhea was present only in 18.5% of mothers which is comparable to NFHS figures that reported 37% for India and 33% for Delhi (NFHS, 2000). One of the most important symptoms i.e. the reduction in urine output was not thought of as dangerous by the mothers. Similar observation was also made in another study. (Rehanet.al., 2003).

Feeding was interrupted in almost half of the cases, and breast milk only one-quarter of the cases. The other reasons cited by the mothers as the culprit for diarrhea was the energy dense foods which the mothers take during lactation is secreted in the breast milk and it should be withdrawn. Practices such as reduction in breastfeeding and restriction of foods and fluids were observed in caregivers in study by other author (Other et al., 2008). The mothers felt that it was less important to continue feeding as they had been given some treatment for the diarrheal illness at the health facility. The use of such remedies may compete with ORT and feeding. The role of the mother in laws was also seen. Thus, involving mother in laws along with the mothers may be rewarding while imparting health education regarding the home based management of diarrhea. Although about 33.3% Acute Diarrheal Disease cases were given ORS, most of the mothers were unable to demonstrate the correct method of preparation. Inaccurately prepared solutions can exacerbate the state of dehydration, thereby doing more harm than good. Low coverage of ORT in India has been pointed out as a major problem (Bhattacharya, 2003). Bentley reported in a study from rural north India that a drastic decline in the use of ORS occurred when mothers who thought ORT was a medicine that would cure diarrhea did not stop the episode (Bentley, 1988). Knowledge about home-available fluids was present in 55% of

the respondents. Among the home available fluids, majority of the respondents gave sugar salt solution followed by rice Kanji and Daalkapani (Boiled Pulse water). Similar observations were made by the other author (Rehan et al., 2003). As far as health seeking behavior is concerned, 80.5% of the mothers consulted some or the other facility for treatment. Although majority of the children were taken to government facility at Rural Health Training Centre followed by unqualified practitioners (Quack). The government should develop a programme to train the physicians in standard case management of acute diarrhea. Surveys should be conducted to identify the factors responsible for mothers or care givers not opting government health facility as a priority option.

CONCLUSION

To conclude the prevalence of diarrhea in children under five years of age living in a rural area of Hapur district in our study was 18%. Mothers' literacy, socioeconomic status and infant feeding practices were important determinants of diarrhea. The present study concludes that there is a wide gap in the knowledge, attitude and practices of the mothers regarding home based management of diarrhea. This poses a challenge for the health care work force as the results in the field of acute diarrheal disease management practices after thirty years of inception of the idea and implementation as a priority is disappointing. Thus, if the options about home based management and the Oral Rehydration Solution in cases of acute diarrhea are clearly percolated in the community, not only the visits to the health facility could be minimized as a short term effect but the reduction in morbidity and mortality of under-five due to acute diarrheal diseases as a long term goal and these can be realized by changes in the behavior of the individuals through communication.

Limitation- Due to lack of funds sanitation and other environmental factors affecting the outcome in diarrheal diseases could not be studied.

Conflict of Interest- None

Funds- None

Ethical Clearance- Taken

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Awareness Regarding Management and Preventive Measures of Dog bite among Parents in Selected Wards of Nayarambalam Panchayat, Ernakulam, Kerala

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ABSTRACT

Introduction - The children below the age group younger than 10 years represent the high risk group for dog attacks. Studies revealed that boys between the ages of 5 to 9 are bitten five times more by dogs than any other group of people. Rabies, a disease of antiquity continues to be a major public health problem in India¹. With around 1.06 lakh canine bite cases being reported in 2014-2015 and 40,000 in 2015 alone². **Methods** - The study design was descriptive research design. The study was conducted among 100 parents of children who met with the eligibility criteria following non probability convenience sampling technique. **Results** - None of the parents exhibits adequate knowledge on dog behaviors towards child, 56(56%) are unaware about the dog behaviors, 44(44%) had average knowledge. Nearly 47(47%) of the subjects had inadequate knowledge regarding management of dog bite and 41(41%) had inadequate knowledge regarding the prevention of dog bite. Even though the incidence of dog bite is tremendously increasing in the country, awareness regarding child behaviors towards dog among parents was found to be poor, only 10(10%) had adequate knowledge, 58 (58%) had average knowledge, 32(32%) had inadequate knowledge. Regarding the misbeliefs related to dog bite, 41% of the subjects had misbeliefs related to dog bite. **Conclusion** The study findings revealed that fact most of the dog bite incidents are occurring due to the children are unaware of dog behaviors and not taught by parents or school how to behave or avoid such a situation. Dogs are understanding mostly by nonverbal cues, body language and previous exposure or treatment by humans based on exhibiting their behaviors.

Keywords: Stray dogs, Dog behaviors, Child behaviors . Misbeliefs and facts, Preventive measures.

INTRODUCTION

Puppies spend a great deal of time playing, chewing and investigating objects. All of these normal activities involve puppies using their mouths and their needle sharp teeth. When puppies play

with people they often bite, chew and mouth on people's hands, limbs and clothing. This type of behavior seems cute when the puppy is 7 week old and the scenario become worsens when the puppies getting old³. Dog bite injuries may cause a number of physical problems and psychological problems. The children below the age group younger than 10 years represent the high risk group for dog attacks. Studies revealed that boys between the ages of 5 to 9 are bitten five times more by dogs than any other group of people.⁴

MATERIAL & METHODS

Quantitative approach using descriptive design was adopted for the present study. The

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settings were selected wards of Nayarambalam Panchayat, Ernakulam. The subjects for the study were parents of children in the age group of 4 to 14 years residing at Nayarambalam. Hundred parents were selected from selected wards of Nayarambalam who met the inclusion criteria. The data collection period was from 1st December 2014 to 14th December 2014.

The data collection instrument include semi structured questionnaire to assess the socio-demographic data of the parent. The socio demographic data of the parents were developed by the researcher which consists of 13 items regarding age of the parent ,relationship with the child, educational status, occupation, monthly income, type of family, religion, age of the child, source of information, previous experience, medical facility nearby, presence of dog in home, first aid box at home.

Tool -I Structured questionnaire to assess the awareness regarding management and preventive measures of dog bite it includes 20 items. It was categorized into 4 headings. Each category includes 5 questions. The first category includes questions regarding management of dog bite, the second category deals with prevention of dog bite, the third category includes items regarding child behaviors towards dog and fourth category includes dog behaviors towards child. Tool - 2 was the alternative response questionnaire was developed by the researchers to explore the beliefs and truth related to dog bite. In this 20 dichotomous questions were asked regarding wound care management, food pattern, symptoms of dog bite and rabies.

FINDINGS

The first objective of the study was to determine the awareness regarding management and preventive measures of dog bite.

Distribution of knowledge of parents regarding management and preventive measures of dog bite.

Part I : Knowledge of parents regarding dog behaviors towards child.

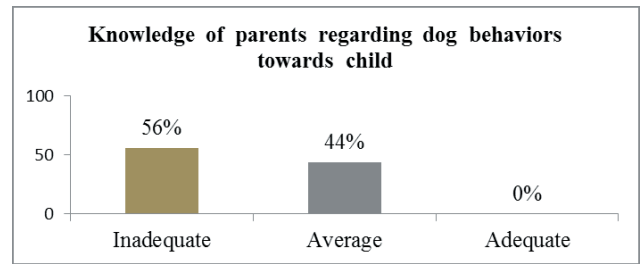


Figure 1: Distribution of subjects based on knowledge regarding dog behaviors towards child.

