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Original Research Article

Reproductive health among women in Pondicherry: A rural and urban comparison study

Shib Sekhar Datta¹, Abhijit V Boratne² and Rajkumar Patil²

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Abstract

Background: India was the first country to start a nationwide family welfare programme in 1952. Later, Reproductive and Child Health (RCH) programme gave importance to contraceptive coverage; though high fertility rate remained consistent over the years and vary in different parts of India. **Objective:** To study the reproductive health status and contraceptive usage among married women in rural and urban Pondicherry. **Material and methods:** The present community based cross-sectional study was conducted during Jan-June, 2014 in both rural and urban areas of Pondicherry. A 30-cluster sampling technique was adopted to collect information from total 360 married women - 120 urban and 240 rural (estimated urban: rural population ratio in the study area). The respondents were interviewed by trained interviewers using a pre-tested proforma. Data analysis was done using descriptive statistics. **Results:** The mean ages of marriage for rural and urban women were 19.93 ± 2.58 and 22.22 ± 3.35 years respectively. Tubectomy was most preferred method among rural and urban women, followed by oral contraceptive pills. Among non-users, primary reason for non-adoption of any of the contraceptive methods was intend to have another child in near future. Urban women (30.83%) were more aware about emergency contraceptive method than rural women (7.92%). The differences were found to be statistically significant ($p < 0.001$). **Conclusion:** Present study revealed that, urban women in Pondicherry enjoys better reproductive health compared to their rural counterparts; and also have better contraceptive coverage compared to married women in rural areas.

Key words: Contraception, Married Women, Reproductive health

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Introduction

As per census 2011, India has population of about 1.21 billion. ¹ In India, the couple protection rate (CPR) continues to be inadequate in an era when we have many options for contraception. India was the first country to start a nationwide family welfare programme in 1952. This programme has travelled a long way, but we are yet to achieve fertility control. Reproductive and Child Health (RCH) programme has given importance to contraceptive methods. The causes for higher fertility in India remains to be

early marriage, poor literacy rate, poor standard of living, unmet need of contraceptives and traditional ways of life. ²

Sociologists and economists have consensus that it is very difficult to improve the living standards of the people with unchecked population growth. ² Changing social norms provides the opportunity for contraceptive uptake earlier in life for the purpose of delaying child birth and spacing between successive children. ³

The acceptance of any contraceptive method varies among different communities. The factor responsible ranges from caste, religion, educational status, occupation, socio-economic conditions and duration of marriage.^{4,6} Advice on family planning (FP) is part of the standard practice of care for women who have just delivered. Demand for FP methods is potentially high after delivery and birth spacing plays a critical role in improving maternal and child health (MCH).⁷

Thus, the current study was conducted to assess the reproductive health status and contraceptive usage among married women in selected rural and urban areas Pondicherry

Material and methods

Study setting: The present community based cross-sectional study was conducted during January to June 2014, in the field practice area of Department of Community Medicine i.e. Urban and Rural Health Training Centers of Mahatma Gandhi Medical College and Research Institute, Pondicherry. Married women of reproductive age group (18-45 years) were considered as respondents for the present study.

Sample size, sampling technique and study tool: A 30-cluster sampling technique was adopted to collect information from total 360 married women - 120 urban and 240 rural women (estimated urban: rural population ratio in the study area). From one household who married women, who was willing and consented to participate in the present study was included.

A pre-tested questionnaire was used by trained interviewers by house-to-house visit and supervised by faculty from Department of Community Medicine to interview married women. It took about 15-20 minutes to interview one respondent. Information on socio-demographic characteristics, reproductive health and contraceptive history was collected. Respondents were interviewed in privacy, in afternoon hours keeping in view social norms.

Statistical analysis: Data entry and analysis was done in Statistical Package for Social Sciences for Windows (SPSS Inc., Chicago, Illinois, USA) version 17.0. Descriptive analysis was done and significance of study findings was assessed by Chi-

square test for proportions and F statistics for mean and $p < 0.05$ was considered as statistically significant.

Ethical consideration: Ethical permission was obtained from Institutional Human Ethics Committee (IHEC) before initiating study. All personal information collected during house-to-house visit was kept confidential during and after study.

Results

In rural area, majority (62.5%) women belonged to <30 years age group, followed by women (36.11%) in 31-40 years age group. In urban area, this proportion was 43.33% and 44.17% respectively. In both rural and urban areas, majority of the women were from Hindu and nuclear families. Women were mostly housewives and literate in both the areas. The difference between rural and urban women's occupation and educational level was found statistically significant ($p < 0.001$). Per-capital per month income of the rural and urban women was found to be mostly below 2000 rupees. This difference was also statistically significant ($p < 0.001$). (Table 1)

The mean age of marriage for rural and urban women was 19.93 ± 2.58 years and 22.22 ± 3.35 years respectively ($p < 0.001$). The age at first pregnancy for rural and urban women was 20.97 ± 2.92 and 23.6 ± 3.17 years respectively ($p < 0.001$). Most of the women had institutional delivery in rural as well as urban area. Very few women from rural and urban area gave history of accidental or unintentional pregnancy. Complication during first pregnancy was reported by quite a less number of women from both the area. The history of abortion was present more in urban (21.67%) than rural (7.5%) area which was statistically significant ($p < 0.001$). History of medical termination of pregnancy in past was more common among urban women (12.5%), than in rural women (2.92%) ($p = 0.002$). Gap between first two successive children was significantly more in urban women (2.3 ± 2.41 years), compared to rural women (1.57 ± 1.41 years) ($p < 0.001$). (Table 2)

Table 1: Background information of study population

Characteristics	Total	Rural	Urban
	(Total 360)	(Total 240)	(Total 120)
	N (%)	N (%)	N (%)
Age (in years)			
Upto 30	202 (56.11)	150 (62.5)	52 (43.33)
31-40	130 (36.11)	77 (32.08)	53 (44.17)
41 and above	28 (7.78)	13 (5.42)	15 (12.5)
Religion			
Hindu	336 (93.33)	229 (95.42)	107 (89.17)
Muslim	9 (2.5)	1 (0.42)	8 (6.67)
Christian	15 (4.17)	10 (4.16)	5 (4.16)
Type of family			
Nuclear	257 (71.39)	182 (75.83)	75 (62.5)
Joint	103 (28.61)	58 (24.17)	45 (37.5)
Education			
Illiterate	49 (13.61)	49 (20.42)	-
1-7 std	75 (20.83)	62 (25.83)	13 (10.83)
8-12 std	187 (51.95)	120 (50)	67 (55.84)
Graduate and above	49 (13.61)	9 (3.75)	40 (33.33)
Husband's education			
Illiterate	39 (10.83)	39 (16.25)	-
1-7 std	70 (19.44)	62 (25.84)	8 (6.67)
8-12 std	182 (50.56)	122 (50.83)	60 (50)
Graduate and above	69 (19.17)	17 (7.08)	52 (43.33)
Occupation			
House wife	273 (75.84)	170 (70.83)	103 (85.83)
Service/Business	8 (2.22)	2 (0.83)	6 (5)
Farmer/Daily labourer	70 (19.44)	64 (26.67)	6 (5)
Other	9 (2.5)	4 (1.67)	5 (4.17)
Husband's occupation			
Service/Business	110 (30.56)	30 (12.5)	80 (66.67)
Farmer/Daily labourer	195 (54.17)	174 (72.5)	21 (17.5)
Other	55 (15.27)	36 (15)	19 (15.83)
No. of family members			
Upto 4	190 (52.78)	129 (53.75)	61 (50.83)
5-8	158 (43.89)	105 (43.75)	53 (44.17)
9 and above	12 (3.33)	6 (2.5)	6 (5)
Per capita income/month (in rupees)			
Upto 2000	293 (81.39)	218 (90.83)	75 (62.5)
2001 - 5000	52 (14.44)	18 (7.5)	34 (28.33)
5001 and above	15 (4.17)	4 (1.67)	11 (9.17)

When asked about their knowledge (awareness) about different types of contraceptives, majority of the women from rural and urban area knew about tubectomy (80% and 79.17% respectively), followed by oral contraceptive pills (68.75% and 74.17% respectively). However, awareness level was significant higher among urban women ($p < 0.001$). Among all contraceptive methods, tubectomy was

Table 2: Reproductive history of married women [N=360]

Characteristics	Total	Rural	Urban	p value
	N (%)	N (%)	N (%)	(chi-square, df)
Age of marriage (Mean \pm SD)*	20.69 \pm 3.06	19.93 \pm 2.58	22.22 \pm 3.35	< 0.001 , (F=51.31, df=1)
Age at first pregnancy (Mean \pm SD)*	21.46 \pm 4.43	20.97 \pm 2.92	23.66 \pm 3.17	< 0.001 (F=64.07, df=1)
Place of first delivery				
Institutional	(94.43)	(91.41)	120 (100)	< 0.001
Domiciliary	19 (5.57)	19 (8.59)	-	($\chi^2=10.93$, df=1)
If domiciliary, whether conducted by TBA	7 (36.84)	7 (36.84)	NA	NA
Presently pregnant	12 (3.33)	9 (3.75)	3 (2.5)	0.756, ($\chi^2=0.10$, df=1)
Past history of accidental or unintentional pregnancy	11 (3.06)	4 (1.67)	7 (5.83)	0.066, ($\chi^2=3.39$, df=1)
Any complication during first pregnancy	24 (6.67)	9 (3.75)	15 (12.5)	0.002 , ($\chi^2=9.84$, df=1)
Past history of abortion	44 (12.22)	18 (7.5)	26 (21.67)	< 0.001 ($\chi^2=14.97$, df=1)
History of Medical Termination of Pregnancy in past	22 (6.11)	7 (2.92)	15 (12.5)	< 0.001 , ($\chi^2=12.81$, df=1)
Number of living children (Mean \pm SD)*				
Total	1.93 \pm 0.94	2.01 \pm 1.01	1.77 \pm 0.75	0.02 (F= 5.31, df=1)
Male	1.03 \pm 0.81	1.08 \pm 0.82	0.92 \pm 0.78	0.077 (F= 3.15, df=1)
Female	0.91 \pm 0.82	0.94 \pm 0.85	0.84 \pm 0.76	0.276 (F= 1.19, df=1)
Like to have another child in future	74 (20.56)	48 (20)	26 (21.67)	0.712 ($\chi^2=0.14$, df=1)
Spacing between first two successive child in years (Mean \pm SD)*	1.81 \pm 1.84	1.57 \pm 1.41	2.3 \pm 2.41	< 0.001 , (F= 13.08, df=1)

Chi-square (χ^2) for proportions and F statistics (F) for mean *

most preferred permanent method among rural and urban women, followed by temporary methods like condoms and CuT. The practice was again significantly higher among urban women ($p < 0.001$). Among non-users, in rural and urban area, reason for not practicing contraception at the time of study was intend to have another child. The difference of non-usage and reasons for such non-usage was also statistically significant ($p < 0.001$). When enquired

about emergency contraceptive known to them, urban women (30.83%) were more aware about it compared to rural women (7.92%) ($p < 0.001$). (Table 3)

Table 3: Knowledge and practice of contraception among married women [N=360]

Characteristics	Total	Rural	Urban	p value
	N (%)	N (%)	N (%)	(chi-square, df)
Contraceptive methods known *				
Oral contraceptive pills	254 (70.56)	165 (68.75)	89 (74.17)	< 0.001, ($\chi^2=34.50$, df=5)
Condoms	169	85 (35.42)	84 (70)	
Cu T	180 (50)	97 (40.42)	83 (69.17)	
Tubectomy	287	192 (80)	95 (79.17)	
Vasectomy	33 (9.17)	26 (10.83)	7 (5.83)	
Others	11 (3.06)	1 (0.42)	10 (8.33)	
Using any method presently	203 (56.39)	128 (53.33)	75 (62.5)	0.098, ($\chi^2=2.73$, df=1)
Method using presently *				
Oral contraceptive pills	4 (1.11)	2 (0.83)	2 (1.67)	< 0.001($\chi^2=3$ 7.47, df=4)
Condoms	16 (4.44)	2 (0.83)	14 (11.67)	
Cu T	12 (3.33)	3 (1.25)	9 (7.5)	
Tubectomy	170	122	48 (40)	
Safe period	4 (1.11)	-	4 (3.33)	
Among non-users, reason for not practicing contraception at present *				
Intend to have child	52 (14.44)	34 (14.17)	18 (15)	< 0.001, ($\chi^2=26.17$, df=3)
Fear of side effects	38 (10.56)	17 (7.08)	21 (17.5)	
Not aware	43 (11.94)	41 (17.08)	2 (1.67)	
Others	14 (3.89)	7 (2.92)	7 (5.83)	
Any contraceptive used in past	71 (19.72)	20 (8.33)	51 (42.5)	< 0.001, ($\chi^2=58.99$, df=1)
Heard of emergency contraceptives	56 (15.56)	19 (7.92)	37 (30.83)	< 0.001, ($\chi^2=31.98$, df=1)

* Multiple options possible, Chi-square for proportions

Discussion

In the present study, mean age of marriage for rural and urban women was 19.93 ± 2.58 years and 22.22 ± 3.35 years respectively; which is better than the study from slums of Chandigarh, which reported about 28% of women were below 18 years of age.⁸ The study from rural area of Thrissur district, Kerala revealed that mean age of marriage of study subjects was 22.06 ± 3.05 years.⁹ Kumar et al. from Lucknow, Uttar Pradesh reported that more than half (55.6%) of the women in their study were married before 18 years of age.¹⁰

The age at first pregnancy for rural and urban women was 20.97 ± 2.92 and 23.66 ± 3.17 years respectively, which is similar to study from Kerala where the mean age at first childbirth was 23.65 ± 3.52 years. The mean birth interval between

consecutive childbirths was 3.25 ± 2.5 years.⁹ Very few women from rural and urban area gave history of accidental or unintentional pregnancy. This may be attributed to high literacy rate of mothers in the study area.

History of medical termination of pregnancy in past was more in urban women (12.5%) than in rural women (2.92%). Similarly the spacing between two successive children in years was better in urban women (2.3 ± 2.41), than in rural women (1.57 ± 1.41). This may be due to educated mothers with more exposure to communication channels of information and availability of medical facilities in urban area.

Regarding awareness about various contraceptive methods, majority women from rural and urban area knew about tubectomy (80% and 79.17% respectively), followed by oral contraceptive pills (68.75% and 74.17%). Similar findings were reported by Kumar et al. from urban slums of Chandigarh, where awareness of contraceptives was found to be 81.7%.⁸

Among all contraceptive methods, tubectomy was most preferred by both rural and urban women, followed by oral contraceptive pills. Study by Rathod et al. from Jamnagar, Gujarat revealed permanent method (58.37%) was most preferred method of contraception followed by CuT (20.23%) and barrier method (17.5%).⁶ Study from Chennai and Thiruvallur, Tamil Nadu by Vaidyanathan et al. has found permanent method of contraception as preferred method.¹¹ Jain et al. from Bhopal, MP found OCPs (28.6%) were most preferred method of contraception followed by tubectomy (13.67%) and condoms (6.67%).¹² Among non-users in rural and urban area, reason for not practicing contraception was intend to have child. Similar results were reported by study from Delhi slums, which was conducted by Bhasin, and found that among non-users, most common reason was the desire for more children (36.4%).¹³

In the present study, urban women (30.83%) were more aware about emergency contraceptives than rural women (7.92%). A hospital-based study from AIIMS, Raipur by Singh et al. revealed that around 56% women had heard of emergency contraceptive pills.¹⁴ It can be argued that, awareness regarding emergency contraception and practice within

prescribed period may always be a matter of chance due to its availability and accessibility.

Many women contacts health care providers for getting more information and options on contraceptives depending on the preference of respective couples. At that moment, they are uncertain of the method to be followed. This is the most critical phase when health care providers can help them to choose one of the best suitable contraceptive. This approach can make them more confident in their reproductive life.

Jain et al. from Bhopal, Madhya Pradesh has observed male dominance in decision making process in family planning.¹² This dominance usually has immense effect on women's reproductive health. Thus, focus must be given on men from the beginning by involving them in safe motherhood planning.⁷ Men must be called for discussion on various FP methods available. With this knowledge, couples can use contraceptive methods in correct manner and take care of their partners effectively. They can contact health care providers in case of any worries as well as in any emergency.

Health care providers must educate the in-laws if they find their influence on the couples' reproductive health. Efforts should be made to involve all influencing family members, religious leaders and key stakeholders in the community towards proper dissemination of information on various contraceptive methods for attainment of safe motherhood.

Conclusion: Present study revealed that, urban women in Pondicherry had better reproductive health indices compared to their rural counterparts; and also have better contraceptive knowledge as well as coverage compared to married women in rural areas.

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Conflict of interest: Nil

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Original Research Article

A study on risk factors of diabetic retinopathy among patients attending to Ophthalmology department in Government General Hospital, Kurnool, Andhra Pradesh

Praveena Ganapa¹, Visweswara Rao. Guthi², V.Soujanya³, G.Sindhura⁴

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Abstract

Background: Globally, the number of people with diabetic retinopathy will grow from 126.6 million in 2010 to 191.0 million by 2030. Diabetic retinopathy is important cause of avoidable blindness in India. Treatment interventions at early stages of diabetic retinopathy can reduce burden of blindness due to diabetic retinopathy. **Objectives:** 1) To study the association of socio demographic factors with diabetic retinopathy. 2) To know the proportion of diabetic retinopathy among study population. 3) To know the factors associated in progression of diabetic retinopathy among study population. **Methodology:** This was hospital based cross sectional study conducted ophthalmology OPD, government general hospital, tertiary care centre, Kurnool city of Andhra Pradesh from 1.10.2014 to 31.12.2014. The study population includes all the patients attending to ophthalmic department during these 2 months with different symptoms. Fundoscopy was used to diagnose diabetic retinopathy by ophthalmic experts. Pretested semistructured questionnaire was administered. **Results:** Results show that out of 355 patients 72 patients had diabetic retinopathy. Out of 72 patients with diabetic retinopathy 39 were known diabetics and 33 were newly diagnosed as diabetics. Diabetic retinopathy was found to be significantly associated with duration of diabetes, hypertension, smoking, hyperlipidemia, physical activity and socioeconomic status. **Conclusions:** Prevalence of diabetic retinopathy is 20.3%. Diabetic retinopathy was found to be significantly associated with duration of diabetes, hypertension, smoking, hyperlipidaemia, physical activity and socioeconomic status.

Key words: Diabetic Retinopathy, Duration of diabetes, Socio demographic factors, Risk factors

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Introduction:

Globally, the number of people with Diabetic Retinopathy (DR) will grow from 126.6 million in 2010 to 191.0 million by 2030, and estimate that the number with vision-threatening diabetic retinopathy (VTDR) will increase from 37.3 million to 56.3 million, if prompt action is not taken.¹A recent systematic review of 35 population-based studies showed that the prevalence of DR, proliferative diabetic retinopathy (PDR), and VTDR among individuals with diabetes is 34.6%, 7.0%, and 10.2%, respectively.²DR is rapidly emerging as a

global health issue that may threaten patients visual acuity and visual functioning. Although treatment of established retinopathy can reduce the risk for visual loss by 60%.³

DR remains the leading cause of blindness among working-age adults in the world. The proportion of blindness attributable to DR ranges from 3–7% in much of South-East Asia and the Western Pacific region to 15–17% in the developed regions of the Americas and Europe.⁴

Diabetes has emerged as a major public health problem in India. According to the World Health Organization, the number of cases of type 2 diabetes mellitus (DM) will grow from 19 million in 1995 to nearly 80 million in 2030 and India will emerge one of the major hubs of diabetic population.^{5,6}Nearly half of the patients with diabetes would have some degree of DR at any given time.^{7,8} After 15 years of duration of DM, DR will develop in nearly all patients with type 1 DM and about 75% of those with type 2 DM.^{6,7}

Diabetic retinopathy constitutes sixth common cause of blindness in India.⁶The major contributing factor toward the development of blindness is the progression to an advanced stage of the disease. The patients themselves never visit an ophthalmologist in the early stage of DR when it is often asymptomatic. The key to maintenance of good vision in these eyes is the early detection and treatment that can be done by screening all the patients with a diagnosis of DM.⁹

Since diabetic retinopathy is important cause of avoidable blindness in India. Treatment interventions at early stages of diabetic retinopathy can reduce burden of blindness due to diabetic retinopathy. So the present study was taken up to know prevalence of diabetic retinopathy. The objectives of present study were to study the socio demographic profile among patients with diabetic retinopathy, to know the proportion of diabetic retinopathy among known and unknown cases of diabetics and to know the factors associated in progression of diabetic retinopathy among diabetics.

Material and methods:

The present study was hospital based cross sectional study done in outpatient department of Ophthalmology, government general hospital, Kurnool city of Andhra Pradesh from 1.10.2014 to 31.12.2014. The study population includes all the patients attending to ophthalmic department during these 2 months with different symptoms. Patients who were suspected to have diabetes were subjected to random blood sugar estimation for confirmation of having diabetes, and those having RBS of more than 200mg/dl were confirmed of having diabetes. Fundoscopy was used to diagnose diabetic retinopathy by ophthalmic experts.

Study procedure: Pretested semi structured questionnaire was administered. Socio demographic information of patients was recorded. In case of previously diagnosed diabetic patients duration of diabetes was recorded. Habits regarding smoking, alcoholism, tobacco chewing were recorded. Blood pressure was recorded with sphygmomanometer in sitting position. Haemoglobin levels were estimated by Sahlis method and persons with <10mg/dl were taken as anaemic. Lipid levels were estimated and those having serum cholesterol levels > 200mg/dl were taken as having hyperlipidemia. BMI was estimated by measuring height and weight.

According to early treatment diabetic retinopathy study classification of DR:

Non proliferative diabetic retinopathy: Micro aneurysms, retinal hemorrhages, cotton wool spots, intraretinal micro vascular abnormalities without neovascularization.

Proliferative diabetic retinopathy: Micro aneurysms, retinal hemorrhages, cotton wool spots, intraretinal micro vascular abnormalities with neovascularization.

Non proliferative diabetic retinopathy grading:

Very mild: Micro aneurysms only.

Mild: Micro aneurysms, retinal hemorrhages, cotton wool spots.

Moderate: Cotton wool spots-common, severe retinal hemorrhages in 1-3 quadrants, significant venous bleeding present in 1 or more quadrants.

Severe: 4-2-1 rule: one or more severe hemorrhages in all 4 quadrants, significant venous bleeding in 2 or more quadrants, moderate intraretinal micro vascular abnormalities in 1 or more quadrants.

Very severe: Two or more criteria for severe.¹⁰

Statistical analysis was done with SPSS version 20. Mannwhitneys U test and chi square tests were used to test the significance. P<0.05 was regarded as statistically significant.

Results and observations:

It was observed from the table 1 that majority of the study population belong to 44-54 years of age group(148/355) followed by 35-44 years of age group(117/355) and ≥55 years of age group(90/355). Among the study population, diabetic retinopathy was more among the 44-54 years of age.

Table 1: Distribution of study population according to socio demographic factors

Socio demographic factor	Diabetic retinopathy (DR) present	Diabetic retinopathy (DR) absent	Total	
Age				
35-44 years	23(19.6%)	94(80.4%)	117(100%)	$\chi^2=0.0729$ P=0.9642
44-54 years	31(20.9%)	117(79.1%)	148(100%)	
≥55 years	18(20%)	72(80%)	90(100%)	
Sex				
Male	40(22.1%)	141(77.9%)	181(100%)	$\chi^2=0.7547$ P=0.3849
Female	32(18.3%)	142(81.7%)	174(100%)	
Literacy				
Illiterate	24(19.5%)	99(85.5%)	123(100%)	$\chi^2=0.0689$ P=0.7929
Literate	48(20.6%)	184(79.4%)	232(100%)	
Socioeconomic status				
Upper	3(9.3%)	29(90.7%)	32(100%)	$\chi^2=36.8415$ P=0.0000
Upper Middle	6(11.1%)	48(88.9%)	54(100%)	
Middle	11(9.8%)	101(90.2%)	112(100%)	
Lower Middle	33(42.3%)	45(57.7%)	78(100%)	
Lower	19(24%)	60(76%)	79(100%)	
Total	72(20.3%)	283(79.7%)	355(100%)	

group(20.3%) followed by ≥55 years of age group(20%) and 35-44years of age group(19.6%). This difference was not statistically significant. Among the study population majority were males(181/355) compared to females. In the study population diabetic retinopathy was more among males(22.1%) compared to females(18.3%). This difference was not statistically significant. Majority of the study subjects were literates(232/355) and among the study population diabetic retinopathy was more among the literates(20.6%) compared to the illiterates(19.5%). This difference was statically not significant. Among the study population majority were belonging to middle socio economic class(112/355) followed by lower(79/355), lower middle(78/355), upper middle(54/355) and upper socio economic class(32/355). In the study population diabetic retinopathy was more among lower middle(42.3%) followed by lower class(24%), upper middle

class(11.1%), middle class(9.8%) and upper socio economic class(9.3%). These differences were statistically significant.

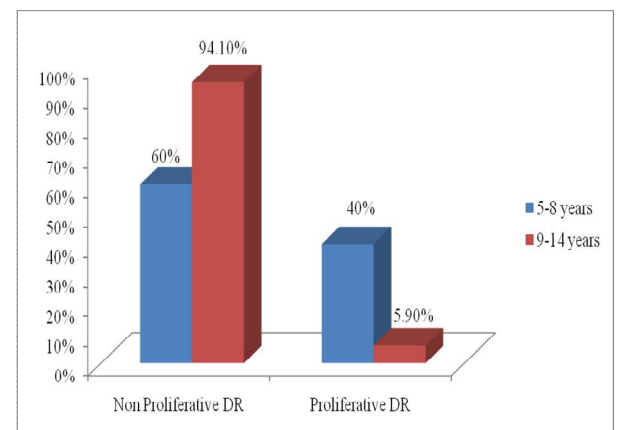
Table 2: Distribution of study population according to habits

Habits	DR present	DR absent	Total	
Smoking				
Smokers	58(30.3%)	133(69.7%)	191(100%)	$\chi^2=26.00$ P=0.000
Non smokers	14(8.5%)	150(91.5%)	164(100%)	
Alcoholism				
Alcoholics	27(18.6%)	118(81.4%)	145(100%)	$\chi^2=0.4183$ P=0.517
Non alcoholics	45(21.4%)	165(78.6%)	210(100%)	
Tobacco chewing				
Present	39(16.2%)	210(83.8%)	240(100%)	$\chi^2=7.448$ P=0.006
Absent	33(28.6%)	82(71.4%)	115(100%)	
Total	72(20.3%)	283(79.7%)	355(100%)	

Table 3: Distribution of the type of DR according to time of diagnosis of diabetes

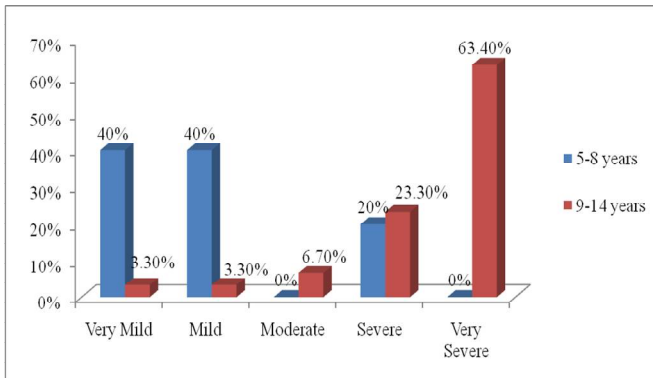
Time of diagnosis of diabetes	Non proliferative DR	Proliferative DR	Total
Newly diagnosed diabetics	27 (81.8%)	6 (18.2 %)	33(45.8%)
Previously diagnosed diabetics	35 (89.7%)	4(10.3%)	39 (54.2%)
Total	62 (86.1%)	10 (13.9%)	72 (100%)

Figure 1: Relation of duration of diabetes with type of diabetic retinopathy



$\chi^2=5.5124$, $P=0.018$

Figure 2: Relation of duration of diabetes with grade of non proliferative diabetic retinopathy



Mann Whitney $U=11.5$, $P=0.001$

Table 4: Distribution of study population according to risk factors

Risk factors	DR present	DR absent	Total	
Hypertension				
Hypertensives	49(28.6%)	122(71.4%)	171(100%)	$\chi^2=14.3066$ $P=0.00005$
Normotensives	23(12.5%)	161(87.5%)	184(100%)	
Hyperlipidemia				
Present	40(28.3%)	101(71.7%)	141(100%)	$\chi^2=9.4614$ $P=0.0020$
Absent	32(14.9%)	182(85.1%)	214(100%)	
Anemia				
Present	29(21.6%)	105(78.4%)	134(100%)	$\chi^2=0.2463$ $P=0.6197$
Absent	43(19.4%)	178(80.6%)	221(100%)	
BMI				
Obese	20(14.2%)	121(95.8%)	141(100%)	$\chi^2=5.3783$ $P=0.0203$
Non obese	52(32.1%)	162(67.9%)	214(100%)	
Total	72(20.3%)	283(79.7%)	355(100%)	

It was observed table 2 that majority of the study subjects were smokers(191/355). Among the study population diabetic retinopathy was more among the smokers(30.3%) compared to nonsmokers(8.5%). This difference was statistically significant. Majority of the study subjects were non alcoholics(210/355). Among the study population diabetic retinopathy was more among non alcoholics(21.4%) compared to alcoholics(18.6%). This difference was not statistically significant. In the study population majority population were having habit of tobacco chewing(240/355) and among the study population diabetic retinopathy was more among the persons not having the habit of

tobacco chewing(28.6%) compared to persons with habit of tobacco chewing(16.2%). This difference was statistically significant. Among the study population 20.3% (72/355) were having diabetic retinopathy.

Among the study population having diabetic retinopathy, 45.8% (33/72) were newly diagnosed diabetic patients and 54.2% (39/72) were previously diagnosed diabetic patients. Among the study population having non proliferative diabetic retinopathy majority were previously diagnosed diabetics (89.7%) and among the proliferative diabetic retinopathy patients majority were newly diagnosed diabetics (18.2%). Figure 1 shows that among of the study population who were previously known diabetics and having non proliferative diabetic retinopathy(35/72) majority were having duration of diabetes of 9-14 years of illness(94.1%). Among the study population who were previously known diabetics and having proliferative diabetic retinopathy(4/72)majority were having duration of diabetes of 5-8 years of illness (40%). This difference was statistically significant. Figure 2 shows that among the study population who were previously known diabetics and having non proliferative diabetic retinopathy(35), very severe grade(63.4%), severe grade(23.3%) and moderate grade(6.7%) of non proliferative diabetic retinopathy were more among the persons with duration of diabetes 9-14 years of diabetic patients and mild(40%) and very mild(40%) grades were persons with duration of diabetes 5-8 years. These differences were statistically significant.

It was observed from the table 4 that majority of the study population were normotensives(184/355) and among the study population diabetic retinopathy was more common in hypertensives(28.6%) compared to normotensives(12.5%). This difference was statistically significant.

Majority of the study population were having no hyperlipidemia(214/355) and among the study population diabetic retinopathy was more among persons having hyperlipidemia(28.3%) compared to persons having no hyperlipidemia(14.9%). This difference was statistically significant.

Majority of the study population were not having anemia(221/355) and among the study population diabetic retinopathy was more among persons with anemia(21.6%) compared to persons without

anemia(19.4%). This difference was not statistically significant.

Majority of the study population were non obese (214/355) and among the study population diabetic retinopathy was more among non obese persons(32.1%) compared to persons who were obese(12.5%). This difference was statistically significant.

Discussion:

This was hospital based cross sectional study conducted in 355 patients approaching ophthalmic OP, government general hospital, tertiary care centre, Kurnool city during October 2014 to December 2014. Current study shows that DR was more among 44-55 years of age group, males, literates and were significantly associated. DR was more among lower socio economic class and was not significantly associated.

In the multivariate analysis conducted by the Lalit Dandona et al it was observed that subjects belonging to the upper or middle socioeconomic strata had a 86% higher chance of having DR than those belonging to the lower or extreme lower strata though this did not reach statistical significance. It was observed that prevalence of DR was more among the 50-59 years of age group(5.84%), among males(2.24%) and middle socio economic class(2.78%).¹¹

In the study conducted by Klein R et al it was observed that the prevalence and severity of DR increases with increasing age in type 1 DM but not in type 2 DM.¹²

DR was more common among the smokers(30.3%), non alcoholics(21.4%), and in the persons who did not had habit of tobacco chewing (28.6%). Among these habits smoking was significantly associated with DR.

Present study shows that among the study population 20.3% (72/355) were having diabetic retinopathy. Among the study population having diabetic retinopathy, 45.8% (33/72) were newly diagnosed diabetic patients and 54.2% (39/72) were previously diagnosed diabetic patients.

In the study conducted by Lalit Dandona et al it was observed that in the urban population studied, the prevalence of self reported diabetes was 7.8% in those >30 years old. Almost all of the self reported diabetes was diagnosed at >30 years of age. DR was present in 22.4% of the self reported diabetics.

These findings were contradicting the present study findings.¹¹

In comparison, 22.8% of those with self reported diabetes had DR in the Melbourne Visual Impairment Project,¹³ and 32.4% of the diabetics in Blue Mountains Eye Study,¹⁴ 26% in Rotterdam Study,¹⁵ and 36.8% in Beaver Dam Eye Study.¹⁶ These results were contradicting to present study findings.

In Melton Study, 52% of those with self reported diabetes had DR.¹⁷These findings were similar to present study findings.

In the present study it was observed that among of the study population who were previously known diabetics and having non proliferative diabetic retinopathy(35/72) majority were having duration of diabetes of 9-14 years of illness(94.1%) and having proliferative diabetic retinopathy(4/72) majority were having duration of diabetes of 5-8 years of illness (40%). This difference was statistically significant. Among the study population who were previously known diabetics and having non proliferative diabetic retinopathy(35), very severe grade(63.4%), severe grade(23.3%) and moderate grade(6.7%) of non proliferative diabetic retinopathy were more among the persons with duration of diabetes 9-14 years of diabetic patients and mild(40%) and very mild(40%) grades were persons with duration of diabetes 5-8 years. These differences were statistically significant.

Similar findings were observed in the study conducted by Klein R et al there was a direct correlation between the frequency and severity of DR and the duration of diabetes mellitus.¹²

In the study conducted by LalitDandona et al it was observed that, 87.5% of those with duration of diabetes since diagnosis >15 years had DR compared with 18.9% of those with duration <15 years. Vast majority of those with DR had mild or moderate NPDR (89.3%); severe NPDR or PDR was present in only 10.7%.¹¹

In the study conducted by Klein R et al it was observed that, increase in duration of diabetes has been associated with higher risk of blindness which increases particularly after about 15 years of diabetes.¹⁸

Current study shows that among the study population diabetic retinopathy was more among hypertensives (28.6%), among persons having hyperlipidemia (28.3%) and in among persons with

anemia(21.6%) and these factors were significantly associated.

Cross-sectional and longitudinal studies have identified some factors associated with a higher risk of DR. These include hyperglycemia, hypertension, dyslipidemia, duration of diabetes, pregnancy, puberty, and cataract surgery.¹⁹

In UKPDS, tight control of blood pressure resulted in 34% reduction in progression of retinopathy with 47% reduced risk of deterioration in visual acuity of three lines.²⁰

In WESDR, higher total serum cholesterol was associated with increased risk of having retinal hard exudates.²¹ ETDRS has reported a positive correlation between serum lipids and risk of retinal hard exudates in type 2 DM. These results were similar to current study findings.²²

Similar results were observed in the study conducted by Gupta *et al.* that, reduction in edema, severity of hard exudates and subfoveal lipid migration in patients with type 2 diabetes and dyslipidemia, using a lipid-lowering drug, atorvastatin, as an adjunct to macular photocoagulation.²³

Similar finding were observed in the study conducted by David *et al* which showed an increased risk of retinopathy in patients with the hemoglobin level of less than 12 g/dl.²⁴In the study conducted by and Singh R *et al* it was observed that anemia-induced retinal hypoxia is speculated as cause of development of microaneurysms and other retinopathy changes.²⁵

Conclusions:

Diabetic retinopathy was found to be almost equal in both previously known diabetics and newly diagnosed diabetics. Severity of the Diabetic retinopathy was increasing with duration of the diabetes. Diabetic retinopathy was found to be significantly associated with duration of diabetes, hypertension, smoking, hyperlipidaemia, physical activity and socioeconomic status.

Recommendations:

Every opportunity of contact with high-risk cases of diabetics should be utilized for screening, diagnosis of diabetic retinopathy and referral. All the stakeholders including the private sector will need to play a role in awareness generation and behaviour change among diabetics. By encouraging community participation and early health seeking behavior among diabetics in order reduce severity of DR.

Source of Funding: Nil

Conflict of interest: Nil

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Original Research Article

Prevalence Of Intimate Partner Violence And Assessment Of Risk Of Danger Among Women Suffering From Intimate Partner Violence

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Abstract

Background: The Intimate partner violence is prevalent in almost all countries worldwide, both in developing and developed countries. Even-though the prevalence rate may vary among countries, the rate is high in almost all countries. If not recognized early intimate partner violence (IPV) may lead to worst consequences in future. **Objectives:** To know the prevalence of intimate partner violence among married women and assessment of risk of danger among IPV sufferers. **Methods:** A cross sectional study was conducted from November 2015 to June 2016 amongst 214 married women attending the outpatient department of three urban health centres by interviewing them using WHO multi-country study questionnaire and risk of danger was assessed using Campbell's 'Danger assessment Scale'. **Results:** The overall prevalence of intimate partner violence was 39.25%. Among these 13% had variable danger, 20% of them had increased danger and 67% had severe danger. The most common reason for IPV were husbands' alcohol consumption and financial problems. **Conclusion:** The prevalence of IPV is high in the present study. Early detection, proper counseling, appropriate treatment and referral may reduce the burden and severity of IPV.

Key words: Intimate partner violence, danger assessment scale, urban area, married women

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Introduction:

Intimate partner violence is one of the important public health problems since decades. But still it remains as the deserted part in gaining health care services.

A wide range of negative health outcomes and even death had been justified as consequences of violence [1]. Indirectly, IPV can lead to a number of health problems, such as a loss of personal autonomy, fertility challenges, substance abuse, depression, anxiety and sleep and eating disorders [2]. According to a World Health Organization (WHO) survey of ten countries, the lifetime prevalence of physical IPV varies from 15% to 71% [3]. Each year, more than 1.6 million people worldwide lose their lives to

violence and also have shown that violence is one of the leading causes of death for people aged 15–44 years worldwide [4]. Violence against women may be either physical, sexual, emotional or controlling behaviour. According to WHO the global prevalence of physical and/or sexual intimate partner violence among all ever partnered women was 30.0%, with the highest in the African, Eastern Mediterranean and South-East Asia regions [5]. Furthermore, women are expected to play a subordinate, submissive and more conservative gender role in marital relationships especially in rural areas. Moreover, low status and low decision-making power of women, lack of access to resources, and information

and shame in exposing certain abuses can put women at further risk of experiencing violence [6]. Violence is often unreported and therefore remains a hidden phenomenon. The percentage of women who do not want to speak about their experience of IPV is high and the reasons may be embarrassment, fear of retaliation, economic dependency, gender bias, family privacy etc. This may lead to increase in the prevalence, intensity and frequency of violence which further lead to worst health outcomes and sometimes may lead to death of the women. Thus the present study was conducted to know the prevalence of intimate partner violence and assessment of danger among married women in urban areas of Belagavi.

Materials and Methods:

Study design: Cross-sectional study

Study period: November 2015 to June 2016

Study participants: 214 married women attending the outpatient department of urban health centres.

Study area: Three urban health centres namely Ashoknagar, Ramnagar and Rukmininagar which comes under the field practice area of Department of Community Medicine, KLE University's Jawaharlal Nehru Medical College, Belagavi, Karnataka.

Sampling method: Sample size was calculated using the prevalence rate (56%) from the previous study done in India [7] and the sample calculated was 214. Proportionate sampling is done so that equal number of study participants was included in the study from three different urban health centres (72 participants from Rukmini nagar and 71 participants each from Ramnagar and Ashoknagar)

Study tool: Data was collected using pre-tested and pre-designed questionnaire after taking informed consent from the study participants. The questionnaire includes socio demographic data, WHO multi-country study questionnaire [8,9], to assess the prevalence of different types of IPV and Campbells' Danger assessment scoring to assess the risk of danger among IPV sufferers.[10]

WHO multi-country study questionnaire has following components: **The physical violence includes:** Was slapped or had something thrown on her, was pushed or shoved, was hit with fist or something else that could hurt, was kicked, dragged or beaten up, was choked or burnt on purpose or perpetrator threatened to use or actually used a gun

or knife. **Sexual violence includes:** Was physically forced to have sexual intercourse, had sexual intercourse when she did not want it or was forced to do something sexual that she found humiliating. **Controlling behaviour includes:** Tried to keep her from seeing friends, tried to restrict contact with family of her birth, insisted in knowing where she was all the times, ignored her or treated indifferently, got angry if she spoke to another man, was often suspicious that she was unfaithful, or expected her to ask permission before seeking health care for herself. [8,9]

Campbell's Danger assessment scale: This scale consists of 20 questions. Add total number of "Yes" response through 1 to 20. Based on sum of weighed scoring the risk of danger was categorised into: Less than 8 - variable danger, 8 to 13 - increased danger, 14 to 17 - severe danger and 18 or more - extreme danger.

Married women who were in reproductive age group, permanent residents of study area, who attended OPD and consented to participate were included in the study. The participants were interviewed in their local vernacular language (Kannada) in a separate room to make them comfortable to answer the questions. Assurance about the anonymity and not disclosing the details of interview to husband or any family member was ensured. Ethical clearance was obtained from institutional ethical committee.

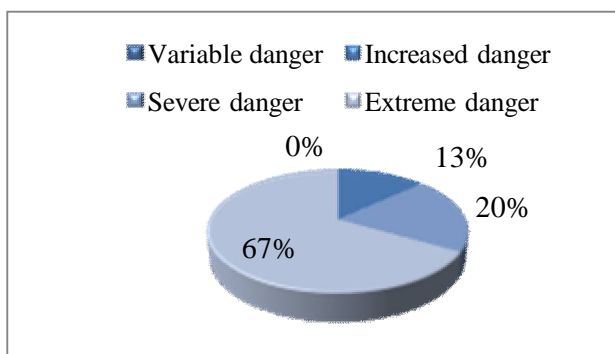
Results:

In the present study, out of 214 study participants, the age group of the married women ranged between 20-39 years. Among the total, 90 (42.0%) of them belonged to 25 -29 years, around 95 (44.4%) of the women studied up to primary school, 54(25.3%) high school, 23 (10.7%) studied up-to college and 42 (19.6%) were illiterates. Almost 84(39.3%) of the married women belonged to Class II socio economic status according to modified B.G. Prasad classification.¹² Among the study participants 137 (64%) of them had arranged marriage, 50(23.4%) had love marriage and 27(12.6%) of them married because of pressure by parents /relatives. [Table No.1] .

Table No.1:- Socio-demographic characteristics of the women participated in the study: (n=214)

Category	No.	%
Age:		
20-24 yrs	60	28%
25-29yrs	90	42%
30-34yrs	35	16.30%
35-39yrs	29	13.60%
Literacy status:		
Illiterate	42	19.60%
Primary	95	44.40%
High school	54	25.30%
Collegiate	23	10.70%
Socio –economic status		
Class 1	17	7.90%
Class 2	84	39.30%
Class 3	69	32.20%
Class 4	44	20.60%
Class 5	0	0%
Type of marriage		
Arranged	137	64.00%
Love	50	23.40%
Forced by relatives	27	12.60%
Duration of married life		
≤5 yrs	123	57.50%
>5yrs	91	42.50%
Husband alcohol consumption		
Yes	67	31.30%
No	147	68.70%
Marital relationship		
Good	130	60.74%
Poor	84	39.25%

Figure 1: Assessment of risk of danger using Danger Assessment Scale (n=84)



In the present study, 13% of the IPV sufferers had variable danger.20% of them had increased danger, 67% had severe danger and none of them had extreme danger.(Figure no: 1)

The most common reason for intimate partner violence in the present study is husbands alcohol consumption(61.9%), followed by financial problems(25%) ,Male child preference (7.1%) and other unexplained reasons constitutes (6%).[Table No.2]

Table No. 2:-Reasons for intimate partner Violence (n= 84)

Reasons	No.	%
Husband alcohol consumption	52	61.90%
Financial problems	21	25%
Male child preference	6	7.10%
Others	5	6%

Discussion:

In the present study the overall prevalence of Intimate Partner Violence was 39.25% (84) which means that these women have adverse physical well being. IPV is quite high in the present study and also similar results seen in other studies done in Bangalore (42%) China (43%), Esfahan, Iran (36.8%) and Ireland (39%)^[11-14] but when compared to other studies done in Eastern India (56%) and in Madina, Saudi Arabia (57.8%)^[7,15], the prevalence in our study is comparatively low.

The prevalence of physical violence is 21.5%, Sexual violence is 14.0% and controlling behaviour is 19.1%.A study done in Pune showed that 8.1% women had reported spousal sexual violence, 30.4% had emotional and 49.9 had physical violence.^[16] Another study done in Bangalore showed that 29% of women experienced physical violence and 69% of women had psychological violence.^[11] These data along with the world-wide literature confirm that domestic violence is a universal phenomenon existing in all communities^[7]

The most common reasons for violence against women were husbands’ alcohol consumption, financial problems and male child preference. Similar findings were found in study done in Bangalore[11] This shows that proper counselling of the couples and improving the socio economic status of the family may help to reduce the prevalence of violence against women drastically.

In the present study, 13% of the IPV sufferers had variable danger.20% of them had increased danger, 67% had severe danger and none of them had extreme danger. Depending upon the risk of danger the women was counseled by telling women the level can change quickly and guiding her for further action like seeking support from the trusted friends, close relatives, NGO’s who are working for women welfare and also with the health care providers.

Advised her about legal action depending on the severity. The women were also advised to get medical treatment immediately if any hurt and informed about its effect on her kids.

Assessing the risk of danger definitely helps to take action earliest possible and can prevent or reduce in severity of future consequences.

Conclusion and Recommendations: The prevalence of intimate partner violence was high in the study area. The effective response for preventing/reducing the burden of violence against women is multi-sectoral. Health sector play a unique role in reducing the prevalence of violence against women and also which is easily accessible by the IPV sufferers. Thus special training should be provided to the health care providers to identify the violence against women in the early stages by screening and identifying the underlying cause and proper counseling, treatment and appropriate referral of the IPV sufferers would reduce the prevalence and severity of violence against women.

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Conflict of Interest: Nil

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Original Research Article

**Morbidity Pattern among Adolescent girls in Urban slums of Kurnool town,
Andhra Pradesh, India**

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Abstract

Objective: To describe the morbidity pattern among the adolescent girls in the urban slums of Kurnool town. **Study Period:** August 2010 – August 2011; **Type of Study:** Cross sectional descriptive study. **Study setting:** Three urban slums attached to urban health centre of Community Medicine Department of Kurnool medical college. **Study Participants:** 613 adolescent girls (10-19years) **Sampling frame:** Adolescent girls residing in three urban slums in Kurnool town **Variables studied:** socio demographic profile and morbidity pattern. Data was collected by a predesigned and a pretested questionnaire and was analyzed by using Statistical Package for Social Sciences (SPSS) version 17.0. Proportions were calculated for the various study variables. Chi-square test was used for analysis of categorical variables. **Results:** Majority of the girls were in the age group 10-13 yrs (51.7%), 49.4% were in middle school, 36.1% belong to Lower middle social class, 59% mothers of adolescent girls were illiterates, The major prevalent morbid conditions among girls were Pallor 48%, Pediculosis 27.9%, Dysmenorrhea 19.9%, Vitamin deficiencies 19%, Dental caries 18.3%, Skin infections 16.6%, Passing worms 10.6%. **Conclusion:** Anaemia, Pediculosis, poor personal hygiene and dysmenorrhea were found to be significant across the age groups. High morbidity was found in 10-13 year age group.

Keywords: Adolescent girls, morbidity pattern, urban slums.

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Introduction:

Adolescence has been defined by WHO as the period of life spanning between 10-19 years. Adolescence is a transition phase through which a child becomes an adult. It is characterized by rapid growth and development; physiologically, psychologically and socially.¹ There are 1-2 billion adolescents in the world, 85% of them live in developing countries². The adolescent population

constitutes about 18-25% of the total population of the South East Asia Region.¹ In India, adolescent girls (10-19 yrs) account for a little more than one-fifth of the population (21.4%).³

Most adolescents go through adolescence with little or no knowledge of the body's impending physical and physiological changes, health issues and problems. Early marriages, high fertility rates, high

rates of teenage pregnancy, high risk of STI/RTI, and poor nutritional status are the main health problems specially related to the adolescent girls in India.⁴ Anaemia is widely prevalent health problem among adolescent girls. Both the 1992 ICMR study on iron and Folic acid supplementation and UNICEF have reported low mean haemoglobin levels and low nutritional intake of proteins, calories, and macro/micronutrients among adolescent girls and pregnant mothers.⁴

Due to various social taboos, ignorance and misconceptions about sex and sexuality, conception and contraception; adolescents form a special vulnerable group. Not much attention has been paid to this group by the society. They need nutritional, social, psychological and emotional support.⁵

The importance of this target group lies in the fact that they are going to be the mothers of tomorrow – whose well being is critically important for improving the nutritional, health and educational status of children in the State. Various base line surveys also revealed that the health, nutritional and educational status of adolescent girls at sub-optimal level. Empowerment of the Adolescent girl is necessary to help her cope with the changes and promote awareness of health, hygiene and nutrition so as break the intergenerational life cycle of nutritional and gender disadvantage and provide an enabling and supporting environment for self-development.⁶

The data regarding the morbidity status among slums are sparse, despite the usefulness of such information in the upliftment of these groups. In this context, the present study was taken up among adolescent girls residing in the slums of Kurnool Town. This study focuses on health status and extent of health related problems of adolescent girls in the slums.