Figure 1 illustrates that none of the subjects had adequate knowledge regarding dog behaviors towards child. Among 56 (56%) of the subjects had inadequate knowledge and 44(44%) had average knowledge.

The study findings were supported by the study conducted by Reisner IR, Nance ML, Zeller JS, Houseknecht EM, Kassam-Adams N, Wiebe D J et al in 2011 , 72% of children knew the biting dog. Most bites to younger children occurred during positive interactions, initiated by the child, with stationary, familiar dogs, indoors. Most older bitten children had been active (outdoors), unfamiliar with the dog and not interacting. Whereas face bites predominated (70%) in the younger group (<7 years), bites to extremities predominated (72%) in the older group. Recognition of the two distinctive behavioral and circumstantial subgroups of dog bites that emerged can lead to more effective prevention strategies.⁵

Part II Knowledge of parents regarding management of dog bite

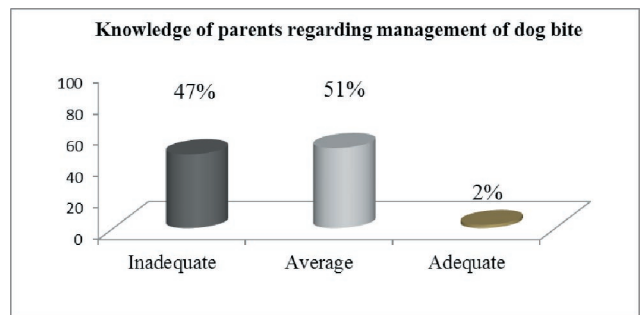


Figure 2: Distribution of knowledge of parents regarding management of dog bite.

Figure 2 illustrates that 51(51%) of the subjects had average knowledge, 47(47%) had inadequate knowledge and only 2% had adequate knowledge regarding management of dog bite.

The present study findings was supported

by the study conducted Muyila DI et al on incidents and clinical aspect of human rabies in 2009. The disease emerges as a new major public health problem because of a lack of knowledge regarding rabies risk, the poor management of dog bite.⁶

Part III: Knowledge of parents regarding prevention of dog bite.

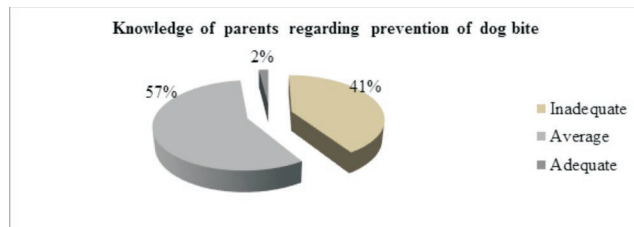


Figure 3: Distribution of subjects based on knowledge of parents regarding prevention of dog bite.

Figure 3 depicts that 57(57%) of the subjects had average knowledge, 41(41%) are unaware and only 2(2%) are aware about prevention of dog bite.

The present study findings were supported by Sambo M et al on knowledge, attitude and practices about rabies prevention and control in 2014. Only 5% were aware of the need for prompt wound cleansing. Among the respondents 65% knew of dog vaccination to control rabies, only 51% vaccinated their dogs. The study concluded that important knowledge gaps related to factors influencing the prevention and control of rabies.⁷

Part IV: Knowledge of parent regarding child behaviors towards dog.

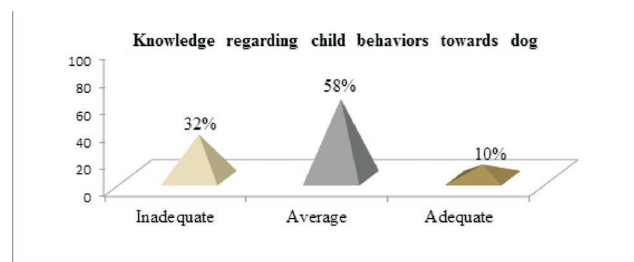


Figure 4: Distribution of subjects based on knowledge regarding child behaviors towards dog.

Figure 4 show that only 10% had adequate knowledge regarding child behaviors towards dog. Among 32(32%) had inadequate knowledge and 58(58%) had average knowledge.

A study done by Shen J et al in 2012 on

support the result of the present study. Results suggest that male gender, older age, frequent exposure to dogs, previous ownership of dogs, and attitudes and beliefs of invulnerability are factors that place children at increased risk of dog bite injuries. Boys were more frequently exposed to dogs than girls and also possessed less safety knowledge but riskier attitudes, beliefs of invulnerability, and more dangerous self-reported practices with dogs than girls. As children grew older, they reported greater exposure to dogs, but they also held riskier attitudes and beliefs and reported more risky behavior practices with dogs, children with riskier attitudes, beliefs of invulnerability, and those who were more frequently exposed to dogs.⁸

The second objective of the study was to explore the misbeliefs and facts related to dog bite.

Among the subjects 77(77%) had belief regarding the form of rabies vaccine, 70(70%) had belief regarding the use of lemon and oil after dog bite, 62(62%) had belief regarding the production of froth and use of antibiotics, 55(55%) had belief regarding reducing of infection after wound closure and medical management. 58.5(58.5%) had the knowledge regarding the facts related to dog bite.

MISBELIEFS

The data regarding misbeliefs was categorized as 0-5 (poor misbeliefs), 6-10 (average misbeliefs), 11-15 (immense misbeliefs), 16-20 (extreme misbeliefs). According to that 18(18%) had poor misbeliefs, 59(59%) had average misbeliefs, 23 (23%) had immense misbeliefs and none of them had extreme misbeliefs.

FACTS

The data regarding facts was categorized as 0-5 (very poor knowledge), 6-10 (poor knowledge), 11-15 (average knowledge), 16-20 (adequate knowledge). According to that 1(1%) had very poor knowledge, 36(36%) had poor knowledge, 57 (57%) had average knowledge and 6 (6%) had adequate knowledge regarding facts related to dog bite.

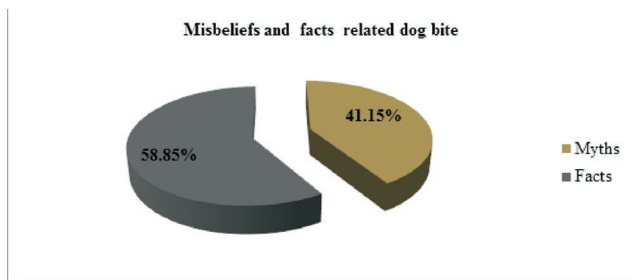


Figure 5: Distribution of subjects based on misbeliefs and truth related to dog bite

Figure 5 illustrates that 41.15% of the subjects had knowledge regarding facts related to dog bite whereas 58.85% had misbeliefs regarding to dog bite.