Material and Methods:

It was a cross sectional descriptive study conducted from August 2010 to August 2011 among adolescent girls residing in the six slums attached to urban health centre of Community Medicine Department of Kurnool medical college in Kurnool city. The study area comprises of total 6 slums under urban health centre with a population of 15,454. For all the

health issues among slum population they approach nearby urban health centre. Simple random sampling was used to select the number of urban slums, so as to attain the calculated sample size (600). Thus three urban slums among six were included in the present study and all the adolescent girls of age group 10-19 yrs in the selected slums who met the inclusion criteria were included in the study. Consent for the participation in the study was taken from the parents of the study subjects. The study was taken up after the approval of the Ethical committee of the medical college.

Sample size: A total of 648 adolescent girls were present at the time of study, out of which 613 participated, while 35 did not give their consent.

Inclusion criteria: All the adolescent girls in the selected urban slums residing for more than one year.

Exclusion criteria: 1. Parents of adolescent girls who had not given consent. 2. Adolescent girls residing in the urban slum for less than one year.

Study Instruments: A Pre-designed, pre-tested semi-structured questionnaire was administered to collect data regarding morbidity status, duration of stay in the area, menstrual history, practices regarding personal, menstrual hygiene and occurrence of any ailment during past 2 weeks. The interview was followed by anthropometric measurements, detailed general examination and systemic examination. Every girl was examined by PG in Community Medicine physically from head to toe and any signs and symptoms of illness were recorded by using weighing scale, Stethoscope, Sphygmomanometer, Snellens chart etc. Data collected was entered in Microsoft office excel and analysed by using SPSS version 17.0. Proportions were calculated for different study variables. Chi-square test was used for analysis of categorical variables.

Results:

Majority of the girls were in the age group 10-13 yrs (51.7%), 49.4% were in middle school, 36.1% were belong to Lower middle social class, 59% mothers of adolescent girls did not have formal education, age at menarche was less than 13 years in more than half (53.9%) of the subjects.

Table 1: Current morbidity profile of study subjects (n=613)

S.no.	Morbidity Status	No.	Percentage
1	Pallor	294	48
2	Pediculosis	171	27.9
3	Dysmenorrhoea (N=356)	71	19.9
4	Vitamin Deficiencies	117	19
5	Dental Carries	112	18.3
6	Skin Infections	102	16.6
7	Passing Worms	65	10.6
8	Respiratory Infections	39	6.4
9	Defective Vision	39	6.4
10	ENT Disorders	36	5.9
11	Lymphadenopathy	17	2.8
12	CVS Disorders	11	1.8
13	Diarrhoea	10	1.6
14	Musculo Skeletal Disorders	10	1.6
15	More than one morbid Condition	288	47

Table 2: Relationship between Personal Hygiene and more than one Morbidity

Personal Hygiene	More than one Morbid Condition		Total No. (%)
	Present No. (%)	Absent No. (%)	
Good	140 (43.6)	181 (56.4)	321 (52)
Satisfactory	89 (39.4)	137 (60.6)	226 (37)
Poor	59 (89.4)	7 (10.6)	66 (11)
Total	288 (47)	325 (53)	613 (100)

The association between personal hygiene and more than one morbid condition was found to be statistically significant ($p < 0.01$). Majority of the subjects with Poor personal hygiene were found to have more than one morbid condition.

Table 3: Relationship between Environmental Hygiene and More than one morbid condition.

Environmental Hygiene	More Than One Morbid Condition		Total No. (%)
	Present No. (%)	Absent No. (%)	
Good	10 (8.1)	113 (91.9)	123 (20.1)
Satisfactory	36 (27.1)	97 (72.9)	133 (21.7)
Poor	242 (67.8)	115 (32.2)	357 (58.2)
Total	288 (47)	325 (53)	613 (100)

Majority (47%) were having more than one morbid condition. The association between environmental hygiene and more than one morbid condition was found to be statistically significant ($p < 0.01$).

Table 4: Illness of study subjects in past two weeks (n=613)

Illness in the past 2 weeks	No.	Percentage
Pyrexia	61	9.95
Scabies	38	6.19
Acute Respiratory Infections	31	5.05
Diarrhoea	10	1.63
Pain abdomen	43	7.01
Having one or more illness	183	29.85

Among 613 subjects, 70.15% did not report any illness in the past two weeks.

Discussion:

In the present study, the leading causes of morbidity were Pallor (48%), Pediculosis (27.9%),

Dysmenorrhea (19.9%), Vitamin deficiencies (19%), Dental caries (18.3%), Skin infections (16.6%), passing worms in the stool (10.6%), ARI (6.4%). Majority of the subjects with Poor personal hygiene were found to have more than one morbid condition. Majority of subjects having more than one morbid condition were living under poor environmental hygienic conditions.

In a study conducted in urban slums of Lucknow by Singh J et al.⁷ on 400 adolescent girls aged 10-19 years, the various morbid conditions found were inadequate oral hygiene (55.4%), pediculosis (39.2%), cold & cough (25.8%), Lymphadenopathy (22.2%), scabies (16.2%), inflamed tonsils (7.8%) and ear discharge (7%). Compared to the present study the high morbidity pattern may be due to poor environmental and personal hygiene.

In a study conducted by Srinivasan, et al.⁸ in Tirupati among 598 children aged 6-17 years, the common morbid conditions found were skin disorders 25.7%, dental caries 21.5%, history of passing worms in stool 21.6%, vitamin B deficiency 3.2%, ARI 1.7% and diarrhoea 1.2%. The morbidity conditions are of similar pattern except more ARI cases in the present study attributed to overcrowding.

In a study conducted by Geetha, et al.⁹ in Kaniyambadi Block of North Arcot district of Tamil Nadu, the leading general complaints were general fatigue, palpitations, backache and abdominal pain. The study was conducted in rural community; girls were not educated and were more involved in household chores leading to more musculoskeletal disorders.

In a study by Satapathy among tribal girls, scabies accounted for 15%¹⁰. The difference may be due to poor environmental and personal hygiene.

Strengths and Limitations:

It is community based study which is strength of present study. Lab investigations could not be done on study subjects to confirm morbidity due to logistic reasons. Recall bias could have occurred while collecting data regarding illness in the past two weeks.

Implications:

Nearly 50% of the adolescent girls were having more than one morbid condition and 30% of with recent morbidity, which highlights the need for them to be recognized as a separate target group. Most of the morbid conditions could be prevented by sensitizing adolescent girls through health education. Special display materials for advocating good personal and environmental hygiene are to be improvised and provided to all schools and anganwadi centers. There should be a separate clinic for adolescent girls at Urban Health Centers on fixed days.

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Original Research Article

**A Study On Educational Performance And Its Determinants In Adolescents
Aged 11 To 17 Years, From Selected Schools Of Different Syllabi In
Bangalore, India**

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Abstract

Background: Studies on educational performance remain scarce particularly in south India and more so in Bangalore. No satisfactory methods were previously used to compare educational performance across various syllabi. **Objectives:** To study the effect of various factors on educational performance among adolescents between 11 to 17 years of age. **Method:** A cross sectional study was done with 403 students across three schools in Bangalore North. Data collected were age and sex of the child, sleep, housing and who the child stays with (both parents, single parent, hostel) from classes VI to X. **Results:** Total study population is 403 (223 males and 180 females). Average academic score was 4.43. Educational performance varied with various factors studied, with sex [males 4.02, females 4.93], with type of housing [kutchha 4.90, semi pucca 4.06, pucca 4.57], with who the student stayed with [hostels 5.49, single parent 3.95, both parents 4.66], with hours of sleep [7 hours 4.20, 8 hours 4.63, 9 hours 4.35, 10 hours 4.19, 11 hours 3.73]. Pearson's correlation between educational performance and staying in better housing ($r=-0.09$) & duration of sleep ($r=-0.02$). **Conclusion:** Female students obtained higher scores as compared to male counterparts. Students living in kutchha houses fared the best followed those in pucca houses. Average sleep of 8 hours showed the highest academic score. **Recommendation:** Enquiries need to be made for the poorer academic performance in male students and rectified. Optimal sleep needs to be encouraged among students.

Keywords: education, academic performance, sleep, housing.

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INTRODUCTION

Education is fundamental to the progress of any nation more so underdeveloped and developing countries. Education shapes and alters various aspects of a student's life. It improves his/her knowledge of health and diseases leading to healthier lifestyle and reduces risk of acquiring diseases specially those sexually transmitted and by unhygienic practices^{[1][2]}. Studies have shown

increased risk of Alzheimer's with reduced intellectual activity^[3]. Better education leads to better jobs, better incomes, improved quality of food, education and medical resources. Hence education initiates a positive cycle of growth development and health. Various factors affect the quality of education a child receives among them sex of the child, age of the child, sleep, housing and who the child stays with (both parents, single parent, hostel) have been considered in this study.

Academic scores while providing an apt means to estimate the level of education achieved by a child have often been neglected as a source of statistical data due to interference of various other factors such as quality of the teachers, teaching equipment available, infrastructure and when comparing different schools especially those following different syllabi and providing different levels of quality of teachers and infrastructure and exposure to various stimuli, does not provide a uniform field of comparison students across schools. Need for such data specially in a developing country where there remains a paucity of statistical data on adolescents, marks scored by students provide an easy and satisfactory alternative solution when factors pertaining to the environment of the child such as teaching quality methods, infrastructure etc. are eliminated (refer to materials and methods). This study has successfully eliminated such factors while assessing the effect of various factors on educational performance.

OBJECTIVES: To study the effect of various factors on educational performance among adolescents between 11 to 17 years of age

METHODOLOGY AND MATERIALS:

Study area:

The present study is a cross sectional descriptive and analytical study conducted in 3 schools in Bangalore North (Lok Sabha constituency). The schools are EbenEzer Public School – ICSE syllabus, Lake Montfort School – CBSE syllabus and Yuvalok High School – State syllabus. Convenience sampling was used for selection of schools due to proximity to the researchers, cost-effectiveness, and time constraints.

Study subjects:

A total of 403 questionnaires were distributed among students from classes VI to X, which included children from 11 years to 17 years of age. All the students who fulfilled the inclusion criteria were included in the study.

Inclusion criteria:

All students who were present on the day data was collected and those who completed the questionnaire were included in the study.

Exclusion criteria:

Students who were absent, those who did not complete the questionnaire and those whose marks were not available were excluded from the study. Students under 11 years of age and above 17 years of age were excluded from the study.

Collection of data and anthropometry:

Based on the objectives of the study, a suitable questionnaire was designed, collecting information regarding the student's age, sex, number of hours they sleep, housing and who the child stays with (both parents, single parent, hostel).

Permission was obtained from the principals of the three schools for conduction of the study. Assent for participation in the study was collected from the students. The data was collected over a period of 3 weeks in the month of January 2015. Data was collected during the school hours. The students of each class were seated in the school auditorium with sufficient spacing to avoid copying and discussion of answers. Each question was explained (by the investigator) both in English and the local language and answered by the students, before moving on to the next one. The questionnaire took 1 hour to complete. The questionnaire was collected after completion on the same day.

Marks obtained in three exams were obtained from school records and the average percentage was calculated to assess the educational performance of the student. Standard deviations from the mean were obtained for each individual class to remove the bias arising due to different syllabi, teaching standards, use of special aids in teaching (slides, models, projectors, etc.), infrastructure of the school and were divided into eight groups based on their standard deviation from the mean. The total marks were adjusted for students who were absent for a test.

Housing was classified as kutchha, semi-pucca and pucca houses and each type was explained to the students.^[4]

Statistical analysis:

Data was entered into Microsoft Excel 2007 for Windows. Data was scrutinized and cleaned. Statistical analysis was done using IBM SPSS

Statistics v20. The data was sorted as per age and sex and grouped according to the standard deviation from the mean as those >2SD = 8, 1SD to 2SD = 7, 0.5SD to 1SD = 6, 0SD to 0.5SD = 5, 0SD to -0.5SD = 4, -0.5SD to -1SD = 3, -1SD to -2SD = 2, <-2SD = 1. Descriptive analysis of the study population was done.

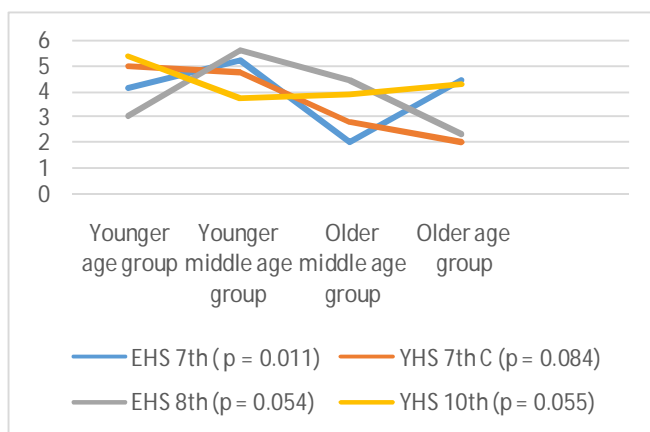
Initially, Levene’s statistical test was performed to check the variance between groups. Wherever this was not significant, a One-way ANOVA test was performed to study any significant differences of means between groups. Correlations were analysed using the Pearson’s correlation test. $p < 0.05$ was taken as a significant result for all the tests performed.

RESULTS

Descriptive & Associations

A total of 403 students were included in the study, of which 223 (55.33%) were males and 180 (44.66%) were females (Ages: 10 to 17 years). The average score of the study population was 4.43 while that’s for males and females were 4.02 and 4.93 respectively. Males showed lower scores in all but 3 of 15 classes that were under the study. (Table 1)

Graph 1: The relation of age to educational performance in classes with $p < 0.05$.



The educational performance of various ages in classes with $p < 0.05$ is presented in Graph 1. No findings remained consistent among various classes in the study.

Table 2 Results obtained when sex was analyzed in relation with educational performance

Sex	N	Mean	%	Std. Error	lower bound	upper bound
Male	223	4.02	0.55	0.11	3.80	4.25
Female	180	4.93	0.45	0.13	4.67	5.19
Total	403	4.43	1.00	0.09	4.25	4.60

Significance < 0.005*

Of the 361 students included in the study of duration of sleep affecting educational performance. 17.7% slept 7 hours, 37.7% had 8 hours of sleep, 25.8% of them had 9 hours, 15.8% 10 hours and 3% had 11 hours of sleep. Students who slept 8 hours obtained a score of 4.62 and decreasing scores were seen in those with fewer or greater hours of sleep. (Table 3.i)

A total of 401 students were included to study the effect of housing on educational performance. 69.58% stayed in pucca houses and had a score of 4.57, 28.09% stayed in semi pucca houses with score of 4.06 and only nine students i.e., <2.32% stayed in kutcha houses with an average academic score of 4.8889. Data analysis was not significant for the study on males and females. (Table 3.ii)

A total of 376 students were included in the study for educational performance versus who the child stayed with. 83.76% of students stayed with both parents, 10.82% stayed with single parents and 5.41% stayed in hostel. Students staying in hostels had the highest scores for educational performance 4.80 and the lowest for children staying with single parents 3.95. Similar patterns echoed in studies with males and females. Study had $p > 0.05$. (Table 3.iii)

Correlation studies

Pearson correlation tests were performed for each of the factors. There was negative correlation between academic scores and staying in better housing ($r = -0.10$), duration of sleep ($r = -0.02$). Similar results were obtained in studies conducted on males and females separately. (Table 3).

Table 3(below): Depicts results obtained when different factors were analyzed in relation with educational performance.

i. Sleep Vs Educational Performance												
Sub variables (Hours)	Total				Females				Males			
	N	Mean	95% Confidence Interval for Mean		N	Mean	95% Confidence Interval for Mean		N	Mean	95% Confidence Interval for Mean	
			Lower Bound	Upper Bound			Lower Bound	Upper Bound			Lower Bound	Upper Bound
7	64	4.20	3.80	4.61	28	4.96	4.29	5.64	36	3.61	3.18	4.04
8	136	4.63	4.32	4.93	67	4.84	4.41	5.27	69	4.42	3.97	4.87
9	93	4.35	3.99	4.72	40	5.25	4.68	5.82	53	3.68	3.27	4.09
10	57	4.19	3.71	4.68	23	4.43	3.70	5.17	34	4.03	3.36	4.70
11	11	3.73	2.52	4.93	1	7.00	-	-	10	3.40	2.32	4.48
Total	361	4.39	4.20	4.57	159	4.92	4.64	5.19	202	3.97	3.73	4.20
Statistical tests	ANOVA test: p=0.2570				ANOVA test: p=0.3180				ANOVA test: p = 0.0530			
	Pearson correlation test: r= -0.052, p=0.3290				Pearson correlation test: r= -0.015, p=0.815				Pearson correlation test: r= 0.0400, p=0.5750			
** - significant												
ii. Housing Vs Educational Performance												
Type of house	Total				Females				Males			
	N	Mean	95% Confidence Interval for Mean		N	Mean	95% Confidence Interval for Mean		N	Mean	95% Confidence Interval for Mean	
			Lower Bound	Upper Bound			Lower Bound	Upper Bound			Lower Bound	Upper Bound
Kutchha	9	4.89	3.77	6.01	12	5.58	4.27	6.90	9	4.89	3.77	6.01
Semi-pucca	117	4.06	3.74	4.38	167	4.88	4.61	5.15	105	3.89	3.57	4.21
Pucca	275	4.57	4.36	4.78	179	4.93	4.67	5.19	108	4.08	3.75	4.42
Total	401	4.43	4.25	4.60	12	5.58	4.27	6.90	222	4.02	3.80	4.25
Statistical tests	ANOVA test: p=0.0500**				ANOVA test: p=0.1880				ANOVA test: p=0.570			
	Pearson correlation test: r= -0.092, p=0.0670				Pearson correlation test: r= -0.100, p=0.3150				Pearson correlation test: r= -0.006, p=0.9900			
** - significant												
iii. Staying With Vs Educational Performance												
Sub	Tot				Femal				Males			

variables	al				es							
	N	Mean	95% Confidence Interval for Mean		N	Mean	95% Confidence Interval for Mean		N	Mean	95% Confidence Interval for Mean	
			Lower Bound	Upper Bound			Lower Bound	Upper Bound			Lower Bound	Upper Bound
Hostel	25	4.8	4.11	5.50	8	5.38	4.12	6.63	17	4.53	3.64	5.42
Single parent	42	3.95	3.41	4.50	20	4.4	3.48	5.32	22	3.55	2.89	4.20
Both parents	334	4.47	4.28	4.67	152	4.97	4.70	5.25	182	4.05	3.81	4.31
Total	401	4.44	4.27	4.61	180	4.93	4.67	5.19	221	4.04	3.82	4.27
Statistical tests	ANOVA test: p=0.0740				ANOVA test: p=0.1740				ANOVA test: p=0.1820			
	Pearson correlation test: r= -0.006, p=0.0740				Pearson correlation test: r= 0.022, p=0.1740				Pearson correlation test: r= -0.026, p=0.1820			
** - significant												

Of these correlations, the values were significant for housing and caregivers of the child for the total population. Housing and caregivers showed a significant correlation with educational performance for females. The test was not significant for males for any of the factors assessed.

DISCUSSION

Various factors directly and indirectly influence academic performance of a child. The factors analyzed in this study are age and sex of the child, duration of sleep, housing and who the child stays with.

The studied showed a gender gap between male and female students, with female students performing better than male students. This is consistent with a studies by Gillian Considine & Gianni Zappala^[5], M.S. Farooq et al. ^[6]. Reviews suggest that boys suffer and educational disadvantage as compared to girls, especially when it comes to literacy (Buckingham, 1999; 2000).^{[7][8]}

While analyzing the effect of age on education no significant observations could be made.

In the present study, the highest scores were obtained among those that obtained on average 8

hours of sleep. Students that slept fewer or greater number of hours obtained lower scored. While current study only paid attention to the number of hours of sleep other factors such as quality of sleep will play an important role. The results in this study are in agreement with the research by DemetUnalanet al.^[9] in Turkey who found that both increasing period of staying in bed and daytime sleepiness negatively affected academic performance. This shows that duration and quality of sleep should be optimum to have a positive effect on studies.

It was found that children living in Kutcha houses had a higher average score followed by those in pucca houses and the least in those living in semi pucca houses These finding are in contrast with most studies performed in this field - Atkinson, 2008 ^[10] and European study on neighborhood effects and youth educational achievement. As said by Sykes and Kuyper ^[11] - “we cannot be sure that the association between neighbourhood conditions and youth achievement are the result of neighbourhood factors or of the differential selection of youth and their families into certain neighbourhoods”. Housing conditions are a reflection of the socioeconomic status of the family and in turn determine the resources available for education. We assume the reason for the results in our study is a result of

greater motivation and understanding of need of education among children living in kutcha houses.

Interestingly, the present study showed a negative correlation between caregivers and academic performance. Staying in hostels provides the advantage of lesser travel time and greater monitors and strict enforcement of study periods minus the distractions of a home such as TV, guests. Staying in hostel also places the child away from parental conflicts and pressures. Studies by Ali, Shoukat, et al ^[12] state that there is no significant difference between students staying in hostel and others. While comparing those children living with single parents to those living with both parents. Those living with both parents fare better. Multiple reasons exist for decreased performance with children living with single parent such as decreased attention to the child as the single parent is sole bread winner, children in contested divorces as used as tool by parents to get at each other, child could be living in fear of an uncertain future or in shame of having divorced parents (Marcy and Sylvan Schaffer ^[13]). This is alike to the study by AemeroAsmamaw & V Hari Lakshmi ^[14] that found that children in intact families academically achieved better than those from divorced families.

CONCLUSION AND RECOMMENDATION

Female students obtained higher scored as compared to male counterparts. Students living in kutcha houses fared the best followed those in pucca houses. Average sleep of 8 hours showed the highest educational score

This novel method of analysis of academic performance across the various syllabi has provided the opportunity to use marks scored in exams as data for various statistical studies.

Further studies to analyse the poorer academic performance need to be carried out and the observed causes need to be rectified. Optimal sleep needs to be encouraged among students. The associations of sleep and age of the student are still largely unexplored in India.

The paucity of Indian studies in these fields makes it difficult to compare the present study with a similar population. While this study provides a starting

ground for various studies, the needs for in depth studies in various factors remain clear. Furthermore, a study on randomly selected population need to be done so data can be generalized.

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Original Research Article

Virological discordance in patients on first line antiretroviral therapy with Immunological failure in Tambaram , India

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Abstract

Background: A percentage of HIV patients who fail first line ART (FLA) via immunologic (i.e. CD4 cell count) criteria may have adequate HIV suppression on viral load (discordance) .We studied the prevalence and factors for this discordance when viral load testing became available in patients enrolled in an HIV treatment program in a large tertiary care hospital in India. **Methodology:** A cross-sectional study of HIV patients on FLA in Government Hospital of Thoracic Medicine , Tambaram with immunological failure (IF) and who were eligible for viral load testing as determined by the State AIDS Clinical Expert Panel (SACEP).Eligibility criteria for SLA include: received FLA for at least 6 months with adherence > 95% and has failed FLA immunologically or clinically (WHO) with a subsequent failed virologic response. Concordant response was defined as IF and VL > 10,000 copies/ml, discordant response as IF and a VL < 400 copies/ml; intermediate response was defined as IF and VL between 400 and 10,000 copies/ml. Various clinical and demographic factors were analyzed between discordant and concordant groups using Chi-Square and Fisher's exact test. **Results:** From January to August 2008, 106 patients were referred for SACEP. Of these, 76 (71.6%) were eligible for evaluation. In those evaluated 69.7% , 21.1% , and 9.2% had a concordant , discordant and an intermediate response. The respective baseline characteristics for discordant and concordant groups were: mean age in years 35 and 39 (p- value < 0.05) , 81.3% and 96.2% males (p- value >0.05) , median CD4 count of 51 and 56 cells/cubic millimeter (p-value > 0.05). Other characteristics of the discordant and concordant groups respectively were: median CD4 count at IF (68 vs. 96 cells/cubic millimeter; p-value > 0.05) , median time to IF (12 vs. 15 months; p-value > 0.05) , previous history of ART (6.3% vs. 37.7%; p-value < 0.05) , ART substitution (50% vs. 71.7%; p-value >0.05) , clinical failure in addition to IF (12.5% vs. 37.7%; p-value < 0.05). **Conclusion:** In this population , 21.1% of HIV treatment patients with IF on FLA were found to have discordant virologic response to ART. Such patients may be inappropriately initiated on more costly and potentially toxic SLA.

Keywords : Virological Discordance , SACEP , ART , Immunological failure , India

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INTRODUCTION :

The estimated number of people living with HIV (PLHIV) globally was 36.7 million at the end of 2015 . Nearly 18.2 million PLHIV were on Antiretroviral therapy (ART) by June 2016¹ . The total number of PLHIV in India were 2.1 million at the end of 2015 . Of which 44% adults were on ART in India² . The National AIDS Control Organisation (NACO) initially started providing first line ART (FLA) in India from 1st April 2004 in eight government hospitals³ and the Government hospital of thoracic medicine (GHTM) was one of those centres . Effective ART generally results in immune reconstitution with increased CD4 and virologic suppression with undetectable HIV viral load(VL) .