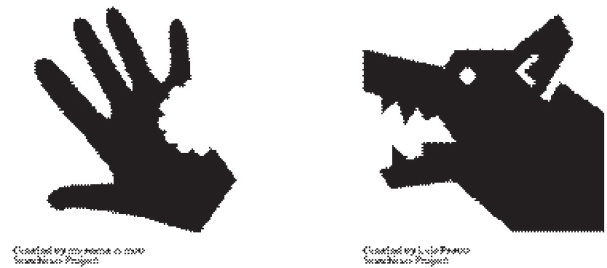
The findings of the study were supported by a research study conducted by Ichhpujani RL, Mala C, Veena M in 2009. Result of the study suggests that 68.7% people had heard about rabies. In 60.7% of cases the community associates rabies with dog bite only. Knowledge about appropriate wound toilet was found to be inadequate. Only 360 (31.90%) people felt that washing the wound with soap and water was the best option. Application of indigenous products like chillies (11.4%), turmeric (5.6%), lime (6.8%), kerosene oil (2.3%), herbal paste (4.2%) was suggested along with visit to occult medicine practitioner (1.5%) as part of the bite wound management. People were not aware of number of injections needed for treatment of animal bites. Multiple reasons like negligence and ignorance 354 (31.4%), fear of multiple painful injections 365 (32.3%), expensive treatment 169 (15%) and long course requiring daily visits to anti-rabies clinics 73 (6.5%) were cited as reasons for non-compliance of treatment.⁹

The third objective was to find the association between the awareness regarding management and preventive measures of dog bite with selected demographic variables.

In the present study there was statistically significant association ($X^2 = 4.438$) at 0.05 level of significance between age of parents and knowledge score. Subjects aged more than 30 years had more adequacy in knowledge 39(48.75%) when compared to those aged below 30 years 15(75%). The present study findings were supported by the research study by Meuder H et al on community perception regarding rabies prevention and stray dog control in Bangalore in 2012. The study result shows that gender, age, educational status were

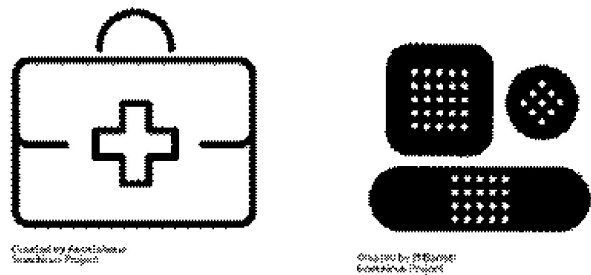
significantly associated with rabies awareness¹⁰.

The fourth objective of the study was to prepare a care guideline for improving awareness regarding management and preventive measures of dog bite.



Care guideline on management and preventive measures of dog bite

Management of dog bite



- The foremost duty of the person who is giving first aid is to make the child calm and reassure that nothing is there to worry.
- The wound should be cleaned thoroughly with soap and water with aseptic technique.
- Apply tight bandaging to stop bleeding because if there is excessive loss of blood it may lead hypovolemic shock.
- Provide the child with appropriate first aid management.
- The child should be taken up to nearby medical facility for appropriate care and vaccination.
- Administer 4 doses of vaccination at regular intervals.
- The bitten dog should be observed for 2 weeks to check whether the dog is affected with any rabies infection.¹¹

Prevention of dog bite

- Educate the children about how to behave to

dog and how to recognize a bite risk situation.



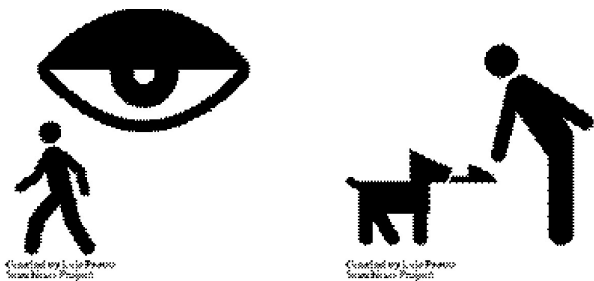
For pet dogs

- Make the child to familiar the behavior of dog.
- Parent can carefully supervise all interactions between child and dog.

For strange dogs

- The child should stand still posture as a tree.
- Child should never approach, touch or play with strange dogs.
- The child should never take steps fastly and run.
- The child should be slow and gentle to move from the situation.
- Make sure that there is no harm from the child to the dog , avoid eye contact with the dog.
- Never do staring continuously at the dogs.
- Walk through the corner of the road slowly
- Hands should be clenched, make suring there is no stone or stick in your hands to harm .

RISKY BEHAVIORS



- Children may assume dog as playmate and starts disturbing them.

- Child may not have any fear of dogs, they may play with the pet dog, and the child will replicate the same to the street dogs which may cause biting.

- Most bite among the young children will be occurring during the positive interactions, initiated by the child, with familiar dogs which will be occurring indoor un intentionally.

- In older children, the activities which may provoke the dog mostly unfamiliar to child occurring outside the house premises.¹²

- Child may do riskier practices like pulling of ears, cheeks and tails , beat with stick.

- As the child's body size is small, when the child approaches the dog the face will near to the dog's mouth that may lead to accidental occurrence of dog bite.

- When the child is running while seeing the dog, it will follow and elated mood to try to touch as winner , if child threatened and scamming the dog will bite.

- Sometimes use the behavior modification technique, never look at the dog and same time extend your path in opposite side walk back, never turn head to see, try on lateral view is following if not, walk fastly.

- Helmet, Caps, Ball in hands , extra or unusual clothing dogs will bark and follow

- Territory fighting will occur any new dog entered, high pitched barking can hear. Never interfere.

- Mating season dog fights are vigorous, never interfere alone.

- Sharing their foods and hiding of foods will not be liked by the dog .

- Stray dogs they already exposed home atmosphere, good foods, verbal commands, play practices when similarity seeing, hearing it will follow for friendly not for bite, if given or hide it will not follow. Example, Ball, plastic bag

What makes the dog aggressive and how to identify?

- Dog will start barking and growling at the child
- Dog will make itself too bigger, stiff and straight legged, unmoving tail.
- Food guarding and territory guarding are the most underlying cause of dog bite incident. The child may sometimes enter in to the premises where the dog is staying or the child will hide or play with the food items. These activities will not be liked by the dogs and make them aggressive.
- Accidental occurrence of bite may happen when the dog playing with the child.
- Behavioral changes and hormonal variations in the dog may also cause the dog to bite.¹³

CONCLUSION

Beyond the study findings other unbelievable issue observed during data collection, the culture of Kerala is highly influenced by beliefs of Arabians where they lived decades coming with same conditioning are reflecting in Kerala. In each family one or two members are either working or worked in Arabian countries according to their spiritual beliefs dogs are untouchable and unwanted. Based on this perspectives the family members also negatively influenced and treating dogs too cruelly. Researchers strongly recommend this issue as serious to investigate the recent mortality of dogs and they way how it were killed. The methods used to kill the dogs were unethical. A shocking news on NewDelhi (ND) TV Sep 25th is showed the evidence of killed dog for each five hundred rupees will be paid by Government of Kerala as reward declared by Government of Kerala.

Ethical clearance obtained from Thesis review committee, Amrita Institute of Medical Sciences, Kochi, Kerala. 682 041

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A Study of HIV/AIDS Related Knowledge and Attitudes amongst the Engineering College Students

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ABSTRACT

One hundred seventy four randomly selected students studying in the various engineering colleges, studying in Uttar Pradesh were surveyed to assess their knowledge on HIV/AIDS. Pre tested, pre designed and preformed questionnaire was used to collect data. Response rate of 87% was obtained (174 out of 200). Overall, females showed less knowledge pertaining to issues related to human sexuality and HIV transmission, As compared to their male peers. Anal intercourse was observed as a risk for HIV transmission by 3 % of females as compared to 20% of males. In general, there were considerable misconceptions regarding the spread and risk of HIV transmission among all engineering students. Attitudes of most of the students toward HIV-infected individuals could be best described as ambivalent. Interesting to note that female students showed more positive attitude towards HIV infected people than their male peers. Findings suggest the need of integrating IEC activities and BCC activities promotion in the community starting from the initial stages mainly concentrating on teenagers and youngsters.

Keywords: HIV, AIDS, Engineering Students, Knowledge.

INTRODUCTION

In April 2005, experts from Global Fund to Fight AIDS stated that India had overtaken South Africa with regard to the number of AIDS cases. The joint United Nations program for HIV/AIDS (UNAIDS) reports that India harbors between 7-9 million HIV cases compared to 4-6 millions found in South Africa¹. The official Indian figures (111,000 HIV infected cases) did not reveal the scale of the HIV infection because of the weaknesses in surveillance systems, bias against targeting groups such as commercial sex workers for testing, and the lack of testing services in many parts of the country. Although, the prevalence of HIV in India is 0.9%, the total number of people living with active HIV infection in the country was estimated to be 10% of all global cases. A fraction of a percent increase in the prevalence of HIV in India will increase the number of adults living with HIV by approximately million people (World Bank ,2004b)².

Even though an appreciable number of intensive HIV/AIDS related programmes and policies are in existence, the effectiveness of these still needs to be evaluated. Youth stand at the centre of the HIV/AIDS pandemic in India regarding transmission, impact, vulnerability and potential for change – they also represent the window of hope and opportunity. Since most of the new infections occur in youth, any intervention in this age group is likely to have an impact on the disease trend³. More than half of the Indian women (60.9%) and men (83.6%) have heard about HIV/AIDS. However, the comprehensive knowledge amongst women (17.3%) and men (33%) small are small (NFHS-3)⁴. The present study was designed to find out the knowledge and attitudes of the students of engineering colleges. The information obtained in this study will be used to demonstrate the need for development and integration of an HIV IEC training module.

MATERIAL & METHODS

A cross sectional study was done amongst students studying in different departments of various engineering colleges under UPTECH. A pre-tested questionnaire with questions pertaining to the knowledge and awareness of risk of HIV infection was given to the students which was approved by the ethical committee of the Era's Medical College, Lucknow⁶. The purpose of the study was explained

to the students and they were asked to answer question sincerely. The questionnaire was filled in the class in the presence of doctors and investigators of Era's Lucknow Medical College. They were given half an hour to complete the form without mutual consultation. Consent forms were obtained from 192 out of 200 students. Eighteen students did not return surveys after consenting to participate in the study. A total of 174 (87%) students returned the completed surveys.

RESULTS- Out of 174 respondents, 110 (63%) were boys and 64 (37%) were girls.

(Table-1). Table-1: Source of information regarding HIV/AIDS

Source of information	Boys (n=110)		Girls (n=64)		X ² , p-value	Total (n=174)	
	No.	%	No.	%		No.	%
Mass media	99	90.0	50	78.1	4.64, 0.03*	149	85.6
Family doctors	6	5.5	3	4.7	0.79, 0.79	9	5.2
Friends	40	36.4	7	10.9	13.27, 0.0003*	47	27.0
Radio	55	50.0	29	45.3	0.36, 0.55	84	48.3
Advertisements	59	53.6	27	42.2	2.12, 0.15	86	49.4
News paper	15	13.6	12	18.8	0.81, 0.37	27	15.5

*Significant

Knowledge on causative agent for AIDS, and detection and transmission of HIV infection

When asked about the difference between AIDS and HIV, only 24 (14%) engineering college students replied that HIV and AIDS were the same condition. Of these, 8% were boys and 25% were girls (Data not shown). Table-2 showed that there was a no difference regarding knowledge about routes of HIV transmission amongst boys and girls. In particular, twenty-eight (43.8%) girl students and 31 (28.2%) male students believed that saliva was a potent route of transmission. Sharing of razors was reported as a route of HIV transmission by 97 (88.2%) boys compared to 50 (78.2%) girls. About one third of the students reported about female commercial sex workers (35.6%) and multiple sex partners (35.1%) as individuals at maximum risk of contracting HIV. These two categories were followed by homosexuals (7.5%), intravenous drug users (5.2%), commercial blood donors (2.9%), and male commercial sex workers (0.6%).

Table-2 Knowledge regarding agent and routes of transmission of HIV

		Boys (n=110)		Girls (n=64)		Total (n=174)	
		No.	%	No.	%	No.	%
Correct knowledge	Blood transfusion	110	100	64	100	174	100
	Mother to child	110	100	64	100	174	100
	Intravenous drug users	110	100	64	100	174	100
	Needle stick injury	110	100	64	100	174	100
	Sexual intercourse	110	100	64	100	174	100
	Saliva	31	28.2	28	43.8	59	33.9

Cont... Table-2 Knowledge regarding agent and routes of transmission of HIV

Misconception	Razors	97	88.2	50	78.2	147	84.6	
	Hugging	3	2.7	3	3.1	6	2.80	
	Toilet seat	13	11.8	7	10.9	20	11.4	
Individuals known to have risk of developing HIV/AIDS								
Female CSW	39	35.5	23	35.9	62	35.6		
Homosexuals	11	10.0	2	3.1	13	7.5		
Multiple sex partners	39	35.5	22	34.4	61	35.1		
Intravenous drug users	7	6.4	2	3.1	9	5.2		
Commercial blood donors	2	1.8	3	4.7	5	2.9		
Male sex workers	1	0.9	0	0.0	1	0.6		
Don't know	3	2.7	6	9.4	9	5.2		
X², p-value	1.70, 0.19							
Sexual behaviour and risk of HIV transmission								
Anal sex	22	20.0	2	3.1	24	13.8		
Vaginal sex	80	72.7	43	67.2	123	70.7		
Oral	4	3.6	1	1.6	5	2.9		
Don't know	4	3.6	18	28.1	22	12.6		
X², p-value	25.11, <0.0001*							
If HIV & AIDS are the same thing								
Yes	2	1.8	16	25.0	18	10.3		
No	108	98.8	44	75.0	152	89.7		
X², p-value	25.32, <0.0001*							

*Significant

Knowledge on prevention of HIV/AIDS, symptoms, and attitude of students toward HIV-infected persons

Results pertaining to attitudes are shown in Table-3. Majority of the boys (66.4%) and girls (37.5%) reported having no problem friends with HIV/AIDS. Majority of the boys (86.4%) and girls (90.6%) were of the opinion that they would care for their friends and relatives infected with HIV/AIDS, whereas 58.2% of the boys and 81.3% of the girls were in favor of abandoning or keeping the friends or relatives infected with HI AIDS in isolation.