However a major concern regarding ART is when there is a discordant response between CD4 count and the viral load . There are two types of discordant responses : Immunological failure (IF) (decrease in CD4 count) despite VL suppression or immune reconstitution (increase in CD4 count) despite VL failure . Interestingly both types of discordant responses to ART are related to AIDS defining events and mortality⁴⁻⁸ . There is very limited data regarding discordant responses and its associated factors to FLA in India . Hence we studied the prevalence and factors associated with virological discordance in patients on FLA with immunological failure attending a tertiary Government hospital (GHTM) in Tambaram , India .

MATERIALS AND METHODS:

We conducted a cross sectional study of HIV adults on FLA with immunological failure in GHTM , Tambaram , India . State AIDS Clinical Expert Panel (SACEP) is NACO expert panel which evaluates patients who have failed FLA treatment either by immunological or clinical criteria after taking FLA for a period of 6 months with adherence > 95% and decides whether to test with HIV viral load , so that confirmed failure cases can be initiated on second line ART (SLA) . The treatment failure in FLA is based on immunological failure (IF) or clinical failure (CF) criteria .

Immunological failure is identified by a) Fall of CD4 count to pretherapy baseline . b) 50% fall from

on treatment peak value . c) Persistent CD4 count below 100 cells/mm³ . Clinical failure is defined as recurrent stage 4 illness after 6 months on FLA . The Government FLA consists of four regimens , Zidovudine/Lamivudine/Nevirapine , Stavudine/Lamivudine/Nevirapine , Zidovudine/Lamivudine/Efavirenz and Stavudine/Lamivudine/Efavirenz⁹ .

Study Period : Jan to Oct 2008 . From Jan to August 2008 nearly 106 patients were referred to SACEP , of which only 90 patients were eligible for VL test . Finally 76 patients were included in the study based on the inclusion and exclusion criteria .

Inclusion Criteria : Adult patients on FLA in GHTM and referred from other government ART centres with immunological or clinical failure and eligible for viral load testing were included in the study

Exclusion Criteria: Patients not on FLA in Government programme and patients who have already taken SLA drugs and failed treatment were excluded . Patient not meeting the WHO (World Health Organisation) immunological or clinical failure criteria were excluded .

Relevance of the study : Since the data is quite old , we have to inform the relevance of this study pertaining to current trends . This is the first time data available regarding discordant response to FLA from whole of India . Initially when viral load testing was started for the first time in India on patients taking FLA and failing treatment . NACO selected only 2 centres to do viral load testing and to provide second line ART , one in JJ Hospitals Mumbai and other one is Government hospital of thoracic medicine , Tambaram in whole of India . So this data is very important first hand data available regarding discordant response to first line ART from our country , India and that too from GHTM which is a centre of excellence for HIV treatment .

Even now in government programme we still use the Zidovudine and Nevirapine and all other drugs mentioned in this study as alternative first line regimen , and also many patients are still continuing to take the first line regimens mentioned in our study . Even now NACO follows the viral load testing as gold standards for detecting confirmed treatment failure in patients on FLA .

The WHO criteria for immunological failure mentioned in our study is still the same and being followed now in India .

Working Definitions for different responses :

Concordant response group or (Virological failure) : NACO guidelines ¹⁰ defines viral load > 10,000 copies/ml as virologic failure. Patients with immunological failure or clinical failure , and VL > 10, 000 copies/ml were categorized as confirmed treatment failure cases and concordance response group .

Discordant response group: The patients with IF or CF , with VL < 400 copies/ml were categorized under discordant response group .

Intermediate response group : Patients with IF or CF and VL 400 to 10000 copies/ml were categorized as intermediate response group . Patients in this intermediate response group were excluded from analysis as it was not clear if these were just one time viral blips or whether they would progress to virologic failure as defined by NACO .

Data collected: Baseline demographics , baseline haemoglobin , haemoglobin value at the time of failure , baseline CD4 counts , CD4 counts at the time of failure , viral load , ART regimens , ART substitutions , clinical failure , previous history of Anti tuberculous therapy (ATT) , were collected from hospital information system and patients treatment card .

Ethical Clearance : Ethical clearance was obtained from Institutional Review board and Institutional Ethical committee of GHTM . Written consent was obtained from all study participants .

Statistical Analysis : The data collected were entered into excel sheet and analysed using SPSS (Statistical Package for Social Sciences) version 14 . The frequency tables for all collected variables were computed . Clinical and demographic factors between discordant and concordant groups were analyzed using Chi- Square and Fisher’s exact test .

RESULTS:

Baseline characteristics: 90.8% of the study population were males with a median age of 37(Inter-quartile range 32to 40) . Other baseline characteristics like median baseline CD4 counts , median CD4 counts at the time of failure , percentage of CF , previous history of ART in private clinics before entering into government ART programme , previous history of ATT , substitution of ART , different ART regimens at time of initiation and at the time of failure are shown in tables 1, 2 , 3 and 4.

Table 1 Baseline Characteristics N=76

Variables		Inter-quartile Range
Median Age in Years	37	32 - 40
Median CD4 counts at baseline (cells/mL)	48	24.5 - 131
Median CD4 counts at failure (cells/mL)	91.5	40.5 - 156.5

Table 2 Baseline Characteristics N= 76

Variables	N (%)	95% Confidence Limits
Male	69 (90.8)	81.9 - 96.2
Clinical Failure	22 (28.9)	19.1 - 40.5
Previous history of ART	21 (27.6)	18.0 -39.1
Previous history of ATT	61 (80.3)	69.5 - 88.5
Substitution of ART	47 (61.8)	50.0 – 72.8

ART: Antiretroviral therapy; ATT: Anti tuberculosis therapy; N : Numbers ; (%):Percentage

Table 3 Baseline characteristics N= 76

FLA Regimens	Initial Regimen N (%)	95% CI	Regimen at the time of failure N(%)	95% CI
AZT/3TC/NVP	40 (52.6)	40.8 - 64.2	36 (47.4)	35.8 - 59.2
AZT/3TC/EFV	1 (1.3)	0.0 - 7.1	3 (3.9)	0.8 - 11
D4T/3TC/NVP	25 (32.9)	22.5 - 44.6	24 (31.6)	21.4 - 43.3
D4T/3TC/EFV	10 (13.2)	6.5 - 22.9	13 (17.1)	9.4 - 27.5

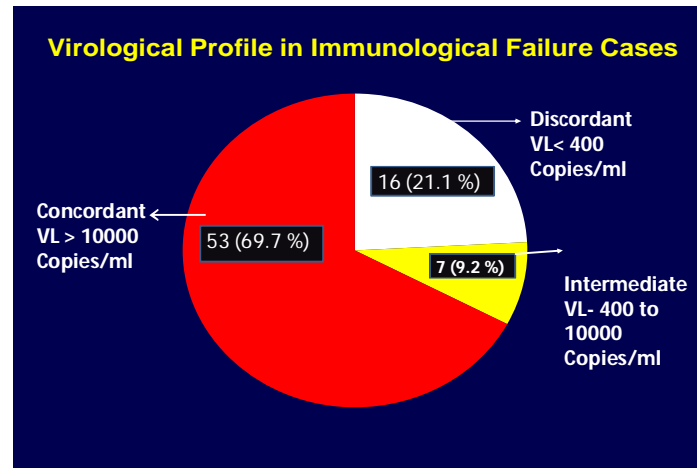
FLA: First line antiretroviral therapy; N: Numbers; (%): Percentage; CI: Confidence Limits
AZT: Zidovudine ; 3TC: Lamivudine ; NVP: Nevirapine ; EFV: Efavirenz ; D4T: Stavudine

Table 4 Variables analysed between Concordant and Discordant group

Variables	Discordant Group VL < 400 copies/ml	Concordant Group VL > 10000 copies/ml	P-value
Median age in years	32	38	0.033*
Median CD4 count at baseline(cells/mL)	51	56	0.814
Median CD4 count at failure(cells/mL)	68	96	0.929
Clinical failure in addition to IF	12.50%	37.70%	<0.05*
Median time to IF in months	12	15	0.19
Previous history of ART	6.30%	37.70%	0.037*
Substitution of ART	50%	71.70%	0.19
Previous history of ATT	68.80%	84.90%	0.279
Mean baseline haemoglobin (mg/dl)	11.02	11.15	0.813
Mean haemoglobin at failure (mg/dl)	11.51	11.56	0.922

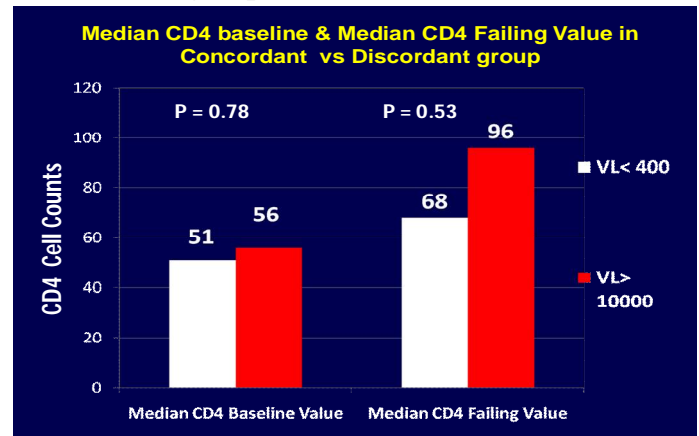
VL: Viral Load; (%): percentage; IF: Immunological failure; *: Significant P-Value <0.05

Figure 1- Virological Profile in Immunologically failed patients on FLA



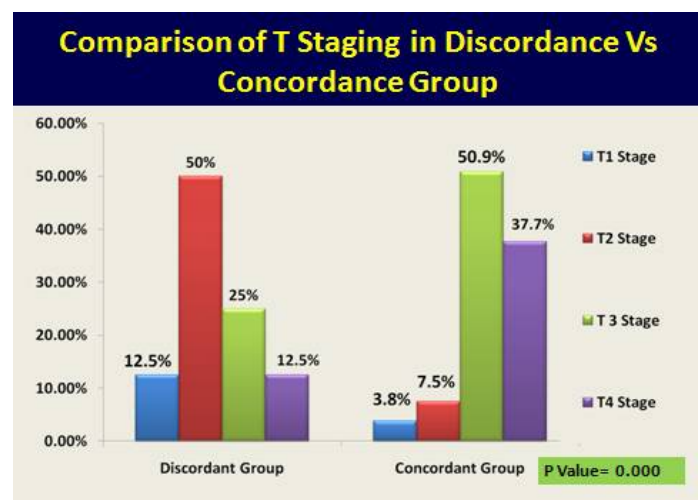
FLA: First line antiretroviral therapy ; VL : Viral Load ; (%):Percentage

Fig 2- Comparison of CD4 counts in concordant vs discordant groups



VL: Viral load ; IF: Immunological failure

Fig 3 – Comparison of WHO Treatment Staging in Discordant vs Concordant group



T: Treatment

Nearly 28.9 % of the study population had CF in addition to IF. 27.6% of our study population had been on FLA in private clinics before entering into government programme (Table 2).

From table 3 you can see the majority of the patients (52.6%) were initiated on Zidovudine based regimen and 47.4% experienced IF while on zidovudine based regimen .

Discordant Response:

From figure 1 we can see the virological profile of patients who have failed immunologically. 69.7 % of the study population showed concordant VL failure indicating confirmed treatment failure. However , nearly 21.1% of immunologically failed patients showed discordant viral response upon VL testing . 9.2% showed intermediate response (VL between 400 – 10000 copies/ml) . Interestingly 12.5% of patients with clinical failure and IF actually had undetectable VLs (discordant) (Table 4) . The median time to IF was slightly shorter in discordant group when compared with concordant group (12 vs 15 months) , but this was not statistically significant (Table 4) .

We also analysed the median CD4 counts at the time of initiation of FLA and at the time of IF (Fig 2) . The median CD4 counts at the time of IF was slightly less in discordant group when compared with concordant group (68 vs 96) , but it was not statistically significant .

We also compared the WHO clinical staging of FLA patients at the time of IF. We found that WHO stage 2 illness was much more prevalent in discordant group when compared with concordant group (50% vs 7.5%) . The WHO stage 4 illness was more in concordant group when compared with discordant group (12.5% vs 37.7%) (Fig 3) . The findings were statistically significant .

DISCUSSION:

Our study showed nearly 21.1% of patients with immunological failure on FLA had a discordant viral response and 69.7% showed a concordant response . Since the NACO definition of virological failure at the time of study period ¹⁰ was VL > 10,000 copies/ml there was a intermediate group . The intermediate group of 9.2% (VL > 400 to 10,000 copies/ml) would now be categorized under the concordant response group .

The discordant response of 21.1% was comparable with another study done by Prabhakar et al ¹¹ in a

similar settings in India , which found a discordant percentage of 24% (virologic only responders) . On the other hand a study done by Antiretroviral Therapy in Lower Income Countries Collaboration (ART-LINC) ¹² , an epidemiological network of HIV/AIDS treatment programmes in Africa , Asia and South America , has reported on a frequency of virologic only response around 19% . Several studies have reported lower prevalence of discordant response of 8 to 16% ^{4-6 , 13-17} , while certain other studies have been nearly comparable to our study with a discordant prevalence between 17 to 21% ^{12 , 18} . Few studies ¹⁹⁻²³ have also shown a high prevalence of above 24% ¹³ .

The wide differences in prevalence of discordance can be attributed to several factors including different criteria for immunological response , virologic suppression , sample size , variation in time to failure , ethnic background and importantly different types of ART regimens ¹³

Our study showed the discordant group were slightly younger (Table 4) when compared with virologic failure group (median age 32 vs 38). On the contrary few studies ^{6 , 21} have attributed discordance to older age.

Clinical failure in addition to IF was also significantly associated with concordance response (Table 4) . It is quite natural to expect WHO stage 4 illnesses in concordant group , as they have failed both immunologically and virologically , subsequently leading on to development of clinical failure . Many studies ^{4 , 6 , 17} have shown that opportunistic infections , AIDS defining illness and mortality was associated with discordant group . Even our study showed inspite of good viral suppression nearly 12.5% and 25% of the study population had WHO Stage 4 and stage 3 illness in addition to IF . Our study also showed that more of WHO stage 2 illness was noted in discordant group when compared with concordant group (50% vs 7.5%) (Fig 3) . This probably means , if these discordant groups are followed , there is a possibility of future developments of more stage 4 illness .

Our study showed that there was no significant difference in baseline CD4 counts in concordant and discordant groups (Fig 2) . Also no significant difference in CD4 counts at the time of immunological failure in concordant and discordant groups . While several other studies ^{20 , 21 , 23- 28} have

attributed discordant response to low baseline CD4 counts .

CONCLUSIONS:

We found that 21.1% of patients with IF with or without clinical failure had a discordant virological response (VL< 400 copies/ml) . Our study also showed that 12.5% of patients with both IF and CF were virologic responders (VL< 400 copies/ml) . The risk factors for discordant group were identified as younger median age , and presence of more WHO stage 2 illness . The predictors of concordance group were previous history of ART in private clinic before entering into government programmes , and clinical failure . Since the median time duration to immunological failure in concordance group was 15 months , we strongly recommend routine VL testing at the end of 12 months for all patients on FLA to detect treatment failure early . We also recommend the global HIV related authorities to implement uniform guidelines for immunological and virological response , so that the wide difference attributed to the prevalence of discordance can be assessed and decided whether it is a true difference in prevalence . These discordant groups need to be carefully monitored for opportunistic infections and more studies are needed as to ways to improve the immunologic response in these patients .

Limitations: As it is a pilot research project about a pilot programme , the sample size is small . All the patients with immunological failure could not get VL testing due to certain inclusion criteria formed by SACEP . Patients with virological failure and good immunological response could not be studied as all the study participants were only immunologically failed cases .

Next Step: The clinical outcomes and mortality related outcomes of discordant groups needs to be studied further .

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DECLARATIONS :

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Conflict of interest : None

Authors Contribution : Dr.Ganesh.S.A carried out the study design , data collection and wrote the manuscript . Dr Rajasekaran .S , Dr Jyoti Somani , Nadol .P , Dr Manoharan.G and Dr Raja.K carried out study design , and reviewed the manuscript . Mr Ezhil R carried out the data management and statistical analysis .

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Original Research Article

Students and faculty perspectives towards early clinical experience in learning neurosciences

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Abstract

Background: Medical education has undergone major changes over a period which redefines conventional teaching strategies. It is necessary to reinforce and link basic sciences with clinical aspects in order to enhance better understanding, knowledge retention, application and development of clinical skills. With this view we introduced a method of exposing students to clinical environment early in their curriculum. Our study aimed at determining post exposure academic performance of students and faculty perceptions towards early clinical experience (ECE) in a hospital setting. **Methods:** Validated teaching module comprising of specific learning objectives, lesson plan, students and facilitators guide was developed and implemented to 150 students. After conventional didactic lectures in Anatomy and Physiology on Facial nerve, students were taken to hospital wards in five batches of 30 each. They observed interaction between physician and patients to appreciate clinical signs of facial nerve palsy. Pre and post tests were conducted to assess effectiveness of ECE. Students and faculty were provided with feedback questionnaires to know their perceptions towards the program. **Results:** Out of 150 students 119 students attended all sessions. Descriptive statistics was employed to assess their responses. Significant difference in scores of the students before (2.91 ± 2.35) and after (5.93 ± 3.07) ECE was observed with p value < 0.01 . 87% of students agreed that module was student centered, facilitated active learning and fostered critical thinking. Faculty involved revealed that this module satisfied current disciplinary (Anatomy and Physiology) and interdisciplinary (clinical) expectations. **Conclusion:** This active teaching learning strategy was well conceived by students and faculty. It helps in integration of basic and clinical sciences and paves way for application of basic science concepts in clinical practice.

Key words: Medical education, Perspective, Early Clinical Exposure, Active learning.

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Introduction:

Medical Science is an ever evolving field which invariably demands a periodic revisit of learning as well as teaching methods. Globally more emphasis is being laid on early clinical exposure of students, which includes both horizontal and vertical integration that eventually is expected to bring contextual learning. The traditional undergraduate medical curriculum in India is designed such that the

students are exposed to clinical subjects during the second year of their course after prior exposure to basic sciences in the form of didactic lectures. On observing and screening the pattern of present medical education curriculum, the academicians have strongly recommended that the students need to be introduced to clinical medicine early in their

training.¹ These observations resulted in directives from General Medical Council, resulting in Edinburgh declaration (1994)² followed by a document from World Federation of Medical Education (WFME) in 1998.³

Early exposure of medical students to clinical experiences during their basic sciences tenure along with didactic lectures is said to link basic science concepts with the respective clinical disciplines and reinforce the subject for better comprehension of concept and enhances knowledge retention.⁴ Early clinical exposure of students is designed to create a sense of preparedness and it also can facilitate understanding of clinical set up earlier in their medical education. Further it is expected to augment problem solving skills, analytical thinking and promote self-directed learning.

It has always been a challenge to teach neuroanatomy and the related physiological aspects in an interesting manner to first year students. The preclinical students find it difficult to understand in view of the complexity in the structure and functions of the nervous system. Hence, there is an ultimate need to introduce innovative teaching strategies such as case based learning, problem based learning and patient centered learning as alternative approach in order to create interest and motivation among students to learn basic science concepts. Hence the idea of introducing an early clinical exposure in their curriculum may prepare them to learn clinical demonstration skills, methods of examination of the patient and strategies involved in delivering the patient care

Recently, Medical Council of India (MCI) has drawn out directives to implement required changes under the program of ‘Early Clinical Exposure’ (ECE) which has mandatorily been made an integral part of I MBBS curriculum (Vision 2015).⁵ Feedback from clinical faculty and students revealed that students entering clinical years could not recall and apply basic science concepts in their practice. With this view present study is aimed at describing the outcome of an ECE program in teaching neuro anatomy and physiology and perceptions of students and faculty towards this program.

Methodology

Description of the innovation:

A teaching module was designed to impart instruction on basic sciences concerned with facial nerve for the class of first year MBBS students during academic year 2014-2015 as a part of Early Clinical Exposure (ECE). Our study design followed the observational action research.

Lesson plan for the topic ‘facial nerve’ was framed according to university guidelines and recommendations. Specific learning objectives were developed to attain the outcome of the module. Students were provided with a template of self-directed learning material which in addition to the text books, served as an additional learning tool. Students were provided with feedback questionnaire which consisted of a set of close ended questions with five point Likert scale, followed by another set of open-ended questions regarding this program and additional suggestions if any were also welcome from the students. Teaching module was subjected to internal and external validation by subject experts before it was given to the students

Implementation of module

This teaching module was implemented to the class of 150 students after obtaining clearance from the Institutional ethics committee. The sessions were conducted during small group tutorial classes assigned for teaching Anatomy and Physiology. Students were given option to participate in this study and from those who got recruited an informed consent was obtained. Students and faculty from the departments of Anatomy, Physiology and Internal medicine were briefed about the teaching methodology. Students attended two independent didactic lectures on Facial nerve in Anatomy and Physiology. The lectures included material on conventional Anatomy and Physiology of facial nerve viz. origin, course, relations and physiology of facial nerve, the tests to be performed to examine the sensory and motor component of facial nerve, differences between supra and infra nuclear lesions of the nerve and its clinical and social implications. A pretest was conducted in the form of multiple choice questions and questions requiring short answers. With this preliminary knowledge on facial

nerve, the Students were then asked to attend the clinical sessions. Class of 150 students was taken to the clinical ward in five batches of 30 each.

During the clinical sessions, the clinical faculty introduced a case of Facial nerve palsy to them and demonstrated the clinical presentation and method of examination of sensory and motor components of the facial nerve. For sensory component, primary taste sensations (sweet, sour, bitter and salt) were tested in the anterior two thirds of the tongue whereas for motor component examination tests for the muscles of facial expressions were performed⁶. Following the clinical exposure sessions, a post test was conducted to assess the clinical examination skills. Feedback questionnaire was administered to the students and faculty at the end of the session to assess the perception of faculty and students towards the program.

Results

Descriptive statistics was employed to analyze the outcome of early clinical exposure of the students. The academic performance of the students before and after early clinical exposure was analyzed using paired 't' test.

Out of 150 students recruited for the study, 119 students presented themselves for the entire program comprising of the lectures and clinical session. Out of those 119 students 68% were females and 32 % were males .There was a significant difference in the scores of students before (2.91±2.35) and after (5.93±3.07) the implementation of early clinical exposure with statistical significant p value (p<0.01) (Table.1)

Table 1: Students performance after and before the implementation of early clinical exposure

Particulars	Mean	N	Std. Deviation	Sig
Pair 1 Pretest	2.9111	90	2.35903	
Post test	5.9333	90	3.07509	.000

Majority of the students (87%) agreed that the module designed was student centered and motivated the students towards self-learning,

ensured active participation by all the members of the team, facilitated active learning process and also fostered critical thinking of higher order. More than 90 % of students expressed that content of this module was easy to understand and was well communicated and aligned to attain the learning outcomes. Feedback also indicated that it was well accepted. Students preferred this innovative method to exclusive didactic lectures only. (Figure.1)

Faculty members from basic sciences and clinical departments involved in this program revealed that learning outcome for the module are clear, and are aligned with assessment tasks and teaching materials. Majority of the faculty thought that this module satisfied the current disciplinary (Anatomy and Physiology) and interdisciplinary (clinical aspects) expectations of the University standards. They also expressed the view that this teaching methodology encouraged active participation, developed communication skills and collaborative learning among the students. (Figure.2). Moreover 85% of the students secured above 90% in objective structured practical examination conducted after ECE

Suggestion by the students in the form of comments contributed immensely to assess the effectiveness of the program. The students' experiences during the sessions were varied but the prevailing view was that they thoroughly enjoyed the experience, as evidenced by the following comments: (Table.2)

Discussion

The present study was designed to introduce an innovative teaching and learning strategy for the first year medical students by exposing them to clinical situations in hospital setting. Introduction of active learning methods like case studies, problem based learning and concept mapping of patient information enable the students to improve their reasoning ability along with better comprehension of basic sciences concepts.⁷

Feedback obtained from the students has shown that the program had a positive impact on their learning strategies. Faculty members involved in this program have also reiterated these observations. These findings are in line with the views of a study

Figure 1. Student perception towards the ECE program (n-119)

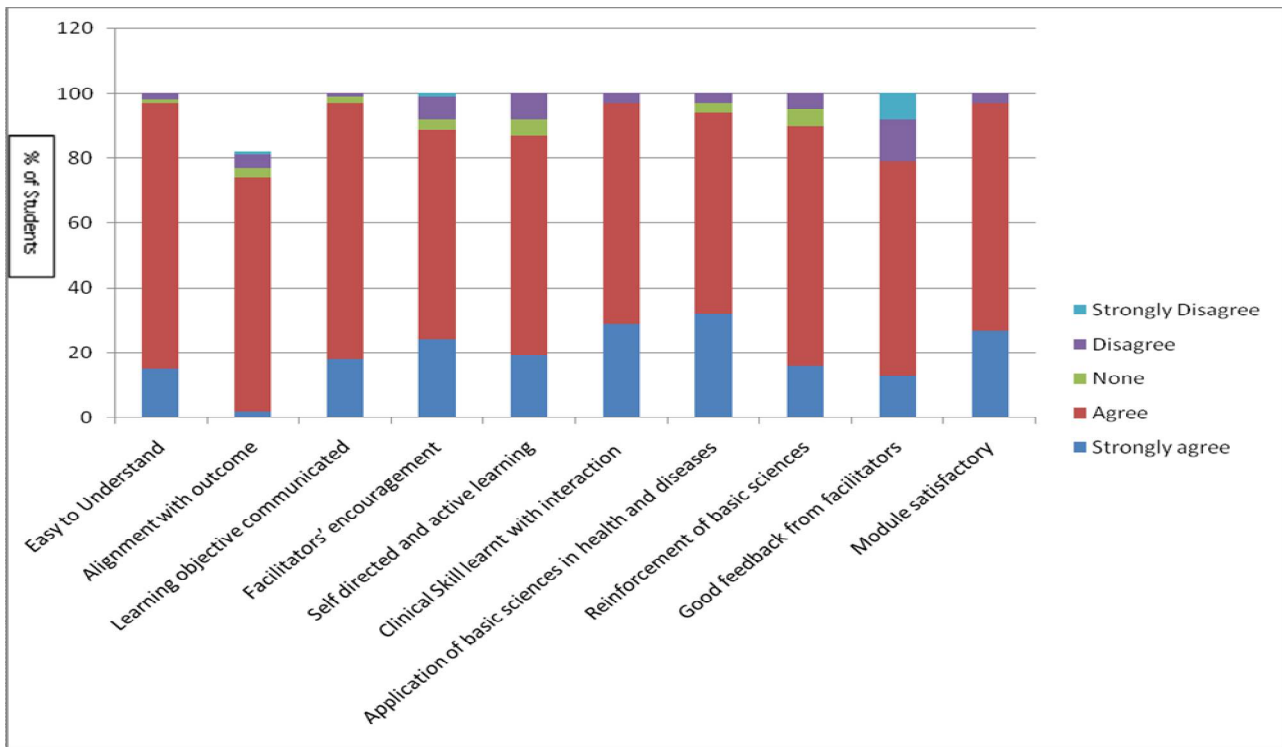
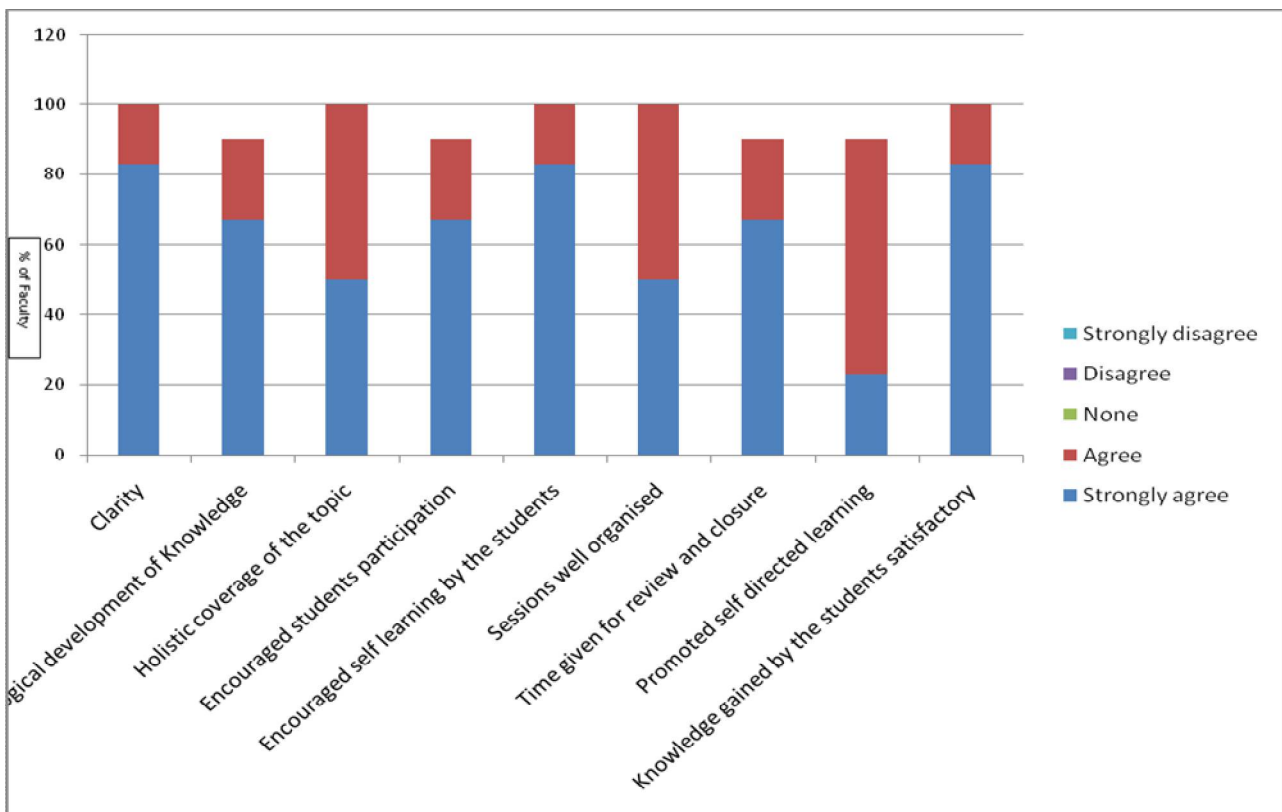


Figure 2. Faculty perception towards the program (n-5)



conducted by Ahmadipour et al in which 95.5% of students from the study group had reported that early clinical exposure program had been a great resource to excel in their studies as well as they could implement their experience in their clinical practice

later.⁸ Furthermore, these sessions may act as a preparatory exposure for their clinical training scheduled to start in a few months' time during the next semester thus supporting the views put forth by Tolsgaard who has proposed that early clinical

exposure could bring in positive attitude among the students in managing patients in future.⁹

Table.2. Students comments towards the program

“I found this innovative teaching methodology to be very informative and impressive. I was able to understand the concepts in a more effective way”

“Easy to understand, it’s more of practical way of learning”

“On seeing the patients with signs and symptoms practically, we came to know more about the applied aspects”

“We had an opportunity to see doctor conversing and examining the patients”

“We now feel confident to perform the clinical examinations systematically”

Significantly noticeable improvement in the academic performance shows that introduction of this method for topics which are clinically important but difficult to understand would help better understanding and knowledge retention by the students. But the constraint of time allotment during the given period of curriculum limits us to reserve this methodology only to a very few topics that are clinically important. In our study, most of the students strongly agreed that this teaching module greatly helped them to apply the basic sciences knowledge in health and disease. In a similar study, conducted in Iran, medical students showed significant difference in their level of knowledge after exposure to early clinical exposure.¹⁰ Our study results were also supported by the observation by Solomon Sathishkumar et al, when basic sciences are learnt in a clinically significant set up it would be better understood, retained and reinforced their efficiency in clinical practice later.¹¹ Several other studies have also reported that when early clinical exposure is supplemented along with didactic lectures it enhances greater students participation, self directed learning, analytical thinking as well as clinical and communication skills among the students.^{12,13} Shirzad Hedayatollah et al in their

study stated that early clinical exposure had brought positive effects and increased their self confidence level.¹⁴ Results from our study further supports the view that the students confidence level improved after observing the faculty examining and interacting with patients.

Our faculty facilitators who conducted the sessions believed that this interactive clinical exposure encouraged the students to actively develop their knowledge beyond their current understanding. Marcus and Lam et al have independently observed that early clinical intervention created awareness and sense of preparedness among the students to become qualified and competent doctors in future.^{15, 16} The results obtained were in line with other studies showing that interpolating this teaching learning strategy establishes motivation, stress reduction and subtle effect on the learning process among students in concurrence with earlier observations.^{17,18} It is well documented that active learning strategies are more beneficial for effective learning, compared to conventional teaching method, as documented by Heidi et al (2006).¹⁹ Two ECE programs were compared by Abramovitch et al (2002), who employed feedback from students and the faculty using questionnaire, Focus Group Discussions and participant observations and have shown that ECE has a profound impact on medical training by students, preceptors and group leaders.²⁰

Students and faculty reflections were found to be encouraging. Spacing of sessions at regular intervals for all the batches was a great challenge because of our routine academic activities and time constraints. Proper prior planning and coordination with clinical departments paved way for the smooth conduct of the program.

Conclusion: Conventional teaching in the form of didactic lectures, when supplemented with Early Clinical Exposure facilitates better understanding of the course content and also develop problem solving and communication skills among the students. Furthermore, this vertical integration of basic sciences and clinical science paves way for retention of knowledge and application of basic science concepts in clinical practice.

Interest of conflict & Source of funding - Nil

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Original Research Article

Assessment of Stress and Burnout among Medical Graduates using PSS-14 and MBI-SS scales.

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Abstract

Background: Medical education and healthcare are inherently stressful and demanding. Optimal level of stress enhances learning while excess of stress can lead to health problems. But, if left untreated can lead to multiple disorders ranging from mild symptoms like sleeping disturbances, insomnia and may lead to burnout. **Objectives:** To assess the level of stress and burnout among medical graduates. **Methods:** A Cross sectional study was conducted among 334 medical graduates in a medical college after taking consent. Data was collected using pre-designed, pre-tested questionnaire. Perceived stress scale-14 (PSS-14) was used to assess stress and Maslach Burnout Inventory-student survey (MBI-SS) was used to assess burnout. Descriptive statistics and chi-square test was done using SPSS v20.0. **Results:** Mean age of the study participants was 19.92±1.60 years. 35.33% were males and 64.67% females. Prevalence of stress was 86.23%. Among them 73.35% had mild stress and 12.88% moderate stress. Prevalence of burnout was 28.74%. Stress levels were higher among 87.04% females, 91.94% second phase, statistically significant (p<0.001) only for phase of study. Burnout was significantly more 37.31% among third phase medical graduates compared to others (p=0.004). 29.66% males had burnout but not statistically significant (p>0.05). **Conclusions:** PSS-14 and MBI-SS can be used as screening tools for early diagnosis and preventive measures like counselling can be initiated at the earliest to all irrespective of their levels of exposure.

Key-words: Burnout, Graduates, MBI-SS, Medical, PSS-14, Stress.

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Introduction:

Stress indicates the consequence of the failure of an organism, human or animal to respond appropriately to emotional or physical threats whether actual or imagined. There are two types of stress, eustress which enhances function and distress which is persistent stress that is not resolved through coping or adaptation.¹

Stress which is experienced by all is not always bad, but a minimum level of stress is required to lead a productive and creative life. Stress can serve as a driving force in terms of obtaining results but on the other hand non-stop stress can act as a killer in terms of performance and if this continues as per World Health Organization (WHO) estimate stress-related disorders will be one of the leading causes of disability by the Year 2020.²

Medical education now is highly challenging and often places heavy demands on the mental resources of its students, stretching their psychological distress and making them vulnerable to high levels of negative affective states.³

The academic atmosphere in medical colleges nowadays is very stressful which promotes competition among learners rather than co-operation, which have led to high level of stress ranging from 27% to 73% among medical students.¹

Thus, medical education has imposed significant psychological stress and has led to considerable degree of psychological morbidity which has been reported among medical students ranging from stress, interpersonal problems and suicidal ideation to psychiatric disorders and they tend to have greater psychological distress than the general population⁵ leading to various morbidities and in extreme cases leading to mortality.

High levels of stress will have a negative impact on both cognitive functioning and comprehension of medical students. Even medical training stressors also have been associated with negative consequences on the mental and physical health of medical students.^{5,6,7}

High levels of educational demands, lack of leisure time, limited contact with family and friends and delayed income may also contribute to medical students stress. In addition, personality traits inherent to medical students, including obsessiveness, perfectionism and self-exigency may also contribute to the problem. Clinical period of medical education opens up additional challenges, such as studying away from home, living up to high parental expectations, completing degree requirements and preparing for exams.⁸ Stress is also known to be associated with sleep disturbance, eating habits, lack of physical activity, alcohol consumption and smoking. Stress along with these unhealthy behaviours is a strong risk factor for chronic non communicable diseases.⁶

It is not just the undergraduate study period which brings stress, but this often continues during the internship, postgraduate study period leading to deterioration in student's mental health. As course progresses it leads to burnout as they enter more

advanced subjects and it is also seen later into the physician's practical life.⁸

Burnout is a response, which may be inappropriate, to chronic emotional and interpersonal stressors in the workplace and also the term may be applied to individuals who engage in activities that are psychologically similar to work, such as students. It is a syndrome of emotional exhaustion (due to educational demands), cynicism (indifference/apathetic attitude toward academic activities) and low academic efficacy (perception of incompetence as a student) that may develop when there is significant stress without adequate support and resources in the face of work overload.¹⁰

Today stress has become a significant public health problem with high prevalence and its recurrent nature profoundly disrupts students lives.¹¹

Thus this study was undertaken to assess the level of stress and burnout among medical graduates.

Materials and Methods:

Study design: Cross sectional study.

Study area: A private medical college in North Karnataka.

Study duration: August 2015 to October 2015

Study subjects: All the medical graduates from 1st year to final year, who were present in the class during the study were included after obtaining written informed consent. Ethical clearance was obtained from IEC before starting the study.

Tools used: Pre designed and pre tested proforma which consisted of basic details such as age, gender, phase of study, PSS-14 and MBI-SS.

PSS-14 Scoring: It comprises of 14 questions with responses varying from zero(0) to four(4) for each item and ranging from zero(0)=never, one(1)=almost never, two(2)=sometimes, three(3)=fairly often and four(4)=very often (five point likert scale) respectively on the basis of their occurrence during one month prior to the survey. PSS-14 scores are obtained by reversing the scores on four positive items, for example 0=4, 1=3, 2=2, 3=1, 4=0 and then

summing across all 14 items. Items 4, 5, 6, 7 and 10 are the positively stated items. The PSS-14 has a possible range of scores from 0 to 56.² Scores were divided into no stress (<14), mild stress (15-28), moderate stress (29-42) and severe stress (43-56). For further comparisons no stress was considered stress absent and sum of mild, moderate and severe stress were considered as stress present.

Once the stress and burnout were assessed a health education session was conducted among all the students regarding de-stressing techniques. Students who were found to be stressed and burnt out were specially advised to enrol themselves and to participate regularly in the yoga and meditation classes, which are conducted in our college. They were also told to follow the same routine on a daily basis, so that it becomes a natural habit of de-stressing themselves.

MBI-SS Scoring: It has three components, emotional exhaustion (refers to feeling of being depleted of one's emotional resources, representing the basic individual stress component of the syndrome) is assessed using five items, cynicism (refers to negative, cynical or excessively detached responses to other people to work, representing the interpersonal component of burnout) four items and academic performance (refers to feeling of decline in one's own competency and to a lowered sense of efficacy, representing the self-evaluation component of burnout) six items (reverse scored). All items were scored on a seven point likert scale. A high score in the first two components and a low score in the third component indicates burnout.^[13] We considered only emotional exhaustion sub scale as it appears to be a more valid measure and provides a quantified measure of burnout.⁸ A score of <17 was considered to be burnout absent and >17 was considered as burnout present.

Statistical analysis: Data was entered in Epidata data entry client v3.1 and analysed in SPSS v20.0. Descriptive statistics like frequencies, percentages, mean and standard deviation were applied and chi square test (χ^2) was applied to determine association between two categorical variables. Statistical significance was set at 5% ($p < 0.05$).

Results:

A total of 334 medical students participated in the study out of 400. Sixty six of them did not participate in the study. Reason being some were not ready to give the consent, some had internal examinations; some people were absent during the study period and even on second follow up. So the response rate was 83.5%, which shows higher participation among the study participants. Mean age of study participants was 19.92±1.60 years. Profile of study participants are shown in table 1.

Of the 334 study participants, 35.33% of study participants were males and 64.67% females. 22.75% were studying in first phase, 37.13% second phase and 40.12% third phase. [Table 1]

When stress and burnout were assessed, 73.35% had mild stress, 12.88% moderate stress and none had severe stress. 28.72% had burnout in comparison with 86.23% who had varying levels of stress. [Table 2]

Table 1: Profile of study participants (n=334)

Variables	Number	Percent
Gender		
Male	118	35.33
Female	216	64.67
Phase of study		
First	76	22.75
Second	124	37.13
Third	134	40.12

Table 2: Levels of Stress and burnout among study participants (n=334)

Levels of stress	Number	Percent
No (<14)	46	13.77
Mild (15-28)	245	73.35
Moderate (29-42)	43	12.88
Severe (43-56)	0	0
Burnout		
Absent(≤16)	238	71.26
Present (≥17)	96	28.74
Total	334	100

Table 3: Comparison of stress with different variables among the study participants (n=334)

Character istics	Present (n=288)		Absent (n=46)		Significan ce
	No	%	No	%	
Sex					
Male	100	84.75	18	15.25	$\chi^2=0.3374$, df= 1, p=0.561 OR=1.2085 (0.6365- 2.2947)
Female	188	87.04	28	12.96	
Phase of study					
First	55	72.37	21	27.63	$\chi^2=16.444$ df=2 p<0.001 OR=1.7992 (1.2041- 2.6886)
Second	114	91.94	10	8.06	
Third	119	88.81	15	11.19	

Table 4: Comparison of burnout with different variables among the study participants (n=334)

Character istics	Present (n=96)		Absent (n=238)		Significan ce
	No	%	No	%	
Sex					
Male	35	29.66	83	70.34	$\chi^2= 0.0752$, p=0.784, OR= 0.9332, (0.5691- 1.5303)
Female	61	28.24	155	71.76	
Phase of study					
First	12	15.79	64	84.21	$\chi^2= 11.1381$, p=0.004, OR= 1.6809, (1.2380- 2.2822)
Second	34	27.42	90	72.58	
Third	50	37.31	84	62.69	

It was found that 84.75% males and 87.04% females had stress in comparison to 15.25% males and 12.96% females who did not had stress. This association was not statistically significant [$\chi^2=0.3374$, df=1, p=0.561, OR=1.2085 (0.6365-2.2947)]. Stress level was highest among 91.94% second phase students, followed by 88.81% third phase and 72.37% first phase medical graduates and this association was statistically significant [$\chi^2=16.444$, df=2, p<0.001, OR=1.7992 (1.2041-2.6886)].[Table 3]

Among the study participants, 29.66% males and 28.24% females had burnout in comparison with 70.34% males and 71.76% females who did not have burnout. This association was not statistically significant [$\chi^2=0.0752$, df=1, p=0.784, OR=0.933(0.569- 1.530)]. It was also found that 37.31% third phase students were suffering from burnout compared to 84.21% first phase who were not suffering from burnout. This association was statistically significant. [$\chi^2=11.138$, df=2, p=0.004, OR=1.6809 (1.238-2.282)]. [Table 4]

Discussion:

A total of 334 medical graduates participated in the study. Prevalence of stress was 86.23%. Among them 73.35% had mild stress, 12.88% moderate stress and none had severe stress. Prevalence of burnout was 28.74%.

Similar prevalence of stress levels have been reported in various studies. In a study done by Solanky P et al.,¹ prevalence of stress was 96.8%, Pagnin D et al.,¹¹ 79.3%, Supe AN¹² 73% and El-Masryl et al., 71.71%.⁸

In a study done by Solanky P et al.,¹ 3.12% had no stress, 55.6% mild to moderate stress and 41.2% severe stress. In another study by Pagnin D et al.,¹¹ 36.8% had low stress, 17.6% mild stress, 24.9% moderate stress, 20.9% major stress. In a study by Satheesh BC et al.,¹³ 1.5% had no stress, 59.9% had mild stress and 1.2% severe stress.

In our study 84.75% males and 87.04% females had stress. In a study by Solanky P et al.,¹ 95% males and 98.75% females had stress. In studies done by Iqbal S et al.,⁴ and Chilukuri H et al.,¹¹ females had more stress in comparison to males.

In our present study stress level was highest among 91.94% second phase students, followed by 88.81% third phase and 72.37% first phase medical graduates. In a study by Satheesh BC et al.,¹³ 84.6% of final year and 50% of all other year students had stress. In a study by Solanky P et al.,² 41.83% first year, 96.87% second year and 95.31% third year students had stress. In a similar study done by El-Masryl et al.,⁸ 59.6% of fourth year, 67.1% fifth year and 82.5% sixth year students had stress.

In our study burnout was found to be 28.74%. In other similar studies done showed prevalence of burnout varying from 52.01% to 89.57%. In study by Bera T et al.,¹⁶ burnout prevalence was 52.01%, Vinod et al.,¹⁴ 63%, Pagnin D et al.,¹¹ 64.2%, El Masryl et al.,⁸ 76.8% and Muzafar Y et al.,¹⁵ 89.57%.

In our study among the study participants 29.66% males and 28.24% females had burnout. Similar findings were seen in a study done by Vinod et al.,¹⁴ and El-Masryl et al.,⁸ where males had more burnout compared to females.

In our study it was found that 37.31% third phase students, 27.42% second phase and 15.79% first phase were suffering from burnout. Similar findings were seen in studies done by Bera T et al.,¹⁶ and Vinodh et al.,¹⁴

Conclusion: Prevalence of stress was 86.23% and burnout was 28.74%, which is very high and increases as they enter higher level of academics, indirectly affecting their health and leading to early development of non-communicable diseases. Thus PSS-14 and MBI-SS can be recommended and utilized as a screening tool among medical graduates, which can detect even mild to moderate changes at an early stage so that preventive measures can be started at the earliest. Counselling sessions should be conducted to all medical graduates at the entry level, on periodical basis and at the exit of the college and should be continued thereafter during their professional life. Student academic cells which are present in various medical colleges should be strengthened by integrated approach with the help of various departments. Counselling and de-stressing sessions like yoga, meditation, cultural and sports activities should be implemented by the college administrators and to make it compulsory to all the students, so that we can avoid untoward events in their productive lives indirectly decreasing morbidity at a later stage.

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Original Research Article

Prescribing Pattern of Interns in Community Medicine during Urban Postings, Tamilnadu.

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Abstract

Background: While the medical graduates generally possess reasonably sound knowledge of medical science, they are often found deficient in the performance of clinical skills and problem solving especially the prescribing pattern. **Objective:** To assess the competence of medical interns across their course on their prescription pattern and to analyse the level of competence achieved with different phases in their posting completed. **Methods:** A cross sectional study among interns to find out the professional competency achieved in their prescribing patterns during their internship. Pretested questionnaire was prepared for the intern that was designed in such a way to assess the cognitive and psychomotor domains without the trainee's knowledge. Affective part was assessed by using indirect parameters and observation by the investigator in the actual situation, where doctor-patient interaction takes place. **Results:** 96.9% of interns listened to complaints without proceeding with clinical examination. 15.5% of interns performed systemic examination and 2.06 % entered findings in outpatient card. 12.4% of interns attempted to make a provisional diagnosis and entered it on the card. 32 % interns prescribed rationally. 21.6 % interns knew how to prescribe adequate dosage. All interns spoke in local vernacular language to patients but none explained the diagnosis or cause to the patient. In assessment of mean score for the competencies of interns in history taking and clinical examination, prescription pattern and communication with individual patients were 78.3%, 69.1%, 99% respectively and they scored two or less than two in each of the above competencies. As the interns completed other postings, their prescription pattern improved. **Conclusion:** The prescription pattern of interns is poor and there is a need for change in the curriculum to incorporate skill training for the medical students from induction of the course.

Keywords: interns, prescription, competence

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INTRODUCTION

Competence is the ability to perform a specific task in a manner that yields desirable outcomes. This implies the ability to apply knowledge, skills and abilities successfully to new situations as well as to familiar tasks for which prescribed standards exists. Health workers acquire competence over time.¹ It can also be defined as the habitual and judicious use

of communication, knowledge, technical skills, clinical reasoning, emotions, values and reflecting them in daily practice for the benefit of the individuals and communities being served.²

Common contextual factors include the practice setting, the local prevalence of diseases, and the nature of the patient's presenting symptoms, the patient's educational level and other demographic characteristics of the patient and of the physician. A

student's clinical reasoning may appear to be competent in areas in which his or her base of knowledge is well organized and accessible; but he may appear to be much less competent in unfamiliar territory.

Competence is also developmental. Habits of mind & behaviour and practical wisdom are gained through deliberate practice which may reflect on their experience. Development of competence in different contexts and content areas may proceed at different rates. The context and developmental level also interact with competence.² Competency in health care is the capability to perform acceptably those duties directly related to patient care.³

While the graduates generally possess reasonably sound knowledge of medical science, they are often found deficient in the performance of clinical skills and problem solving which form the core requisite of clinical competence. There is growing level of mistrust among the public for the medical profession as one hears of cases of negligence, misconduct and unethical practices leading to legal suits.

In the traditional curricula, the stress has been laid on the acquisition of knowledge as against the development of skills. More attention needs to be given to the development of various skills, viz., problem-solving skills, psychomotor or performance skills, attitudinal and communication skills.

It is essential that the traditional bedside skills of history taking, physical examination, formulation of differential diagnosis and planning a diagnostic and management plan for various problems be inculcated in every medical student. The other skills that need thrust during training are the basic skills in human resource management, leadership qualities (ability to lead a health care team) and providing cost effective care in rural/non-hospital settings. The development of these skills needs to be strengthened by introducing a clinical clerkship (where students actively take part in the management of patients) and reinforce during internship. It is commonly observed that the period of internship is not effectively utilized by the interns to develop and refine these skills.⁴

Clinical empathy, which involves the ability of the medical personnel to understand the patient's situation, perspective and feelings and the ability to communicate with the patient in an accurate and effective manner, have a major role to play in patient care. Mercer and Reynolds emphasized that

empathy can be enhanced and successfully imparted in medical schools, provided it is embedded with the actual experiences of students with the patients.⁵

In this context, the present study is planned to assess the competency achieved by interns in their prescribing pattern in selected diseases.