Table-3 knowledge regarding prevention of HIV and attitude of students towards HIV infected patients

	Boys (n=110)		Girls (n=64)		Total (n=174)	
	No.	%	No.	%	No.	%
Will be friends with HIV infected people						
Yes	73	66.4	24	37.5	97	55.7
No	37	33.6	40	62.5	77	44.3
X², p-value	13.66, 0.0002*					
Will care for people infected with HIV						
Yes	95	86.4	58	90.6	153	87.9

Cont.. Table-3 knowledge regarding prevention of HIV and attitude of students towards HIV infected patients

No	15	13.6	6	9.4	21	12.4
X², p-value	0.69, 0.41					
Abstinence message for HIV transmission						
Yes	64	58.2	52	81.3	116	66.7
No	46	41.8	12	18.7	58	33.3
X², p-value	9.59, 0.002*					
Is HIV/AIDS curable?						
Yes	5	4.5	2	3.1	7	4.0
No	105	95.5	62	96.9	167	96.0
X², p-value	0.21, 0.65					
Awareness regarding condoms						
Yes	106	96.4	56	87.5	162	93.1
No	4	3.6	8	12.5	12	6.9
X², p-value	4.95, 0.03*					
Concept of safe sex						
Condom only	26	23.6	49	76.6	75	43.1
Monogamy	44	40.0	1	1.6	45	25.9
Both	40	36.4	14	21.8	54	31.0
X², p-value	25.15, <0.0001*					

*Significant

DISCUSSION

IEC materials and media have the potential to facilitate the development of positive behaviors and attitudes among engineering students as they relate to HIV. Studies over the past decade among health professionals in India identify the gaps in their knowledge concerning risks and transmission of HIV⁷. These studies also document the negative attitudes towards HIV infected people. The data from our study shed light on the critical gaps concerning knowledge regarding the spread and risk of HIV transmission among the medical students. For example, saliva was reported as a transmission route by 34% of students, which is in contrast to scientific evidence that considers saliva as a weak vehicle of transmission because of low viral load).⁹

The low level of knowledge among medical students concerning the relationship between HIV transmission and type of sexual intercourse also suggest a lack of awareness concerning human sexuality.¹⁰ In our study, only 14 % of the engineering

students reported anal intercourse as a risk of contracting HIV. Even lesser number (10%) of students reported homosexuality as a risk factor. Our findings contrast sharply with prevalence studies conducted in Mumbai, which estimate that 15% of homosexual men tested in sexually transmitted disease clinics are HIV positive.¹¹ Our findings concerning level of knowledge pertaining to anal intercourse, homosexuality and HIV transmission, although much lower are comparable to the work reported among Pakistani medical students where only 40% of medical students reported homosexuality as possible route of transmission.¹² Overall, mass media was found to be a leading source of HIV-related information followed by newspapers and television. Sood et al. (2006)¹³ reported comparable findings in a study among college students in southern India where the majority of students suggested mass media as source of HIV related information (Lal, 2000).

CONCLUSION

Although, awareness level about HIV/AIDS among Indian youth is fairly high, high-risk sexual behavior without condom use and the presence of

certain misconceptions constitute a major area of concern. A small proportion of youth appear still to hold negative attitudes toward HIV voluntary testing and HIV-positive people.

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Conflict of Interest - Nil

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A Study of Utilization of Janani Suraksha Yojana (Maternity Benefit Scheme) in Urban Slums

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ABSTRACT

Background: Janani Suraksha Yojana (JSY) was launched on 12th April 2005, under the umbrella of National Rural Health Mission (NRHM) Janani Suraksha Yojana (JSY) is a safe motherhood intervention under the National Rural Health Mission (NHM). It is being implemented with the objective of reducing maternal and neonatal mortality by promoting institutional delivery among poor pregnant women. The scheme is under implementation in all states and Union Territories (UTs), with a special focus on Low Performing States (LPS). **Objective:** To find out the difference in utilization of Janani Suraksha Yojana in Lucknow urban slums. **Material and Methods:** The present study titled was designed to measure the utilization of health services provided to women under reproductive age group that is (15-45 years) of age below poverty line residing in urban slums of Lucknow city. It was planned to assess the prevailing knowledge status of mothers in Lucknow district and also to assess the impact of services provided under RCH programme using thirty cluster sampling. **Results:** Out of the total number of married women who delivered at govt. hospital i.e. 266, none were registered with some health personnel. Out of these, either had one ANC. these women belonged to urban slums. Only 49.4% women went for three or more ANC visits and the proportion was lower in urban slums. Only 53.8% women consumed hundred IFA tablets and the proportion was low in urban slums of Lucknow city. 85.7% of the women received complete TT immunization. **Conclusion:** The JSY utilization was found to be low in urban areas, Communication activities should be strengthened and use of media and social mobilization by AWW to be used as a tool.

Keywords: Utilization, Cash incentives, Determinants, Janani Suraksha Yojana, Institutional delivery,

INTRODUCTION

Janani Suraksha Yojana (JSY) is a safe motherhood intervention under the National Rural Health Mission (NHM). It is being implemented with the objective of reducing maternal and neonatal mortality by promoting institutional delivery among poor pregnant women. The scheme is under implementation in all states and Union Territories (UTs), with a special focus on Low Performing States (LPS). Janani Suraksha Yojana was launched in April 2005 by modifying the National Maternity Benefit Scheme (NMBS). The NMBS came into effect in August 1995 as one of the components of the National Social Assistance Programme (NSAP). The

scheme was transferred from the Ministry of Rural Development to the Department of Health & Family Welfare during the year 2001-02. The NMBS provides for financial assistance of Rs. 500/- per birth up to two live births to the pregnant women who have attained 19 years of age and belong to the below poverty line (BPL) households. When JSY was launched the financial assistance of Rs. 500/-, which was available uniformly throughout the country to BPL pregnant women under NMBS, was replaced by graded scale of assistance based on the categorization of States as well as whether beneficiary was from rural/urban area. States were classified into Low Performing States and High Performing States on the basis of institutional

delivery rate i.e. states having institutional delivery 25% or less were termed as Low Performing States (LPS) and those which have institutional delivery. Accordingly, eight erstwhile EAG states namely Uttar Pradesh, Uttarakhand, Madhya Pradesh, Chhattisgarh, Bihar, Jharkhand, Rajasthan, Odisha and the states of Assam & Jammu & Kashmir were classified as Low Performing States. The remaining States were grouped into High Performing States.¹

MATERIAL & METHODS

Community based cross-sectional study was conducted after taking approval from the ethical committee. The study was conducted for a period of one year from August 2009 to August 2010. As per the report titled **“Concurrent assessment of Health and Family Welfare Programmes and technical assistance to district of Uttar Pradesh”** by the Department of medical Health And Family Welfare, Uttar Pradesh. ² statistic at α level of significance i.e 2The Antenatal coverage amongst the recently delivered women was found to be 60%. Taking P as 60 and Q as 40 and absolute error (L) 6%, Since respondents are chosen by cluster sampling design affect due to complex sample design comes into picture. Taking into account design effect of 2, the sample size will be 532.