AIMS AND OBJECTIVES

1. To assess the competence of medical interns across their course on their prescription pattern.
2. To analyse the level of competence achieved with different phases in their posting completed.

METHODOLOGY

A cross sectional study among interns to find out the professional competency achieved in their prescribing patterns during their internship of Rajah Muthiah Medical College was conducted for a period of 13 months from February 2009 to February 2010.

A list of selected competencies to be achieved as per the norms set by Medical council of India (1997 revised curriculum) was prepared which included three domains of Learning namely Cognitive, Affective and Psychomotor.

The following few assumptions were made, before the study was started:

1. The competency achieved at the end of the medical curriculum is the result of cumulative and phased inputs which include tutoring (classroom teaching), observation, practical exercises, self learning & reflection and internship training. Otherwise the end product is the result of inputs by different departments and different teaching programmes in different phases of the MBBS course duration.
2. Even though the study was a cross sectional study, data was collected from different batches of students starting from the first MBBS to interns and it is assumed that the input given to the students is uniform for all the students across the batches that comprised our study population.

Taking into consideration the practical difficulties in assessing all the competencies prescribed by MCI, a list of core competencies to be achieved by the medical students at the end of the curriculum in

community medicine / public health were chosen for evaluation.

During the period of internship, an intern must acquire the following list of competencies:

1. Clinical competence for diagnosis of common ailments.
2. Gain information on essential drugs and their usage with the awareness on availability, cost and side effects.
3. Acquire skills to use audio visual aids.
4. Provide health education to individual/community.

During internship, house surgeons apply most of the cognitive learning in solving clinical problems. As per the protocol, many of the psychomotor skills are learnt during internship only. Pretested questionnaire was prepared for the intern that was designed in such a way to assess the cognitive and psychomotor domains without the trainee's knowledge. Affective part was assessed by using indirect parameters and observation by the investigator in the actual situation, where doctor-patient interaction takes place.

SAMPLING

Entire batch of interns (97) who passed out in February 2009 were included for the study. The interns were assessed when they attended their regular posting for two weeks in Urban Health Centre, Chidambaram, as batches.

STUDY SETTING

The interns posted in Urban Health Centre, Division of Community Medicine RMMC, during their two weeks of posting were observed for two hours/day for their history taking, examination of patients, prescribing pattern and their communication with the patients. A minimum of ten prescriptions per intern, were observed for common ailments like febrile illness, acid peptic disorder, upper respiratory tract infection, lower respiratory tract infection, diarrhoea, diabetes mellitus and hypertension without interrupting the normal outpatient activities. Once the patient had been examined and prescribed, his/her outpatient card was examined without the knowledge of the intern and their recordings were noted. These findings were matched with standard protocol/checklist.

On the first day of their internship in Urban Health Centre, each intern was given a topic for group

health education. The topic on individual health education was according to the patient's need and the disease diagnosed. The interns were observed while giving health education, both at individual level and group level.

The interns were also given closed ended questionnaire regarding team work, during their postings in UHC to assess their attitude towards team work. A scoring system was developed for the responses given. According to the total score (maximum 20) obtained, the willingness to work was graded as not satisfactory (<10), satisfactory (11-16) and completely willing (17-20) for willingness to work as a team.

For the purpose of analysis, the individual performance of all interns was taken into consideration along with the comparison of competency among different batches in the context of completion of other major postings, such as Medicine/Surgery and Obstetrics and Gynaecology.

STUDY TOOL

Observation and questionnaire

OPERATIONALISATION OF TERMS

A. History and clinical examination skill - Check list:

1. Listening to patients' complaints without interrupting
2. Performing systemic examination
3. Entering complaints and findings in outpatient sheet,
4. Ordering for relevant investigations when needed
5. Arriving at a provisional diagnosis.

B. Prescription of interns - Check list:

1. Rationality,
2. Adequate dosage,
3. Frequency,
4. Not prescribing unnecessary tablets and injections
5. Not yielding to pressure while prescribing.

C. Communication with the patients - Check list:

1. Use of vernacular language
2. Explaining diagnosis and cause to the patient
3. Instructing them on duration and dosage of drug

4. Diet restrictions/precautions/specific protections and follow up advice.

D. Health education Check list

1. Content
2. Presentation
3. Feedback.

The scoring was given in nominal scale; negative statement was taken into consideration, while making the scoring.

STATISTICAL ANALYSIS

The data collected from interns was analysed separately for each group by simple proportions, ratio and non parametric tests like Mann Whitney test and Kruskal Wallis test.

RESULTS

There were 56(57.76%) male and 41(42.24%) interns (Total: 97) prescription and clinical skill pattern analyzed.

TABLE I-DISTRIBUTION OF INTERNS ACCORDING TO THE POSTINGS COMPLETED

Posting	Frequency	Percentage
Fresh to CM	17	17.53
Completed OG	17	17.53
Completed OG+Sur	16	16.49
Completed OG+Surgery+Medicine	16	16.49
Completed OG+Sur+Med+ENT/Oph	16	16.49
Completed all except CM*	15	15.47
Total	97	100

*OG+Surgery+Medicine+ENT/ophthalmology+Paediatric+Ortho

As shown in Table I, in each batch, the interns were distributed equally, because it is a rotatory internship. The purpose of categorization is to find out if there is any difference in competence achieved with the completion of different postings as specified in the curriculum.

TABLE II- DISTRIBUTION OF INTERNS ACCORDING TO THEIR PRACTICE OF COMPETENCY (HISTORY AND CLINICAL EXAMINATION) FREQUENCY FOR EACH COMPONENT

Competency	Yes		No	
	Freq	%	Freq	%
Listens to complaints without examining	94	96.91	3	3.09
Enters complaints in outpatient card	56	57.73	41	42.27
Performs systemic examination	15	15.46	82	84.54
Enters examination findings in outpatient card	2	2.06	95	97.94
Arrives at a provisional diagnosis + entered in the outpatient card	12	12.37	85	87.63

As regards to history taking and clinical examination (Table II), majority of interns (97%) have listened to the patient's complaints uninterruptedly. Only 57.7% have entered the complaints in the outpatient card. Proper systemic examination was done by only 15.46% of interns. Only 2.06% of the interns have entered the examination findings in the outpatient card.

TABLE III-ASSESSMENT OF HISTORY TAKING AND CLINICAL EXAMINATION-SCORE*

Score obtained	Frequency	Percentage
1	14	14.4
2	62	63.9
3	16	16.5
4	4	4.2
5	1	1
Total	97	100

*Maximum score 5

As regards to the assessment score in history taking and clinical examination (Table III), majority of interns (78.36%) have scored two or less than two in history taking and clinical examination.

FIGURE I-DIAGRAM SHOWING THE DISTRIBUTION OF INTERNS ACCORDING TO THEIR PRACTICE OF COMPETENCY (PRESCRIBING PATTERN)

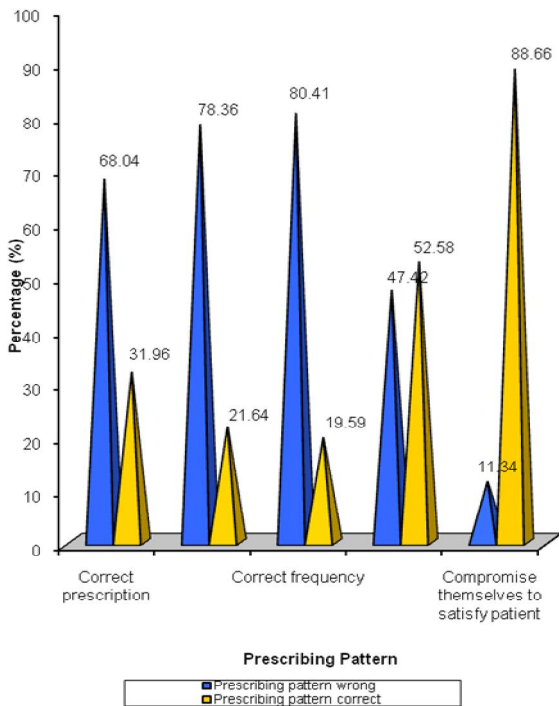


TABLE IV- DISTRIBUTION OF INTERNS ACCORDING TO THEIR PRACTICE OF COMPETENCY (PRESCRIBING PATTERN) - FREQUENCY FOR EACH COMPONENT

Prescribing pattern	Yes		No	
	Freq	%	Freq	%
Correct prescription	31	31.96	66	68.04
Adequate dosage	21	21.64	76	78.36
Correct frequency	19	19.59	78	80.41
Unnecessary tablets/injections	46	47.42	51	52.58
Compromise themselves to satisfy patient	11	11.34	86	88.66

From Table IV, it is shown that nearly half (47.42%) of the interns are found to have prescribed unnecessary tablets/injections. Prescription of correct drugs in adequate dosage and frequency is also found to be poor i.e., less than one third.

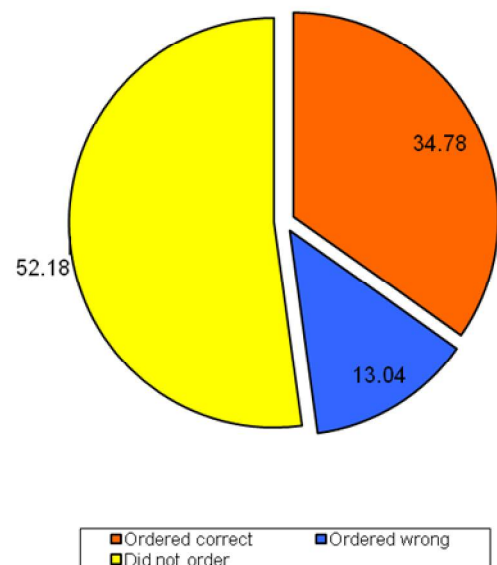
TABLE V- ASSESSMENT OF PRESCRIPTION PATTERN-SCORE*

Score obtained	Frequency	Percentage
1	38	39.18
2	29	29.9
3	13	13.4
4	12	12.37
5	5	5.15
TOTAL	97	100

*-Maximum score 5

Table V shows that majority of interns (69.1%) have scored two or less than two in proper prescription skill. Only 5.2% of the interns have done the prescription correctly.

FIGURE - II- DIAGRAM SHOWING THE DISTRIBUTION OF INTERNS ACCORDING TO THE RATIONALITY OF INVESTIGATIONS ORDERED (ASSUMING THE NEED FOR INVESTIGATION AS 100%)

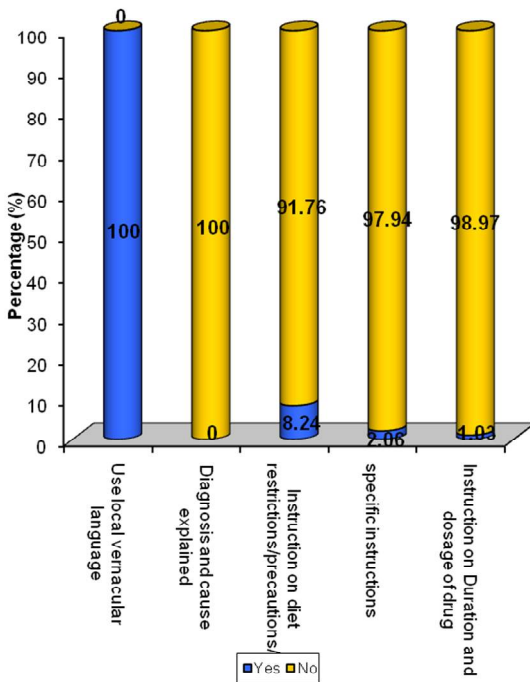


Among 23.7% of the interns who were supposed to order for investigations, 8.3% have requested correctly, 3.1% wrongly, 12.4% did not order even write when it was needed. Assuming the need for doing investigation as 100%, 52.17% have failed to carry out the investigations required (Table VI).

TABLE VI-DISTRIBUTION OF INTERNS ACCORDING TO THE RATIONALITY OF INVESTIGATIONS ORDERED

Investigation pattern	Frequency	Percentage
Ordered correct	8	8.3
Ordered wrong	3	3.1
Did not order	12	12.4
Not required	74	76.3

FIGURE – III DIAGRAM SHOWING THE DISTRIBUTION OF INTERNS ACCORDING TO THEIR PRACTICE OF COMPETENCY (COMMUNICATION PATTERN WITH THE INDIVIDUAL PATIENTS)



As regards to the mean score on proper history taking skill and completed postings (Table VII) there is no difference among the six different groups.

TABLE VII-DIFFERENCE IN MEAN SCORE ON PROPER HISTORY TAKING SKILL AND COMPLETION OF DIFFERENT POSTINGS

Postings completed	Mean	SD	K.W value	P value
Fresh to CM	1.182	0.6	8.453	0.133
Completed OG	2	0.612		
Completed OG+Sur	2.063	0.443		
Completed OG+Sur+Med	1.938	0.443		
Completed OG+Sur+Med+ENT/Oph	2.312	0.873		
Completed all except CM	2.667	1.113		

df-5 (KRUSKAL WALLIS TEST)

TABLE VIII- DIFFERENCE IN MEAN SCORE ON PRESCRIPTION PATTERN SKILL AND COMPLETION OF DIFFERENT POSTINGS

S. No	Postings completed	Mean	SD	K.W value	P value	Multiple comparison Test for K.W
1	Fresh to CM	1.414	0.507	42.121	<0.001	5,6 Vs 1-4 is significant
2	Completed OG	1.353	0.493			
3	Completed OG+Sur	1.688	0.873			
4	Completed OG+Sur+Med	2.063	1.289			
5	Completed OG+Sur+Med+ENT/Oph	3	1.095			
6	Completed all except CM	3.533	1.06			

df-5 (KRUSKAL WALLIS TEST)

As shown in the Table VIII, the prescription pattern of interns improved with the completion of postings. The number of postings completed is directly related to the better prescribing pattern and the difference is statistically significant ($P < 0.001$).

DISCUSSION

Competency in health care is the capability to perform acceptably those duties directly related to patient care. Competency is defined in the context of particular knowledge, skills and abilities. Skill is one of the expected functions of knowledge.

Competency among 97 interns (57.7% males and 42.3% females) in history and clinical examination was assessed by combination of methods such as observation, comparing with the standard and check list. History taking is a fundamental aspect of clinical practice. Physicians obtain most of the information needed for diagnosis from the medical history.

The present study shows 57.7% of interns entered the complaints and history in outpatient card. Only 2% have entered their findings and 12% have arrived at a provisional diagnosis. Study done by Harmeet Singh Rehan et al.⁶, at a primary health centre under Maulana Azad Medical College showed similar results. New Delhi also showed that in 43% of prescriptions by interns, diagnosis was not mentioned. In another 7.13% prescriptions neither diagnosis nor signs and symptoms were mentioned.

In the present study only 2% have entered their findings in patient's card which shows the lack of concern /interest of interns to document the findings. Majority of interns (78.3%) scored two or below two out of maximum score of five in history taking and clinical examination. Similar finding was observed by Aminur Rahman⁷.

Though students are taught formally regarding history taking and clinical examination from first clinical year, a lacuna still persists in recording the findings and documentation which may be due to time constraints and too many patients waiting to be seen.

As far as the competency of interns in prescribing pattern, the following things are expected:

1. Rational use of drugs

2. Prescribing drugs in correct doses
3. Prescribing for adequate duration
4. Not prescribing unnecessary drugs/injections
5. Compromising themselves to satisfy the patient

Prescription pattern of the interns was assessed by observation of their performance and interaction with the patients, without the knowledge of interns and the findings were noted. Later, the findings matched with the standard protocol. In the present study 47.4% of the interns prescribed unnecessary tablets/injections and only 32% followed rational prescription. It is found that 21.6% have prescribed the drug in correct dosage and 19.6% of the interns prescribed the drugs in correct frequency.

The findings of the study done by Kazeem et al.⁸ also fall in similar lines, 5.8% of interns had problems with prescription writing, 64.2% had problems with memorizing drug dosage for different age groups, 2.46% know appropriate drug for common clinical conditions. This shows that the interns always have a problem in prescription writing during the postings. Similar findings were also observed in studies done by R.R.Pati⁹ and Harmeet Singh Rehan et al.⁶ Majority of interns 69.1% scored two or less than two out of a maximum score of five in prescription pattern.

A possible explanation for incomplete prescriptions may be due to lack of practical knowledge and adequate exposure. Only theoretical knowledge on pharmacology is emphasized during the course of study and the practical prescribing and regular assessment of prescribing skills are rarely tested in undergraduate medical education.

Rationality of investigation ordered was assessed not for all the interns. Only cases which required investigation were taken into consideration. Number of cases which required investigation was taken as 100%. Assuming the need for doing investigation as 100% as described earlier, 52.17% of interns failed to carry out the investigations. This implies the lack of comprehension and integrative training and lack of applied knowledge among interns. Unnecessary investigations prescribed by the interns were about 2.06%.

In the present study all interns spoke in local vernacular language, none explained the diagnosis or cause of illness, 8.3% interns gave instructions on diet/and diet restrictions/precautions/specific

instructions. Only 2% of interns gave instructions on duration and dosage of drug and 1% of the interns gave follow up advice. The possible explanation for not giving advice on duration and dosage may be that many of the interns were under the impression that others (pharmacist/nurse) would give instructions on dosage and duration. The other reasons could be time constraint, lack of interest and lack of orientation.

Attempt was made to compare the prescription pattern skill and number of postings completed such as Medicine/Surgery/Paediatrics and Obstetrics and Gynaecology. The present study shows that prescribing pattern improved with the number of postings completed. The same results have also been observed by Pearson et al¹⁰ and Kazeem et al.⁸ As the interns rotate through each posting their prescriptions are corrected by faculty members and also they learn from the prescriptions made by other staff members and peers in wards and outpatient departments. Hence as the number of completed postings increases, prescription pattern improves qualitatively.

SUMMARY

The key findings of the present study are presented as follows

Only 96.9% of interns listened to complaints without proceeding with clinical examination.

Only 15.5% of interns performed systemic examination and 2.06 % entered findings in outpatient card.

Only 12.4% of interns attempted to make a provisional diagnosis and entered it on the card.

Only 32 % interns prescribed rationally.

Only 21.6 % interns knew how to prescribe adequate dosage.

All interns spoke in local vernacular language to patients but none explained the diagnosis or cause to the patient.

In assessment of mean score for the competencies of interns in history taking and clinical examination, prescription pattern and communication with individual patients were 78.3%, 69.1%, 99% respectively and they scored two or less than two in each of the above competencies.

As the interns completed other postings, their prescription pattern improved.

LIMITATIONS

The study was done in a private medical college set up. So the results cannot be generalisable to the undergraduate medical students in other institutions like state/central Government institutes.

Many assumptions were made in this cross sectional study, about the input, nature of students, etc. One of the assumptions is that the input/methodology of teaching is same/remains unchanged for different batches. It may or may not be correct.

RECOMMENDATIONS

The present study shows that only 2.06% of intern enters the examination findings in outpatient card and only 12.37% of interns arrived at a provisional diagnosis and entered in outpatient card. Hence the importance of documentation of history, examination, findings and provisional diagnosis must be stressed during the internship training programme, which will have an implication in their future professional career especially in the context of Consumer Protection Act.

The prescription of correct drugs in adequate dosage and frequency was also poor (< 30%) in the present study. It will be better if practical prescribing and regular assessment of practical skills is incorporated in the curriculum and there should be an examination after the completion of internship.

At the end of internship, a qualifying examination for evaluation of clinical skills (competencies) may be recommended for better learning of competencies, since competencies regarding skill are learnt only during internship in the medical curriculum.

INTEREST OF CONFLICT & SOURCE OF FUNDING: Nil

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Original Research Article

Utilization of health services and its determinants among Elderly Population of Raichur District, Karnataka

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Abstract

Introduction: Utilization of Health Services is a result of “Health Seeking Behavior” which in fact is an entity of a wider concept known as “Health Behavior”. Data regarding the utilization of health services by the elderly and the factors associated with it from the most rural and backward areas of Raichur district of Karnataka are lacking. **Objectives:** To assess the utilization of health services and the socio-demographic factors associated with it among the elderly population of the rural villages of Raichur district. **Materials and Methods:** This community based cross sectional study was carried out in the most rural and backward villages of Raichur District. Data was collected using a pre-designed and pre-tested questionnaire. 230 elderly were interviewed regarding their socio-demographic profile and utilization of health services. **Results:** It was observed that, 83% of the elderly used health services in the past year of which 78% utilized the allopathic health services. However, 16% of them still utilized the services of quacks. The average monthly expenditure of the elderly on health was Rs100/-. A higher level of education and social class were found to be significant factors favouring the utilization of healthcare services by the elderly. **Recommendation:** Integration of geriatric care into the primary healthcare system has become the need of the hour in order to make health services more accessible to the elderly.

Keywords: Elderly, health services, utilization, rural

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Introduction:

Utilization of Health Services is a result of “Health Seeking Behavior” which in fact is an entity of a wider concept known as “Health Behavior”. Health Seeking Behavior is defined as “Any activity undertaken by individuals who perceive themselves to have a health problem or to be ill for the purpose of finding an appropriate remedy”.¹ In other words, it is the sequence of remedial actions that individuals undertake to rectify perceived ill health which is

initiated from symptom definition, whereupon a strategy for treatment is devised. When an individual perceives himself as sick, he adopts distinct behavioral changes which include confining to bed or staying away from work or consulting a healer, either traditional or a health worker for counseling, diagnosis and treatment.²

Over the last three decades social and medical anthropologists have tried to analyze the patient’s perspectives and conceptions about illness and medicine. They have been trying to study how patients comply with the sick role- how they

perceive the causes, their condition and make choices regarding the use or non use of different kinds of health care.³ It has been observed that health seeking behavior of a person is influenced by a large number of factors operating at the individual, family and community level. The way in which people conceptualize the etiology of a health problem and their perception of symptoms plays an important role in seeking health.⁴

According to the Operation and Research Group, the level of utilization of public health facilities in rural India was 37 per cent and as per the National Health Policy-2002 the level of utilization of public health facilities was found to be less than 20 % .The District level Rapid Household Survey too reported very low levels of utilization of health care services and revealed high degrees of inequalities in utilization between rural and urban population.⁵ It has been observed that, the utilization rates and factors influencing the utilization of health services vary depending up on the socio- cultural and demographic profile of the people. This is seen especially with regard to the elderly, since they suffer from multiple morbidities when compared to the others and they are often dependent on others for the utilization of health services..⁶ However, data regarding the utilization of health services by the elderly and the factors associated with it from the most rural and backward areas of Raichur district of Karnataka are lacking. Hence, the objectives of the study were to assess the utilization of health services and the socio-demographic factors associated with it among the elderly population of the rural villages of Raichur district.

Materials and Methods:

This community based cross sectional study was carried out in the villages of 'Singanodi', 'Siganodi thanda', 'Mandalagiri', 'Bhapur' and 'Bhapur thanda' which is known to be the most rural and backward areas of Raichur District. A person aged above 60 years as per the UN definition was considered to be an elderly in our study. ⁷An initial house to house survey was carried out in these villages and a total of 576 elderly who were permanent residents were identified. A pilot study carried out revealed that the prevalence of utilization of health services was (p) 50% and by using the formula $n = \frac{Z^2 pqN}{e^2 (N-1) + Z^2 pq}$, where, acceptable error $e = 5\%$, total population

$N = 576$, $q = 1 - p$ and level of significance $\alpha = 5\%$. The required sample size was calculated to be 230. By using random number table, 230 elderly were selected for the study. The institutional ethical committee approval and the written informed consent of the participants were obtained prior to the start of the study.

The data was collected by interviewing the study subjects using a pre-designed and pre-tested questionnaire. They were interviewed about their socio-demographic profile and utilization of health services. The data obtained was analyzed using Epi Info version- 3.5.3.

Results:

Socio-demographic profile

The study revealed that out of the 230 elderly, majority of them belonged to the age group of 65 to 69 years (37%) with a mean age of 65 years ($SD \pm 5.44$). It was observed that most of the elderly were women (58%), illiterate (57.8%), Hindu by religion (89.6%), married (62.2%) and were part of a joint family (76.08%). The Modified B G Prasad classification⁸ revealed that most of the elderly belonged to class IV (43.9%) and more than half (55%) of them were not working. The details of these socio-demographic data are mentioned in the below given table number 1 .