The maternal care and other components of the Reproductive and Child Health programme were assessed using 30 cluster sampling technique. Thus for the present study, Probability Proportionate to Size (PPS) method was adopted as the sampling strategy Each household in the sample had an equal chance of being selected. This made the sample self-weighting, which simultaneously had simplified the analysis. The zone and ward wise list of slums of Lucknow district was procured from the Municipal Corporation and Lucknow Development Authority to select the slums to be used in the survey. In the next step sampling interval was calculated by dividing the total cumulative population with the number of clusters required. Thus sampling interval turned out to be 18822. Consecutively to select the first cluster last five digit of the Indian currency note of India was used taking care of the fact that it should be less than cluster interval corresponding to this number first cluster was selected (between 1 and 18822). The first cluster would be located in slum, where the cumulative population was more than

the random number was chosen. The second cluster was located in the slum area whose cumulative population exceeded total of the random number & sampling interval (1+18822). The location of each subsequent cluster was identified likewise by adding the sampling interval to the number which located the previous cluster.

The desired number of women to be interviewed in each cluster is 18 in each cluster the first house was chosen at random and from there on, the next nearest house was visited until the desired numbers of mothers were interviewed. If a household had more than one beneficiary, all were included in the survey.³The testing study was approved by the ethical committee of Era's Lucknow Medical College and Hospital. The interview was done in the presence of a female social worker of the Department Of Community medicine.

RESULTS

The study showed that none of the women were not registered at the health facility. They did receive any ANC services (IFA tablets, Antenatal visits, T.T immunization) but their deliveries were institutional.

Study depicts the distribution of women according to Place-wise visits of the women according to the utilization of ANC. The women were considered to receive antenatal care were who got registered, received IFA tablets received tetanus toxoid immunization simultaneously who was checked for height, weight and abdomen were considered for ANC received.

ANTENATAL CARE

A total of 332 (61.5%) of the women availed ANC services at any place. Out of these, 234 (70.5%) registered at government hospital and 77 (23.2%) got registered at private hospital. Only 21 (6.3%) of the women visited quacks. More than half 223 (67.2%) of the women were registered for ANC in first trimester and 54 (16.6%) in third trimester. However, 55 (16.3%) were registered for ANC in second trimester.

About half (50.6%) of them have less than there antenatal visits.

Table-1: Distribution of women according to utilization of Antenatal care

ANC Services		No (n=332)	%
Place of visit	Govt. hospital	234	70.5
	Private hospital	77	23.2
	Quacks	21	6.3
Trimester of visit	First	223	67.2
	Second	54	16.3
	Third	55	16.6
No. of visits	<3	168	50.6
	≥3	164	49.4

IFA Tablets received and consumed

Table-2 depicts the distribution of women according to IFA tablets received and consumed is given in the Majority (82.2%) of the women received IFA tablets during their visits for ANC services and 53.8% of them fully consumed the tablets.

Table-2: Distribution of women according to IFA tablets received and consumed by the women.

IFA Tablets	No.	%
Received (n=332)		
Yes	273	82.2
No	59	17.8
Consumption (n=273)		
Fully consumed	147	53.8
Not consumed	126	46.2

Tetanus Toxoid injections

Table -3 shows the distribution of women according to Doses of TT injection received by the women. More than half (59.6%) of the women received one dose of TT injections and 25.9% received two doses. Only 14.5% of the women did not received doses of TT injections.

Table 3: Distribution of women according to Doses of TT injection received by the women.

Number of doses of Tt received	No (n=332)	%	P value
One doses	198	59.6	P value>0.1
Two doses	86	25.9	Pvalue.>0.1
None	48	14.5	Pvalue <0.1

Intra-natal services

Table 4 shows distribution of women according to Intra-natal services received. More than half, 293 (54.3%) of the women delivered at home and 170 (31.5%) delivered at government health facility. However only 64(11.9%) delivered at private health facility and only 13 (2.4%) women were delivered by untrained practitioners.

More than one third, 224 (41.5%) delivered were conducted by neighbor/home's women (untrained birth attendant) and 117 (32.8%) deliveries were conducted by trained birth attendant / dai and 226 (4.8%) deliveries were conducted by nurse.

Table-4:- Distribution of women according to Intra-natal services received by mothers

Intra-natal services	No.	%
Place of delivery (n=540)		
Home	293	54.3
Government health facility	170	31.5
Private health facility	64	11.9
Untrained practitioners /quacks	13	2.4
Attendant at delivery (n=540)		
Neighbor/home's women(untrained birth attendant)	224	41.5
Nurse	26	4.8
Trained birth attendant /dai	113	20.9
Doctor	177	32.8

JANANI SURAKSHA YOJANA

A conditional cash transfer scheme, was an important step in this direction. The programme envisages achieving a reduction in maternal mortality by providing adequate antenatal care, supervised transportation to institutions for delivery, skilled birth assistance and incentives for care of the newborn and the mother⁴. The main components of the programme are mobilizing the community with the help of intervention worker named Accredited Social Health Activist (ASHA) and providing cash assistance.

Table 5: Distribution of women (15-49 yrs) according to services provided at the time of delivery and benefit of

Intra-natal services	Number	Recieved the benefit of JSY	Did not received the benefit of JSY
Home	293	9	284
Government health facility	170	27	143
Private health facility	64	8	56
Untrained practitioners /quacks	13	4	9
Total	224	48	492(21.8%)

DISSCUSSION

In the present study 56.7% of the women delivered at home and 44.3% delivered at health facility. 41.5% deliveries were conducted by neighbor/home's women (untrained birth attendant) and 32.8% deliveries were conducted by doctors. However, 20.9% deliveries were conducted by trained birth attendant/Dai. Similar results were shown in DLHS-3⁷², institutional deliveries were 24.5% and home delivery was 74.5%/, **Zulfa et al (2009)**⁵ showed that 60% of the women had home deliveries conducted by traditional untrained or trained birth attendants and **Shraddha and Bharti in 2006**⁶ found that 94% of femals delivered at home with the heap of local dai. Only 6% went to hospital for delivery. The above studes correspond with the findings of the present study. The findings of **baseline facts of Uttar Pradesh**⁷ reports 50.9% institutional deliveries which is some what close to the findings of the present study.

In the present study 46.4% opined that logn distance of the health facility was the main reason for home delivery, 22.5% felt that there was no need for institutional delivery and 42 (14.3%) had less time. Other reasons cited were financial constraints, family constraints and lack of transportation to reach the health facility. Similar findings were given by **Sarode etal (2010)**, **Zulfa et al (2009)**⁵ & **Sharaddha and Bharti in (2006)**⁸ which go in co-ordination with the findings of the present study, where they perceived that barriers to maternal health-care utilization in

hospital/health centers among the participants were thinking that health checkup is not required (27%), loack fo knowledge about available services (17%), long waiting time (22%), none to accompany (15%), financial constraints (12%), working (7%), fear of hospital care (6%) and objection from family (2%).

This was seen in the present study and study by **Prasad et al in (2009)**⁹ by showed that uptake of preventive health services is low in the state,especially among uneducated women. Low literacy and lack of awareness about services, schemes, and entitlements, low status of women, poverty, and cultural factors are among the crucial factors that determine the health-seeking behavior in the state. Awareness levels regarding the JSY scheme among the eligible beneficiaries were on the Higher side (76.2%). Similar findings were observed in another study done among women eligible for JSY benefits in West Bengal, where 64% mothers had heard the name of JSY (7).Whereas concurrent evaluation of NRHM(2009) Punjab revealed that the awareness aboutJanani Suraksha Yojana (JSY) .

CONCLUSION

The majority of deliveries (48/492; 721.8%%) took place within the JSY program; 81% of all mothers below poverty line delivered in the program. Ninety percent of the women had prior knowledge of the program. Most program mothers reported receiving the cash incentive within two weeks of delivery. The ASHA's influence on the mother's decision on where to deliver appeared limited. Women who were uneducated, multiparous or lacked prior knowledge of the JSY program were significantly more likely to deliver at home.In this study, a large proportion of women delivered under the program. Most mothers reporting timely receipt of the cash transfer. Nevertheless, there is still a subset of mothers delivering at home, who do not or cannot access emergency obstetric care under the program and remain at risk of maternal death.

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Conflict of Interest - Nil

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A Study of Socio - Demographic Profile of Victims and Associated Factors of Road Traffic Accidents in a Tertiary Care Hospital in Amritsar, Punjab

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ABSTRACT

Introduction Expansion in the road network, a surge in motorization and the rising population in the country contribute toward the increasing numbers of road accidents. So this study was planned to assess the socio-demographic profile of road traffic accident victims and associated factors. Material & methods: The present cross-sectional study was done at SGRDIMSAR, Hospital, Amritsar. A pre-designed proforma was used for collection of information and statistical analysis was done by using SPSS 20.0 version. Results : The study revealed that 36 % of road traffic accident victims belonged to age group of less than 25 years . Out of total 225 RTA victims , 11.1% were pedestrians, 49.3% were drivers of two wheelers, 11.1% were drivers of four wheelers, 8.4% were drivers of heavy vehicles while rest were occupants of two wheelers. Discussion :The results of the study revealed that maximum number of victims of Road traffic accidents belonged to younger age group age group of less than 25 years. It was observed that out of total victims, almost half of the victims (49.3%) were drivers of two – wheelers. .Conclusions : Campaigns should be conducted to create awareness on matters related to road safety especially among younger population.

Keywords: Profile, Victims, Road Traffic, Accidents

INTRODUCTION

Road traffic accidents are a major but neglected public health challenge . Approximately 1.24 million people die every year on the world's roads, and another 20 to 50 million sustain nonfatal injuries as a result of road traffic crashes. The Global status report on road safety 2013 estimates that more than 231 ,000 people are killed in road traffic crashes in India every year¹. Road traffic injuries are estimated to be the eighth leading cause of death globally, with an impact similar to that caused by many communicable diseases, such as malaria².

Expansion in the road network, a surge in motorization and the rising population in the country contribute toward the increasing numbers of road accidents, road accident injuries and road accident fatalities. During the year 2011, a total of 4.43 lac road traffic accidents were reported in India³. An important accident related parameter is the extent

of accident severity (road accident related deaths per 100 accidents). It varies from a low of (2.1) in Mumbai to a high of (72.6) in Amritsar. The other cities which reported a very high accident severity of more than 50 included Ludhiana (62.4), Jodhpur (57.1), Varanasi (52.2) and Dhanbad (51.2) respectively ⁴.

Vehicles in developing countries are known to have a far more lethal impact than those in highly motorized countries – by as much as 200-fold in some cases .Over the past three years there has been a 16% increase in the global number of registered motorized vehicles⁵. Without action, road traffic crashes are predicted to rise to become the 7th leading cause of death by 2030.90% of the world's fatalities on the roads occur in low- and middle-income countries, even though these countries have approximately half of the world's vehicles. The number of registered vehicles increased by 28% from 168 million reported in the first Global status report on road safety 2009, to 215 million in the second report in 2013 ⁶.

The World report on road traffic injury prevention indicates that more than half of all global road traffic deaths occur among young adults between 15 and 44 years of age⁷. Road traffic injuries are the eighth leading cause of death globally, and the leading cause of death for young people aged 15–29. Half of the world's road traffic deaths occur among motorcyclists (23%), pedestrians (22%) and cyclists (5%) – i.e. “vulnerable road users” – with 31% of deaths among car occupants and the remaining 19% among unspecified road users. The proportion of deaths among motorized two- and three-wheelers group of road users is also highest in Indonesia (36%) and India (32%), while in Bangladesh, pedestrians are the most affected group (41% of all road traffic deaths). Pedestrian death also accounts for the highest proportion of road traffic death in Myanmar (27%); 21% of road deaths in India and 17% in Maldives are pedestrians⁶.

The Decade of Action for Road Safety (2011–2020) calls on countries to implement the measures identified internationally to make their roads safer. Level of road traffic injury is unacceptable and that it is largely avoidable.

Globally, millions of people are coping with the death or disability of family members from road traffic injury. Many families are driven deeply into poverty by the loss of breadwinners and the added burden of caring for members disabled by road traffic injuries. So this study was planned to assess the socio-demographic profile of victims and associated factors of road traffic accident.

MATERIAL & METHODS

The present cross-sectional study was done at SGRDIMSAR, Hospital, Amritsar. All the road traffic accident victims who reported in the emergency wing of the hospital of SGRDIMSAR, Amritsar from October 2015 – December 2015 were included in the study. Prior consent was obtained from victim and in case of unconscious victim from the relative. In the present study, a road traffic accident was defined as accident which took place on the road between two or more objects, one of which must be any kind of a moving vehicle⁸.

A pre-designed pre-tested proforma was used to collect information from the accident victims.

Where the victim was unconscious, the relatives or attendants were interviewed, who had either seen the accident happening or had visited the site of accident afterwards and had full knowledge of accident happening through the police enquiry. The information collected consisted of socio-demographic profile of Road traffic accident victims (RTA victims), details regarding occurrence of accident, types of roads, time of accident. Fatal road traffic accident victims were excluded from the study. Total non fatal accident victims who reported to the emergency of SGRDIMSAR, Amritsar were 237. 12 victims and relatives (in case of unconscious patients) who did not consent to be a part of the study were excluded. So the total number of accident victims came out to be 225. The statistical analysis was done by using SPSS 20.0 version.

RESULTS

The study revealed that 36 % of road traffic accident victims belonged to age group of less than 25 years and only 3.6% belonged to age group of more than 55 years (Table 1). 92.9% of accidents occurred among males & 7.1% among females. Education status of RTA victims revealed that out of total victims 39.1% were educated till primary, 41.3 % till secondary, 10.2% were graduates & 9.3 % were illiterates. 90.2% RTA victims were from rural area and 9.8% from urban area. Occupation wise distribution of victims revealed that out of total victims, 29.8% were students, 17.3% were farmers, 15.1% were drivers, 10.2% were servicemen & 19.1% belonged to other categories.

Out of total 225 RTA victims, 11.1% were pedestrians, 49.3% were drivers of two wheelers, 11.1% were drivers of four wheelers, 8.4% were drivers of heavy vehicles while rest were occupants of two wheelers (15.1%) and four wheelers (4.9%) as shown in Table 2. Among the drivers of two wheelers, more number of students were involved in accidents (Table 4). The difference was found to be statistically significant ($p=0.000$). Age wise distribution of victims showed revealed that age group of less than 25 years constituted more number of accidents among drivers of two wheelers (Table 5). The difference was found to be statistically significant ($p=0.000$). Most of the collisions of the victims occurred with heavy vehicles (42.2%), followed by 22.7% collisions with

four wheelers, 9.3% with two wheelers (Table 3). Rest 5.3% of collisions occurred with pedestrians/animals and 20.4% with stationary objects.