Utilization of health services by the elderly

It was observed that more than three fourths (83%) of the elderly population utilized some or the other forms of health services in the past one year . The rest of them (17%) did not use any forms of health services either due to the absence of illness (76.9%) or due to their lack of interest in getting their illness treated (15.4%), while the rest claimed that they did not have enough money for treatment (7.7%). This study revealed an interesting fact that, elderly women (57%) were found to utilize health services more than the males (43%). Even though, allopathy (78%) was found to be the most popular system of medicine followed by the elderly, it was quite disappointing to note that some of them (16%)

Table - 1: Socio-demographic profile of the elderly population

Socio demographic Profile	Total (%)
Age	
60 - 64	33
65 – 69	37
70 – 74	20
75 – 79	7
80 - 99	3
Sex	
Male	42
Female	58
Religion	
Hindu	89.6
Muslim	10.4
Education	
Illiterate	57.8
Primary school	35.2
Middle school	5.2
High school	0.9
Pre university course	0.9
Marital Status	
Married	62.2
Unmarried	0.9
Widow	31.3
Widower	5.6
Type of family	
Nuclear	19.56
Joint	76.08
Living alone	4.36
Socio-economic status (Modified B G Prasad)	
Class I	2.6
Class II	12.2
Class III	30.9
Class IV	43.9
Class V	10.4
Occupational status	
Not working	55.6
Agriculture	14.3
Coolie	30.1

Table 2: Distribution of elderly according to utilization of health services

Factors	Frequency	Percentage
Use of health services		
Yes	191	83
No	39	17
Reason for not using health services		
No health problem	30	76.9
Not interested	6	15.4
No money	3	7.7
Type of services utilization		
Religious rites	2	1
Allopathy	149	78
Ayurvedha	7	4
Homeopathy	2	1
Quacks	31	16
Frequency of utilization of health care services		
Weekly	16	8
Monthly	126	66
Once in 6 months	49	26
Monthly expenditure on health		
20-69	83	43
70-119	61	32
120-169	28	14
170-219	12	6
220-269	3	2
270-319	3	2
320-369	1	1
Satisfaction with health care services		
Yes	48	75
No	16	25
Suggestions to improve existing health care services		
No suggestion	102	44.4
Free treatment	93	40.4
Doctor to come home	23	10
Quality treatment	12	5.2
Care takers during illness		
Spouse	73	31.7
Son	127	55.2
Daughter	20	8.7
Relatives	8	3.5
Others	2	0.9
Satisfaction of the care provided by their care takers		
Yes	209	90.9
No	21	9.1

Table 3: Socio-demographic factors associated with utilization of health services

Socio-demographic factors	Utilization of health services		Chi-square
	Yes (%)	No (%)	P-value
Age			
60-65	58 (77.3)	17 (22.7)	$\chi^2 = 2.787$
66-70	74 (87.1)	11 (12.9)	P = 0.248
71 & above	59 (84.3)	11 (15.7)	
Gender			
Male	83 (86.5)	13 (13.5)	$\chi^2 = 1.365$
Female	108 (80.6)	26 (19.4)	P = 0.243
Education			
Illiterate	105(78.9%)	28 (21.1)	$\chi^2 = 3.758$
Literate	86 (88.6%)	11 (11.4%)	P = 0.05
Occupation			
Retired	111 (86.7)	17 (13.3)	$\chi^2 = 2.769$
Working	80 (78.4)	22 (21.6)	P = 0.096
Socioeconomic Class			
Low	32 (94.1%)	2 (5.9%)	$\chi^2 = 21.087$
Middle	47 (66.2%)	24 (33.8)	P = 0.0001
High	112 (89.6%)	13 (10.4%)	

utilized the services of quacks. It was observed that, among the 191 utilizers of health care services majority (66%) of them visited the health centers on a monthly basis and spent about Rs 20 to 69 per month on health. The average monthly expenditure on health by the elderly was calculated to be Rs 100/-.

Among the 191 health care service utilizers, only 64 (33.5%) of them had been hospitalized in the past one year and were mostly for Asthma, Diabetes, Hypertension and its complications. It was observed that majority (75%) of the elderly were satisfied by the inpatient services.. When asked about their suggestions for improving the existing health care services according to their needs, 40.4% suggested that free treatment should be provided for the elderly, while 10% felt the need for having a doctor visit their home for regular checkups. Only 5.2% suggested that they should be provided with quality treatment at the existing health system and the rest

44.4% of the elderly refrained from making any suggestions. However, it was interesting to note that at the time of illness majority of the elderly were taken care of by their sons (55.2%) and nearly all of them were satisfied by the care provided to them at the time of illness (90.9%). The details of the utilization of health services by the elderly are provided in table number 2.

Factors associated with the Utilization of health services by the elderly

While looking into the factors associated with the utilization of health services, it was observed that as age increases utilization too increased, but this finding was found not to be statistically significant, (p=0.248). Even though it was observed that the utilization of health services were more among the elderly females than in the males, there was no statistical association between utilization of health services and the gender (p=0.243). With regard to education it was observed that literates were utilizing health services more than illiterates and this finding was found to be statistically significant (p= 0.05). It was observed that, those elderly who were retired were using more health services than those working, however it was found not to be statistically significant (p=0.096). At the same time, elderly belonging to higher socioeconomic class were utilizing the health services more than those of the lower class and this finding was found to be highly significant (p=0.0001). The details of the factors associated with utilization of health services are provided in table number 3.

Discussion

In our study it was observed that out of the 230 elderly, 191(83%) of them utilized some or the other forms of health services such as allopathy, ayurveda, homeopathy, traditional medicine or even quacks, while 39(17%) of them did not use any forms of health services. This was found to be similar to the findings of the 60th round of National Sample Survey where 82% of the rural elderly utilized some or the other forms of health services.⁹ It was also seen in our study that majority (78%) of them followed the Allopathic system of medicine while 16% of them utilized the services of quacks. This was found to be similar to the findings of the 42nd round of National Sample Survey where most of the

'sick' used the allopathic system of medicine.¹⁰ This could probably be due to the fact that this system is based on sound scientific principle and hence more efficacious, is promoted by the government and is present in most parts of the country. With regard to the utilization of the services of the quacks it could probably be due to the fact that they live close to the people and they are more affordable than the allopathic system of medicine. Among those who did not utilize any form of health services in our study, 7.7% of them claimed that they did not have enough money for treatment, while Goswami et al reported a higher number of people (32.4%) who were not accessing healthcare services due to affordability issues.¹¹

It was also observed that the elderly women (57%) were utilizing health services more than elderly men (43%) in our study. This could probably be because women were living longer than men and were having more number of morbidities than the men. Our study also revealed that of the 191 elderly who were utilizing health care services, majority (66%) of them utilized the health care services on a monthly basis. This could probably be due to the fact that the utilization pattern of the elderly depended upon multiple factors such as occurrence of morbidity, severity of morbidity, visit by quacks who often do home visits on a monthly basis in these rural areas etc.

It was observed that majority of the elderly(43%) spent about Rs 20 to 69 per month on health accounting to a low mean of Rs 100/- as monthly expenditure on health . This was similar to the findings of Goswami et al where 44% spent less than hundred rupees on their treatment.¹¹ Such a low expenditure on health could probably be because the people utilized the services of the nearby government PHCs which are free and the quacks who provide services at a very cheap price.

Among the elderly who were hospitalized, it was observed that 25% of them were not satisfied and the most common reasons given by the elderly for dissatisfaction was the high cost; lack of proper patient care in the hospitals etc. When asked about suggestions to improve the health care services, 44% of the elderly were unwilling to giving any suggestions for the betterment of the existing health services because they felt that their suggestions

would not be put into action, while others were felt that they were incapable of putting forward valid suggestions and rest of the elderly were not interested in improving the health facilities. Among the elderly who made suggestions, 10% of the elderly suggested a regular home visit to be made by the doctor because they had no one to accompany them to the hospital or they found travel to the health centre to be tedious and tiring. Only a meager 2.5% felt that they needed better quality treatment, this could either be because they were already being provided with good quality treatment or it could be because the rural elderly were unaware of the medical advances made in the field of geriatrics.

In our study, age, gender and occupation of the elderly were found not to have any association with the utilization of health services. While it was observed that those elderly who were literates were utilizing health care services more when compared to the illiterates and this was found to be statistically significant. This is because education has been identified as an enabling factor in seeking health care. Going to school, probably changes the attitude of the elderly towards health seeking and thus improves their utilization of health services.

In the 52nd round of National Sample Survey, the educational status of an individual was used as a proxy for familiarity with the health care system. It showed that those who had formal education had 85% higher likelihood of preferring health care services than illiterates.¹²

It was observed that, the elderly belonging to a higher socioeconomic classes were utilizing health care services more when compared to those belonging to the lower socioeconomic class and this was found to be highly significant. This could be because of the fact that education, occupation and income are the three basic characteristics of social class, these three variables have wide impact on the utilization pattern of health services.¹³

The study came to the conclusion that, majority of the elderly used allopathic health services, however a minority of them still utilized the services of quacks. A higher level of education and social class were found to be factors favouring the utilization of healthcare services. Integration of geriatric care into the primary healthcare system has become the need

of the hour in order to make health services more accessible to the elderly . Geriatric clinics need to be established at all levels of healthcare and a multidisciplinary approach in the management of the elderly need to be adopted.

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Original Research Article

**Modifiable Risk factors of Cardiovascular Diseases in Adults at
Soolamangalam, Tamilnadu-A Cross Sectional Study**

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Abstract

Introduction: Cardiovascular (CVD) disease has emerged as major cause of morbidity, mortality and disability across Globe. Out of the 16 million deaths under the age of 70 due to non-communicable diseases, 82% are in developing countries and 37% are caused by CVDs. The study was carried out in Soolamangalam village with the aim of identifying the prevalence of selected modifiable risk factors of cardio vascular diseases among the people over 18 years old and association between demographic variables and risk factors of CVD among adult population. **Materials and Methods:** The study included 400 people of Soolamangalam village and simple random sampling method was adopted and interview schedule was administered to collect data from them. Statistical tests were used to find out the association between the risk factors and CVD. **Results:** A total of 400 people were included in the study, of whom the females constituted 55% and males 45%. The risk of developing CVD due to their risk behaviours like smoking, alcohol, blood pressure, diet and obesity was moderate in 90% of the participants. **Conclusion:** It is evident from the study that 90% had a moderate risk of developing CVD due to their life style. However, some proactive strategies need to be devised to reduce their risk behaviours and lead a healthy life style.

Key Words: Cardiovascular, Modifiable Risk Factors, Morbidity and Mortality

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Introduction:

Cardiovascular (CVD) disease has emerged as major cause of morbidity, mortality and disability across Globe. Knowing the risk factors that lead CVD would provide insight into the prevention and treatment of this major public health concern. ⁽¹⁾ The risk factors that are connected to CVD encompass hypertension, obesity, physical inactivity, diet and alcohol and non modifiable risk factors like age, sex and family history. At present one cannot explain

why people are susceptible to it. The adult people in America, Europe and Japan have reported highest rate of heart diseases. ⁽²⁾ Until recently, the burden of cardiovascular disease was thought to be a problem that afflicts only developed countries. Nevertheless, the growing facts have apparently showcased that the problem affects developing countries rather than developed countries. Globalization and pattern of food consumption and life styles are equally responsible for the disease. ⁽³⁾ CVD is a prime cause

of death worldwide. Many people die of CVD every year than any other diseases. According to 2012 report, an estimated 17.5 million people died of it representing 31% of all global deaths. Over three quarters of CVD deaths take place in low- and middle-income countries. Out of the 16 million deaths under the age of 70 due to non-communicable diseases, 82% are in developing countries and 37% are caused by CVDs. ⁽⁴⁾ It has now become the most important cause of mortality in India. A quarter of all mortality is attributable to CVD. Ischemic heart disease and stroke are the predominant causes and are responsible for >80% of CVD deaths. It was indicated in the Global Burden of Disease study that the global age standardized average death of 235 per 100000 population was lesser than death rate of 272 per 100000 population in India. Some aspects of the CVD epidemic in India are peculiar causes of concern, including its accelerated build-up, the early age of disease onset in the population, and the high case fatality rate. In India, the epidemiological change from mainly infectious disease conditions to non-communicable diseases has occurred over a brief period of time in India. Premature mortality in terms of years of life lost because of CVD here increased by 59%, from 23.2 million in 1990 to 37 million in 2010. ⁽⁵⁾

Most of the cardio vascular diseases could be easily prevented and treated by reducing the susceptible behaviours such as consumption of alcohol, obesity and unhealthy diet, tobacco, and physical inactivity. Many studies have been carried out across globe including north India, but scant studies have been conducted in South India, especially in rural Tamilnadu. Still there is wider gap between urban and rural areas in the diagnosing aspects on cardiovascular diseases. In order to fill these gaps, the study was carried out in Soolamangalam village with the aim of identifying the prevalence of selected modifiable risk factors of cardio vascular diseases among the people over 18 years old and association between demographic variables and risk factors of CVD among adult population.

Materials and Methods:

Cross-sectional descriptive design was methodically adopted to study the modifiable risk factors of cardio vascular diseases in adult population at Soolamangalam village in Thanjavur district. The study was conducted between 1st September, 2015 and 26th February, 2016. The people of both sexes over 18 years old were recruited as respondents of the study. The sample frame consisting of 1100 people was logically prepared using Assembly voters list, from which 400 respondents were selected by the simple random sampling. The tool selected to obtain data from the respondents was self constructed and semi-structured interview schedule. The final schedule was prepared according to requirements of local area after having done pretest with 10% of the total population. It was initially in English language and back translated to Tamil and English. The schedule consisted of two domains, the first encompassed demographic details like sex, religion, age education, occupation income, marital status, type of family and previous histories of CVD and risk factors of families and the second included blood pressure, obesity, smoking, physical activity, diet and alcohol.

Prior to the data collection, content validity of the interview schedule was systematically done with expert doctors from community medicine, cardiology, Nutrition and Bio-statistics departments, to enhance its relevancy and accuracy in respect of study objectives. Later the interview schedule was administered in the field to collect data from the respondents who were assured of confidentiality of not disclosing their identity to anyone without their prior permission and had consent to take part in the study. During the data collection, blood pressure, height and weight of every respondent were measured.

Once the data collection was over, they were collated, edited, numbered, codified, and entered into the excel sheet. Then they were shifted to SPSS software for analysis and tabulation. After the analysis was done, the data was presented in tabulation forms with interpretations. Chi-Square test was appropriately used to identify the

Table:1 Classification of Blood Pressure Level among Adults

S. No.	Category	Systolic B. P (mmHg)	No.	%	Diastolic B.P (mmHg)	No.	%
1	Optimal B.P	<120	320	80	<80	340	85
2	Normal B.P	<130	44	11	<85	24	6
3	High Normal B.P	130-139	8	2	85-89	4	1
4	Grade I Hypertension (Mild)	140-159	24	6	90-99	32	8
5	Grade 2 Hypertension (Moderate)	160-179	4	1	100-109	0	0

Table: 2 Mean, Standard Deviation and Range for Physiological Base Line Data

Physiological Data	Mean		Standard Deviation		Range			
	Male	Female	Male	Female	Minimum		Maximum	
					Male	Female	Male	Female
Height in cms	167.04	154.93	7.0	6.4	155	142	181	170
Weight in Kgs	57.95	47.20	9.19	11.14	37	27	77	78
BMI (KG/M²)	20.10		3.56		12.50		33.77	
Blood Pressure	118.99		10.78		90		163	
Systolic mmHg	77.30		7.67		50		96	
Diastolic mmHg								

association between demographic variables and high risk for CVD among the adults.

Results:

A total of 400 people were included in the study, of whom the females constituted 55% and males 45%. As regards education, 34% studied up to High school level, while 22% of them had no any formal education and 19% of them studied up to Middle school level. The highest proportion of the

population (70%) was professing Hinduism and 30% of them were belonging to Christianity. An outright majority of them (93%) led a legitimated marital life. Occupationally, 37% of them were engaged in unskilled work, which was fairly higher than the people (25%) who were not engaged in any work. However, there was a significant association between people engaged in skilled works (14%) and business (14%) in the percentages. In respect of their monthly income, 25% earned up to Rs. 500, which

Table: 3 Association between the Grade of BMI and Selected Demographic Variables

Selected Demographic Variables	Under BMI<18.50		Normal Range 18.50-24.99		Over Weight ≥25.00		Chi-Square	P-Value
	No	%	No	%	No	%		
Sex								
Male	40	22.2	132	73.3	8	4.4	7.95	p<0.01
Female	96	43.6	100	45.3	24	10.9		
Age in years							9.03	P=0.53
18-30	24	35.3	40	58.8	4	5.9		
31-36	28	38.9	40	55.6	4	5.6		
37-42	24	27.3	56	63.6	8	9.1		
43-48	20	23.8	48	57.1	16	19		
49-54	20	62.5	12	37.5	-	-		
55-60	20	35.7	36	64.3	-	-		
Occupation							12.13	P=0.28
Unskilled	64	43.2	80	54.1	4	2.7		
Skilled	20	35.7	32	57.1	4	7.1		
Office Workers	-	-	28	87.5	4	12.5		
Business	12	21.4	40	71.4	4	7.1		
Retired	-	-	8	100	-	-		
No occupation	40	40	44	44	16	16		
Income							17.09	p<0.05
<Rs. 500	40	40	44	44	16	16		
Rs.501-Rs.1000	28	31.8	66	68.2	-	-		
Rs.1001-Rs.1500	44	50	40	45.5	14	4.5		
Rs.1501-Rs.2000	20	45.5	24	54.5	-	-		
>Rs.2000	4	5	64	80	12	15		
History of CVD							7.09	P=0.53
No	80	32.8	148	60.7	16	6.6		
Paternal	4	14.3	24	85.7	-	-		
Maternal	8	22.2	24	66.7	4	11.1		
Both	4	50	4	50	-	-		
Don't know	40	47.6	32	38.1	12	14.3		

was slightly lower than the people (22%) who earned up to Rs. 1000 and Rs. 1500 separately. Regarding the previous history of cardiovascular diseases in their families 61% of their families did not have any such diseases; however, it was surprising to note that 21% of them didn't even

know what they were. As for BMI, 58% maintained normal weight, whereas 34% maintained underweight. The mean score of BMI was 20.10 with a standard deviation of 3.56.

The systolic pressure reading showed that a mean score was 118.99 with a standard deviation of 10.78. Diastolic blood pressure results showed a mean

score was 77.30 with a standard deviation of 7.67. With regard to the association of the modifiable risk factor with smoking, 76% of them had no habit of smoking and a less chance of developing cardiovascular diseases.

However, 24% of them had a habit of smoking. The association of modifiable risk factors with physical activity showed that 47% got engaged in physical activity for less than two hours a day and 25% not got engaged any physical activities. The diet practices of the respondents were assessed to find out risk involved in them. The results showed that 87% were non-vegetarian who consumed meat once a week, 44% had a habit of eating fried fishes once a week, 23% consumed coffee twice a day, and 18% added pickles to their regular meals. In relation to association of modifiable risk factors with alcohol, 78% had not in the habit of consuming alcohol in any forms, in contrast, 22% had a regular habit. The mean and standard deviation was assessed for the association of various modifiable behaviours (smoking, exercise, diet, & alcohol and Overall), the upshot exemplified that the highest mean score of 67.36 was associated with exercise, while the lower 28.60 was related to alcohol. The overall mean for modifiable risk factors among adults was 57.16 and overall risk factors ranged from 42.86 to 77.78. In regards to level of risk for various modifiable risk factors among adults, 86% had a moderate risk of developing CVD due to diet, 85% had low risk due to non smoking, and, 82% who indulged in consuming alcohol had low risk. The association between level of risk factors and demographic variable were assessed; the result showed that regarding sex, the mean score for males was 57.1 with a standard deviation of 6.71 and the mean score for females 56.71 with standard deviation of 5.25. The variance value $F=0.69$ was not found to statistically significant. There is no statistical significant association between the level of risk factors and variables. However, there were statistically significant association between income and BMI of the study population.

Discussion:

There are numerous modifiable risk factors that cause cardiovascular diseases, among which dietary pattern, obesity, smoking, alcohol, hypertension, stress at work, physical inactivity, blood lipids and

high blood glucose concentration and malnutrition are considered as important and inevitable factors. However, the crux of present study was confined only to the factors like alcohol, physical inactivity, smoking and hypertension. Its results showed that as per BMI, 58% of the people maintained normal weight that reduced their risk of acquiring CVD. However, 86% had a moderate risk of developing CVD due to their diets. The mean score of BMI was 20.10 with a standard deviation of 3.56. Similarly, the study of Buttar HS, & Ravi N⁽⁶⁾ indicated that obesity in the elderly population was the main cause for CVD.

According Shrivastava U, Misra A, Mohan V, Unnikrishnan R, Bachani D⁽⁷⁾ there were approximately 274.9 million people using tobacco in India, of whom 68.9 million were smokers. The people in the age group of 15-69 have substantially increased their smoking habits which also gradually increased their risk of acquiring CVD. However, the current study stated that 85% had low risk owing to non smoking. The people's blood pressures were methodically assessed to determine whether they maintained it normally or not. The result portrayed that 82.5% have maintained it normally and they did not have any risk of developing CVD. The other study conducted in Karnataka⁽⁸⁾ showed that out of 202 respondents 37.75% who had Hypertension had CVD. It is worth to note that the people who possess the habits of smoking, consuming alcohol, doing less physical activities and having excessive diet and has diabetics and blood pressure, are more prone to CVD. Thus, they need to have medical checkups at regular interval and take early treatment avoid future complication.

Conclusion:

It is evident from the study that 90% had a moderate risk of developing CVD due to their life style. However, some proactive strategies need to be devised to reduce their risk behaviours such as creating awareness on cardiovascular diseases, increasing positive life style, changes in the consumption of food pattern and doing regular physical exercise, developing early health seeking behaviours, treatment adherence, secondary prevention, etc. Over and above, establishing new health centers in rural areas with adequate facilities for treating CVD or altering the existing health

system would facilitate the health care providers to cater the health needs of people. Many empirical studies in these areas need to be conducted in rural areas in order to bring the attention of policy makers on these issues and plan and implement new programs for reducing risk of acquiring CVD.

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Original Research Article

Evaluation Of Mass Drug Administration For Lymphatic Filariasis In Bagalkot District, Karnataka, Cross Sectional Study.

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Abstract

Background: Lymphatic Filariasis (LF), the neglected tropical diseases (NTD) is still a global public health problem causing disfiguring chronic ailments causing considerable economic loss and social stigma. Eliminating LF can prevent unnecessary suffering and contribute to the reduction of poverty. The success of programs for elimination of LF depends largely on their ability to achieve and sustain high levels of coverage and compliance with Mass Drug Administration (MDA). **Objective:** To assess the coverage and compliance of 12th round of MDA in Bagalkot district during the MDA campaign in December 2015. **Methodology:** The Cross sectional study was carried out in Bagalkot district on 22nd and 23rd of January 2016. Total of 122 houses consisting of 633 eligible beneficiaries in four clusters who were covered during 12th round of MDA campaign were interviewed and Information regarding coverage, compliance and adverse effects were obtained from all eligible population using a predesigned validated survey proforma. Data was entered in MS Excel and analysed using suitable statistics. **Results:** The coverage of MDA was found to be 88.5% with 99% had consumed the tablets. Effective compliance rate was found to be 87.5% and among that around 90.3% had consumed complete course of tablet and the coverage compliance gap (CCG) was found to be 0.96%. **Conclusions:** Though overall coverage was more than 87%, intensive IEC activities addressing the importance of MDA and complete course of drug among the beneficiaries of MDA through mass media and other means of communications is the essence of the hour to achieve our goal of elimination of lymphatic Filariasis.

Key-words: Lymphatic filariasis, Mass Drug Administration, Coverage, Compliance.

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INTRODUCTION:

Lymphatic Filariasis (LF), a Mosquito borne disease, is a major public concern and a disfiguring and disabling disease, usually acquired in childhood.⁽¹⁾ Worldwide around 947 million people are at risk, with South East Asia Region countries alone contributing to around 65% of risk.⁽¹⁾ Globally, an estimated 25 million men suffer with genital disease and over 15 million people are affected with lymphoedema,⁽²⁾ leading the lymphatic Filariasis to be a 4th most common cause for disability caused by

infection in the World.⁽³⁾ It has been estimated that Lymphatic filariasis leads to 5 million DALY's (Disability Adjusted Life Years) lost annually ranking 3rd among Research and Training in Tropical Diseases (TDR) diseases in terms of Tuberculosis and Malaria.⁽⁴⁾ It not only cause acute physical suffering but also directly impedes the earning capacity of the individual. Though the disease is not fatal it is of more public concern due to the personal trauma it causes to the affected person due to physical disfiguring and the social stigma associated with it.⁽¹⁾ Elimination of the

disease is an important tool for poverty alleviation and economic development.

In India, the disease has been prevalent since antiquity and is still a public health problem in India and is endemic in 257 districts in 17 states and 6 union territories⁽⁵⁾. The total DALYs lost in India due to this disease is around 2.06 million, resulting in an annual wage loss of US \$811 million.⁽⁶⁾

Taking into consideration further progress and the new knowledge and tools available, the regional strategic plan has been revised and updated with the goal to eliminate LF from the Region by 2020.⁽⁷⁾ The strategies include, Mass Drug Administration (MDA) with Diethylcarbamazine citrate (DEC) and albendazole, prevention and alleviation of disability, community awareness and mobilization, etc.⁽⁷⁾

MDA is recognized as the main strategy that will enable GPELF (Global Programme for Elimination of Lymphatic Filariasis) to achieve elimination by 2020. It targets every eligible individual, including children, living in all endemic areas. Mass Drug Administration (MDA) with single dose of Diethylcarbamazine citrate (DEC) and albendazole 400mg for around 5 consecutive years with more than 80% coverage would help achieve our goal of elimination.