In the present study, out of total accidents, 40.5% occurred on national highways, 7.5% accidents on state roads, 44.9% on city roads and 7.1% on village roads. Accidents happened either at some point on the road like junction of two or more roads (38.7%), turning of roads (25.3%), road dividers (23.1%), speed breakers (2.7%) or some non specific point (10.2%). Road was familiar to 85.8% victims. Road was observed to be concrete in 81.8% by the accident victims while in rest of the cases road was made of gravel (11.6%), mud or tar (6.6%).

In the present study 44% of accidents occurred in evening time, 23.1% accidents took place in morning and 22.2% in afternoon and 10.2% accidents occurred at night time.

Traffic congestion at the time of accident was reported to be average by 54.7% RTA victims. While only 15.1% reported it to be more and this traffic was more on city roads. 30.2% victims reported traffic to be less at the time of accident.

Weather was reported to be dry in 52.4% accidents at the time of accident. Heavy rain was reported in only 4.9% cases, drizzling was reported in 23.6% cases and wet road in 5.8% cases at the time of occurrence of accident. Over speeding by the driver of the vehicle was reported by 40.2% RTA victims while 59.8% reported speed to be normal. Fatigue was reported only in 8.1% cases among drivers. As regards history of alcohol intake, only 7.1% accepted alcohol intake while driving. At the time of accident, 10.2% drivers reported to be conversing on mobile phones. Over taking was reported in 18.7% of drivers at the time of accident. Valid driving license was present with 64.5% of drivers.

DISCUSSION

The results of the study revealed that maximum number of victims of Road traffic accidents belonged to younger age group age group of less than 25 years. Similar findings were highlighted in another study at the Trauma Centre of King George's Medical

University, Lucknow, India done by Singh RK, Gupta K, Kumar A, Singh GK, Singh A, Kumar

S among survivors of road traffic accidents⁹. In vehicle distraction, attitude towards speeding and demographics characteristics were the significant factors effect young drivers crash risk at the age of 18-24¹⁰.

More number of males as compared with females were involved in accidents. Similar results were observed in another study done in Hyderabad by Thomas V, Lavayna, Sridhar¹¹.

More number of victims belonged to rural area. Victims from rural areas 237 (65.83%) were more as compared to urban areas 123 as observed in study done by Mishra Badrinarayan, Sinha Nidhi D, Sukhla SK, Sinha AK in Western Nepal¹². Majority of victims were students in the present study and drivers were observed to be 15.1% out of total victims. Education status of the victims revealed that 39.1% educated till primary and 41.3% secondary. It was observed that out of total victims, almost half of the victims (49.3%) were drivers of two-wheelers. Among the victims of two wheelers, age wise distribution of victims showed that maximum were students. Similarly in a report published on road traffic accidents 2011, India it was documented that amongst the vehicle categories, two-wheelers accounted for the highest share in total road accidents (23.7 per cent)¹³. Motorcyclists comprise a third of all road traffic deaths in the South-East Asia and Western Pacific Regions, but are also increasingly represented among deaths in Africa and the Americas, which are seeing rapid increases in motorcycle use¹⁴.

Maximum collisions occurred with heavy vehicles followed by four wheelers. It was observed in present study accidents mainly occurred on national highways and city roads. This could be because highways permit greater speed resulting in relatively greater number of road accidents.

Accidents happened mainly at some point on the road like junction of two or more roads (38.7%), turning of roads (25.3%), road dividers (23.1%), speed breakers (2.7%) or some non specific point (10.2%).

In our study maximum accidents happened at evening time. Traffic congestion at the time of accident was reported to be average by more than half of RTA victims. Traffic was reported it to be more when accident happened by 15.1% RTA victims and

this more traffic was observed on city roads in our study. This could be because non-motorized mode of transport blend with motorized traffic, increasing the risk of accidents and its severity.

Weather was reported to be dry at the time of occurrence of accident by more than half of victims. Less than half of the victims admitted overspeeding by the driver at the time of accident. Only few drivers admitted fatigue at time of accident. As

Tables 1: Socio demographic profile of road traffic accidents victims

Demographic profile		Frequency	%
Age	less than 25	81	36.0
	26-35	48	21.3
	36-45	55	24.4
	46-55	33	14.7
	more than 55	8	3.6
Sex	Male	209	92.9
	Female	16	7.1
Area	Rural	203	90.2
	Urban	22	9.8
Education	Illiterate	21	9.3
	Primary	88	39.1
	Secondary	93	41.3
	Graduate	23	10.2
Occupation	Driver	34	15.1
	Farmer	39	17.3
	unkilled worker	19	8.4
	Service	23	10.2
	Student	67	29.8
	Others	43	19.1

regards history of alcohol intake, only 7.1% accepted alcohol intake while driving. As a proportion of total accidents and deaths due to 'drivers' fault', intake of alcohol accounted for 6.4 per cent⁴. At the time of accident, 10.2% drivers reported to be conversing on mobile phones. Over taking was reported in 18.7% of drivers at the time of accident. Valid driving license was present with 64.5% of drivers.

Table 2: Distribution of road traffic victims according to type of vehicle

Victim		Frequency	Percentage
Pedestrian/cyclist		25	11.1
Drivers	2wheeler	111	49.3
	4wheeler	25	11.1
	heavy vehicles	19	8.4
Occupants	Two wheeler	34	15.1
	Four wheeler	11	4.9

Table 3: Distribution RTA victims according to type of collision

	Frequency	Percentage
pedestrian /animal	12	5.3
2wheeler	21	9.3
4 wheeler	51	22.7
heavy vehicles	95	42.2
Stationary Objects	46	20.4

Table 4: Occupation wise distribution of road traffic accident victims

Occupation	Victim Role					
	pedestrian	2wheeler	4wheeler	heavy vehicles	occupants 2 wheeler or cycle	occupants 4wheeler&heavy vehicle
Driver	2	4	5	19	2	2
Farmer	6	22	6	0	1	4
unkilled worker	0	15	0	0	3	1
Service	0	18	2	0	2	1
Student	7	40	12	0	5	3
others	10	12	0	0	21	0

Chi-Square = 198.4; df = 25; p = 0.000 (highly significant)

Table 5: Age wise distribution of road traffic accident victims

Age	Victim Role					
	pedestrian	2wheeler	4wheeler	heavy vehicles	Occupants 2 wheeler or cycle	occupants 4wheeler&heavy vehicle
less than 25	11	45	12	0	10	3
26-35	6	28	2	2	8	2
36-45	2	22	11	11	7	2
46-55	4	14	0	6	7	2
more than 55	2	2	0	0	2	2

Chi Square = 50.091; df = 20; p = 0.000 (highly significant)

CONCLUSION

Present study concluded that maximum road traffic accident victims were from younger age group. So campaigns should be conducted to create awareness on matters related to road safety especially among younger population. Promotion of best practices in road safety and traffic management should be done. The most positive changes to road user behavior will occur only when road safety legislation is supported by strong and sustained enforcement, and public awareness.

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Conflict of interest : None declared

Ethical clearance : Study approved by Ethical Committee of SGRDIMSAR, Amritsar.

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