Bagalkot, being one of the 6 endemic districts of LF in Karnataka, had observed 12th round of Mass Drug Administration (A combination of single dose of DEC and albendazole tablets was distributed to the eligible population of the districts by drug distributors) on December 2015. The entire implementation (House survey, line listing of cases, training, IEC activity, drug distribution, house to house mopping up activity) of the programme was supervised by concerned district malaria officer and chief medical officer at the regional office for health and family welfare. The present study was conducted to assess the programme in terms of coverage and compliance of MDA in Bagalkot District.

OBJECTIVES: To evaluate the coverage and compliance of 12th round of MDA in Bagalkot district during the MDA campaign in December 2015.

MATERIALS AND METHODOLOGY:

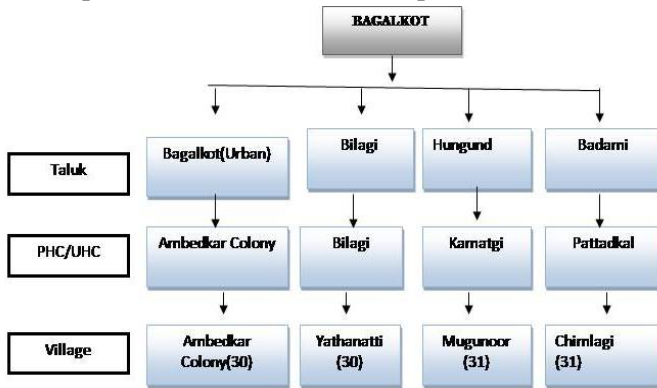
The MDA programme was conducted from 14th to 20th of December 2015. And the study was conducted 1 month later on 22nd and 23rd of January 2016 in Bagalkot district of Karnataka using structured survey proforma. Cross sectional study in which all the eligible population (The eligible population did not include pregnant and lactating women, children below two years of age and seriously ill persons) in MDA campaign area were included.

Total of four clusters one in the urban and three in the rural settings in Bagalkot district were selected. Based on the endemicity of the areas, one Taluk from each high (Bilagi), medium (Hungund) and low (Badami) endemic areas were selected. And one urban (Bagalkot Urban) was selected randomly. One PHC (Bilagi, Kamatgi, Pattadkal and Ambedkar colony) in each of these were selected randomly from each Taluk by lottery method. Subsequently from each of these PHCs one Subcentre and a village (Yathanatti, Mugunoor, and Chimlagi) and one urban area (Ambedkar colony) pertaining to it was selected by lottery method for the household survey. Total of 122 houses consisting of 633 beneficiaries were covered in 4 clusters (1 in urban + 3 in rural area- with minimum of 30 houses in each clusters). Center of the village was identified by taking the help of a resident of the village; from there the four directions were identified and numbered. One direction was chosen randomly and a walkthrough survey was done to note the average number of houses in the street.

Investigators visited the houses and the information regarding knowledge about elephantiasis, coverage, compliance, adverse drug reactions were collected after obtaining informed verbal consent from the adult responsible respondent aged between 18-60 years using a structured survey proforma by interview technique after explaining the purpose of the survey and showing a flashcard containing a picture of elephantiasis case, DEC and Albendazole tablet. Data was entered in MS Excel and analysed using descriptive statistics and chi square test with significance level of p value <0.05. For compilation and analysis purpose age has been grouped as <15 years and ≥15 years.

The results (Age and gender wise MDA Coverage, compliance rate (Number of beneficiaries

consumed tablets/ total number of beneficiaries received tablet), effective compliance rate (No of beneficiaries consumed tablet/total beneficiaries)) were expressed in the form of descriptive tables.



Ethical issues: The study is a cross sectional study, to assess the National Programme and it does not involve patient intervention methods and also informed verbal consent has been obtained before starting the study; hence, ethical issue does not arise. No conflict of interest.

RESULTS:

Out of total 633 eligible population, around 20% (127) belong to < 15yrs of age which comprises of 10% of males and females each and rest 80% (506) were ≥ 15 yrs age with males around 42% and females 38% (Majority belongs to ≥ 15 yrs age).

Out of total 633 eligible populations around 560 received tablet and 554 has consumed the tablet and only around 506 has taken the complete course of tablets. Among males 82.5% of children <15 yrs have completed full dose of MDA and in ≥ 15 yrs age group 88% had completed the doses. And among females 87.95% and 94.7% of them in <15yrs and ≥ 15 yrs had completed the full course of tablet respectively. Compared to males, more than 90% of the females have completed full course of drug but there were no statistical difference in coverage and complete intake of drug among males and females($p=0.054$).

The overall coverage of MDA was found to be 88.5% with 98.9% had consumed the tablets. Effective compliance rate was found to be 87.5% and around 90.3% had taken complete course of

Figure1: Compliance and full dose completion among males and females.

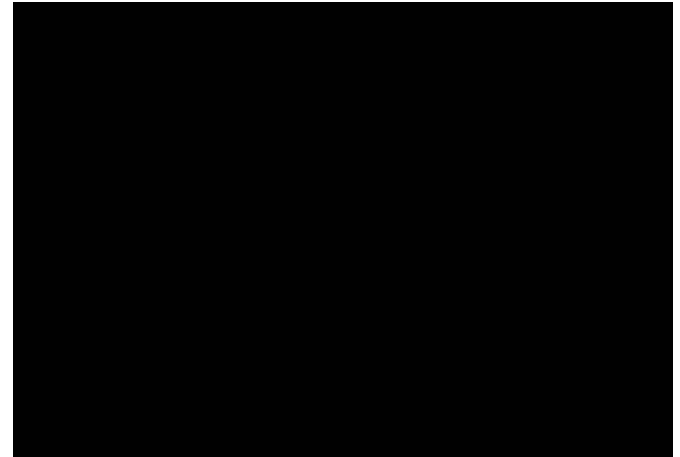


Table 1: Age and Sex wise distribution of Coverage

AGE	SEX		TOTAL
	MALE	FEMALE	
<15	57(10.2%)	58(10.4%)	115(20.5%)
≥ 15	235 (41.9%)	210 (37.5%)	445(79.5%)
TOTAL	292(52.1%)	268 (47.9%)	560 (100.0)

Table 2: Full dose completion in different age group and gender

CATEG ORY	AGE	FULL DOSE COMPLETIO N(%)		Total	P value(c hi square test)
		YES	NO		
Males, n=331	<15	47 (14.2)	19 (5.8)	66 (20)	0.235*, p>0.05
	≥ 15	207 (62.5)	58 (17.5)	265 (80)	
Females. n=302	<15	53 (17.5)	08 (2.6)	61 (20.1)	0.418*, p>0.05
	≥ 15	199 (65.9)	42 (12.7)	241 (79.8)	
Gender	Males (n=331)	254 (40.1)	77 (12.2)	331 (52.3)	0.054* p>0.05
	Females (n=302)	252 (39.8)	50 (7.9)	302 (47.7)	

* P not significant at p <0.05 level. (p value <0.05 is taken as significant)

tablet. The coverage compliance gap(CCG) was around 0.96%. There was maximum i.e 99% coverage in Bilagi with effective compliance of about 97.4% and minimum coverage of about 76.1% in Badami (Chimlagi). However complete intake of full course of tablet was found to be high i.e., 100 % in Hungund (Mugunoor). However almost 90.3 % of those received had taken complete dose of the drug. Though there was significant difference ($p < 0.05$) in coverage between urban and areas, effective compliance in urban and rural areas are almost similar.

Table 3 Coverage of MDA in urban and rural areas

Locality	Received tablets		Total	P value (Chi square test)
	Covered	Not covered		
Urban	127 (20.1%)	28 (4.4%)	155 (24.5%)	P=0.005 8,p<0.05
Rural	433 (68.4%)	45 (7.1%)	488 (75.1%)	
TOTAL	560 (88.5%)	73 (11.5%)	633 (100%)	

Table 4: Completion of full dose of MDA in urban and rural areas

Locality	Full course		Total	P value (Chi square test)
	Taken	Not Taken+ Not received		
Urban	123 (19.4%)	32 (5.1%)	155 (24.5%)	P=0.835, P>0.05
Rural	383 (60.5%)	95 (15%)	478 (75.5%)	
TOTAL	506(79.9%)	127 (20.1%)	633 (100%)	

DISCUSSION:

The population coverage during MDA has improved from 73% in 2004 to 83% in 2013 which has resulted in the overall reduction of microfilaria rate from 1.24% in 2004 to 0.44 in 2014 and 0.26% in 2015⁽⁸⁾ A high coverage (>85%) in endemic areas, which is sustained for 5 years, is required to achieve the interruption of transmission and elimination of disease in India. The MDA coverage rate has

increased from 72.6% in 2004 to 83% in 2013.⁽⁸⁾ In Karnataka following MDA, Microfilaria rate has come down from 1.84% in 2004 to 0.60% in 2015 and morbidity management has been increased gradually over years from 85.22% in 2004 to 88.1% in 2015.⁽⁹⁾

Table 5: Cluster wise Coverage, Compliance, Coverage Compliance Gap(CCG)

Cluster	Eligible population (number)	Coverage rate (%)	Compliance Rate (%)	Effective compliance rate (%)	CCG (%)
Bilagi	194	99	98.4	97.4	1.6
Mugunoor	150	92.7	99.2	92	0.7
Chimlagi	134	76.1	98	74.6	1.5
Ambedkar colony	155	82	100	82	0
Total	633	88.4	98.9	87.5	0.96

In our study of the 122 household surveyed there was 633 eligible beneficiaries, around 560 had received tablet and around 554 had consumed it and among them only 506 has taken full course of the tablet.

MDA coverage in our study was 88.5% which was comparable with global target of more than 85% in endemic areas and the compliance rate was found to be 98.9% among those who received the tablet and around 90.3% has taken complete course of tablet. This was much comparable with a similar study by Patel PK in 2010 in Bagalkot which shows coverage of 72.1% with 78.6% taken complete course of tablet.⁽¹⁰⁾ There was a good improvement now in 2015 in 12th round of MDA in both coverage and compliance as compared to 2012 in same Bagalkot district of Karnataka.

Mukhopadhyay AK et al has reported compliance rate of 64.64% with coverage of 69.9% in Andhra Pradesh⁽¹¹⁾ another study by Kulkarni MM et al reported 66.8% consumed drug against 84.6% coverage in another study by in Bijapur in 2012.⁽¹²⁾ Compliance rate in our study was around 98.9% which was much higher when compared to 38.8% in study by Patel PK in Gulbarga in 2010⁽¹⁰⁾ and 73.9% in a study by Sanjay TV et al in Raichur in 2012⁽¹³⁾ and 68% compliance rate against 78% coverage in

Bidar district by Ranganath TS et al in 2008.⁽¹⁴⁾ The overall compliance rate was much higher than many on studies in different districts of Karnataka and other states at varying period.⁽¹⁵⁻¹⁸⁾

The main reason for reduced coverage in our study was found to be out of station on the day of drug distribution (around 49% were not in home at the time of drug distribution) followed by fear of taking drugs among people suffering from chronic illness like hypertension, Diabetes mellitus, etc. Though drugs were distributed through DOT strategy, only 29% of the beneficiaries consumed in front of the drug distributor rest have taken the drugs in their home. They reported to have taken dose in split in morning and night, in which few forget to take complete course of drug. Drug distributors (72.1%) being the main source for information about MDA among the beneficiaries. However only 45% of the beneficiaries were explained in detail about the reason for MDA and need to take complete course of drug, which itself can attribute for gap in coverage. But in our study we could find that none has reported any side effects following drug intake which seems to be a good sign of inherent motivation for drug intake in future.

Limitations: This survey assessed only the coverage aspect and not the entire MDA implementation programme.

CONCLUSION AND RECOMMENDATIONS:

The overall effective compliance rate was 87.5% which is more than the target of 85% for elimination of lymphatic filariasis. And the compliance rate was found to be good and among those who received the tablets only 1.5% of the eligible population had not consumed and almost none of them developed any adverse effects for drug. However, Intense and continuous IEC activities regarding the importance of drug intake and also the fear associated with drug intake among people in endemic areas through various approaches of mass media and interpersonal communications must be intensified to increase coverage. Intense mopping up activities has to be carried out to reach those who were missed on the day of drug distribution. DOT (Directly Observed Treatment) should be made more strict to ensure intake of complete full course thereby providing complete protection and achieving 100% compliance. Vector control would be used as an adjuvant to MDA to prevent resurgences.

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Conflict of Interest: Nil

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Original Research Article

Evaluation of Safety Issues, Gender Bias Problems and its Effect on Self Esteem and Mental Health - A Cross Sectional Study among Female Adolescents of Dakshina Kannada District.

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Abstract

INTRODUCTION: Gender equality and women empowerment are frequently used terms in the present era. In developing countries such as India, this is yet to be achieved in a few areas. Despite campaigns, speeches, programs and various other attempts, this is still a farfetched concept especially for women belonging to rural or backward areas. Even in urban areas, girls and women do not share freedom of the same degree as enjoyed by their counterparts elsewhere in the world. **OBJECTIVES:** This study was aimed at assessing and evaluating the nature and extent of gender bias faced by female adolescents and to review the issues related to safety owing to gender bias. The study also aimed at assessing whether bias, abuse or discrimination has an impact on self esteem and mental health of an adolescent female. **METHODS:** A total of 152 female adolescents (age range 10-19 years; mean age= 14.5) were included in the study. A pre structured and pre tested questionnaire, Rosenberg questionnaire and the SQIFA Mental health screening questionnaire interview for adolescents were used as study tools. **RESULTS:** It was found that late teens were reported more instances of abuse or eve teasing, with the majority (63.81%) amongst them having experienced it in public places. The reason for this was attributed by 92.76% of the study subjects to the crowded and over populous nature of public spaces and public transport. A majority of the study subjects i.e. 92.76% of them stated that the main preventive measure taken by them to stay safe was to avoid venturing out alone after dark. All the study subjects admitted that the incident(s) faced had made them feel depressed with 75.6% stating that it has had an impact on their studies/career. **CONCLUSION:** Gender bias, discrimination and abuse are commonly faced by all female adolescents irrespective of age and place of stay. The incidents faced do have a negative impact on mental health and overall health and wellbeing of female adolescents.

KEYWORDS: Female adolescents, gender bias, discrimination, mental health

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INTRODUCTION:

The World Health Organization defines adolescence as the period of life between 10 and 19 years.¹ This phase of bridging from childhood to adulthood is associated with many physical, biological, cognitive and even social changes. While the incidence of gender bias and feelings of insecurity among female adolescents are well known, there is less data on the definite ways in which this can affect mental health and wellbeing.^{2,3}

The adolescent population, especially girls in developing countries such as India, face many health-related problems and greater gender discrimination. This may be attributed to the low socio economic status and poor conditions of living especially in rural areas. Unlike boys, females in most regions of the world are expected to behave in a particular manner. The mannerisms of young girls are expected to be more delicate, decent and are hence, questionable. The whereabouts of a girl are of concern in most societies, more so in a developing country like India. In case of adolescent girls, inability to spend time outdoors after dark, to play

sports/ games, to being unable to return home after dark without a male attendant, could be possible barriers to the overall development of the female adolescent. In contrast none of the above are expected of the male counterparts.⁴

Adolescent girls are more conscious about their image in society compared to boys, the criteria for getting married, arranged marriages, dowry etc also play a major role. The above concepts outline the discrimination and bias faced by female adolescents which are likely to give rise to psychiatric morbidities which may affect mental health and behavior. Studies show that female adolescents are more likely to show symptoms of anxiety than males. The purpose of this study was to determine the extent to which adolescent girls today are subjected to gender bias and feelings of insecurity and to assess the degree of its effect on mental health. Do female adolescents in India face problems associated with gender bias and personal safety owing to their gender, and to what degree does it have an impact on their mental health?

OBJECTIVES:

1. To assess and evaluate the nature and extent of gender bias faced by female adolescents.
2. To review the issues related to safety owing to gender bias.
3. To assess whether bias, abuse or discrimination has an impact on self esteem and mental health of an adolescent female.

METHODOLOGY:

This was a cross sectional, community based descriptive study. A total of 152 female adolescents (10-19 years of age) of Dakshina Kannada district were included in the study. Sampling was done using simple random sampling method. Sample size was calculated using the formula $Z_{1-\alpha/2}^2 \times p(1-p) / d^2$ with a prevalence of female adolescents in both rural and urban areas being taken as 50%. Ethical clearance was obtained from the institutional ethical clearance committee.

The purpose of the study was explained, assent from the participants and written informed consent from their parents was obtained before enrolling them in

the study. A pre structured and pre tested questionnaire was used to obtain data from all the individuals who gave informed consent to participate in the study. The information given was correlated with the self esteem scores of these individuals using *Rosenberg’s Self-Esteem Questionnaire (RSE)*⁵. RSE score <30 implied a poor self esteem.

*The SQIFA Mental health screening questionnaire interview for adolescents*⁶ was used to assess if mental health was affected due to bias faced.

RESULTS:

As seen from table 1, early teens (10-13 yrs) constituted the majority (37.5%) of our study population, with mean age of the subjects being 14.5 years. Majority of our study subjects were from urban area 91 (60%).

Table 1: Age wise distribution of subjects

Age group	Number (%)	Mean	SD
Early teens (10-13 years)	57 (37.5%)	14.55	2.81
Middle teens (14-16 years)	50 (32.89%)		
Late teens (17-19 years)	45 (29.6%)		

Table 2: Places where discrimination is faced predominantly

Place	Number (%)
Public places	89 (58.55)
Home and Neighborhood	36 (23.68)
School and College	27 (17.76)

A majority i.e. 89(59%) of our study subjects reported that gender discrimination was faced more at public places as shown in Table 2. This discrimination was previously defined to the subjects as any event, action or word that attempted at making them feel any lesser or smaller than the other gender in any activity or event.

Table 3: Public places where adolescents had faced sexual harassment or assault or made to feel uncomfortable (multiple responses are possible)

Public places	Number (%)
Using Public Transport	97 (63.81)
Roadside	59 (38.81)
Waiting for Public Transport	48 (31.57)
Market Place	34 (22.36)
Park	26 (17.1)
Public Toilets	16 (10.52)

Table 4: Factors constituting major safety threats as perceived by girls (multiple responses are possible)

Factors	Number (%)
Crowded public transport /bus stops/Stations	141 (92.76)
Lack of effective/visible police	98 (64.47)
Lack of respect for women from men	97 (63.81)
Poor lighting	95 (62.5)
Poor maintenance of open public spaces	84 (55.26)
Lack of clean and safe public toilets	78 (51.31)
Men dealing with or taking alcohol/drugs	63 (41.44)
Lack of vendors or stalls/people in the area	56 (36.84)
Lack of/poor signage or information	21 (13.81)

As seen from table 3, female adolescents found that using any public place made them an easy target for sexual abuse; with the most common site being public transport (64%).

We found that most female adolescents perceived using public transport as the most common (93%) threat for sexual harassment owing to over populous and crowded nature of the same as shown in Table 4.

Almost all our study subjects stated that as a precautionary measure to protect themselves against sexual harassment, abuse or discrimination they chose to simply avoid certain places (public places, secluded areas and public transport) completely (98%) after certain hours of the day.

Table 6: Evaluation of mental health using SQIFA. (multiple responses are possible)

Particulars	Number (%)
Anxiety/excessive worry/stress	99 (64.5%)
Traumatic experiences (PTSD) e.g. Serious accidents, abuse, assaults	91 (60.3%)
Depression	16 (24%)
Self harm	32 (21.37%)
Drug use	3 (0.76%)
Alcohol use	0 (0%)

The other precautionary measures stated by the female adolescents are as shown in Table 5.

Table 6 shows that 65% of the study subjects faced excessive stress or anxiety following an episode of abuse and 24% had depressive episodes for a long period of time ranging from days to weeks. 21% admitted that they had resorted to self harm and 1% to substance abuse.

As seen in table 7, perceived self esteem was poorer in the older adolescents who were prone to abuse compared to their younger counterparts and this association was found to be statistically significant with good association.

Age had no significant association with the onset of mental health issues in the female adolescents undergone abuse, although 115 (76%) of our study subjects had a mental health issue using SQIFA Mental health screening questionnaire interview for adolescents as seen from table 7.

Table 7: Co-relation of self esteem and mental health with variables in female adolescent

Self esteem				
Age group	Poor	Good	Total	Significance
10-13 yrs	5	52	57	$X^2 = 38.47, df-2, p < 0.0001, HS. Cramer's V = 0.5$
14-16 yrs	15	35	50	
17-19 yrs	30	15	45	
Total	50	102	152	
Depression/anxiety				
Age group	Yes	No	Total	Significance
10-13 yrs	41	16	57	$X^2 = 2.82, df-2, p 0.2441, not significant$
14-16 yrs	42	8	50	
17-19 yrs	32	13	45	
Total	115	37	152	
Self esteem				
Locality	Poor	Good	Total	Significance
Rural	45	16	61	$X^2 = 74.06, df-1, p < 0.0001, HS. Cramer's V = 0.71$
Urban	5	86	91	
Total	50	102	152	
Depression/anxiety				
Self esteem	Yes	No	Total	Significance
Poor	30	20	50	$X^2 = 8.69, df-1, p 0.0032, HS. Cramer's V = 0.25$
Good	85	17	102	
Total	115	37	152	

As seen from table 7, adolescents from rural area had a poorer self esteem when compared to their urban counterparts and it was statistically significant.

Table 7 shows, although adolescents had good self esteem they had mental health issues and this was found to be statistically significant with moderate association, suggesting that abuse or bias of any type in the life a female adolescent would affect her psychologically and over a long run intellectually.

DISCUSSION:

Studies show that gender differences begin early in adolescence and are largely responsible for depressive symptoms even in later adult life.⁷ It has also been found that female adolescents may be more vulnerable to psychiatric symptoms such as anxiety and depression compared to their male counterparts. Gender related bias is said to be largely found within families resulting in the girl child feeling unwanted and inferior compared to their male siblings. Regarding discrimination at home, even though the subjects in our study did not directly recollect any bias, said they spent more time doing household work compared to their male siblings. This contributes to the concept of gender bias and discrimination at an early age itself. The difference in treatment is mainly attributable to the social, traditional and cultural roles of boys versus girls in Indian (especially rural) families.⁸ Hence, participation in the household activities, particularly in rural India, is the job of the 'weaker' sex. Thus research insists on the prevalence of discrimination against girls coming from parents themselves. They disapprove of certain behaviours from their daughters more than sons; restricting their independence and expecting more in terms of household chores.

Similar Indian studies on female adolescents show that a majority of them have experienced physical abuse/harassment, among which few were even less than 10 years old. Our study had the same finding with gender discrimination and harassment being prevalent among all groups of female adolescents; reported more at public spaces, followed by home/neighborhood and least at schools or colleges.

Factors like overburden of work, societal pressure, limitations and restrictions, role conflict and ambiguity, are sources of stress, the consequences of which may be psychological symptoms like anxiety and depression.⁹ A study conducted by Dubat K et al¹⁰ in two cities of Hyderabad and Hisar also found that adolescent females experienced more stress due to societal factors compared to males.

In a study by Sellers RM et al, adolescents reported an ill effect on academic performance and psychological impairment secondary to discrimination and bias.¹¹ This was similar to our findings which was also consistent with Cogburn

CD et al and Joe S et al suggesting that bias and discrimination can definitely have an impact on mental health and academic performance.^{12,13}. However these findings by Sellers RM et al were similar for both boys and girls alike which was not assessed in case of our study.

CONCLUSION: In a large nation like India where adolescents comprise a major proportion of the population, health care systems and research studies need to have a practical approach to the adolescent health and wellbeing which can serve the needs of both sexes separately. The study indicates that optimal development of girls is affected largely due to gender bias existing in the society. A comprehensive review must take place to ensure that discrimination against women be systematically brought to an end and to ensure that women get to participate freely with no inhibitions for choices, interests, opportunities and participation in activities similar to their male counterparts. Also there should be more emphasis on positive psychology in adolescent age group especially females, for which currently there are not adequate research evidence in our country.

INTEREST OF CONFLICT & SOURCE OF

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Original Research Article

Cervical Cancer And Screening -Knowledge And Attitude Among Married Women in Rural Areas ,Tamilnadu

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Abstract

Context: Cervical cancer is the fourth most common cancer affecting women worldwide and India shares a staggering one fifth of this global burden. Cervical cancer and its mortality have been proven preventable by various screening procedures. Hence by early detection and screening, cervical cancer has a better prognosis. **Objectives:** a) To determine the knowledge and attitude about cervical cancer and its screening among rural married women aged 21-65 years b) To find the socio-demographic factors associated with women's willingness to participate in screening procedure. **Material and Methods:** Settings and Design: A community based cross sectional study in Nemam village, Kancheepuram district, Tamil Nadu. Among 654 married women in age group 21-65 years, two hundred women were chosen by simple random sampling method. Interview schedule was used to collect the socio demographic details, knowledge and attitude regarding cervical cancer and its screening. Statistical analysis: Descriptive statistical analysis was done and Chi square test was used to find association with factors. **Results:** Awareness about cancer cervix was 69% and among those who knew about cancer cervix screening nearly 81.16% was willing to be screened. Barriers to screening test were fear of test result, cost, embarrassment to get the test done. **Conclusions:** There is reasonable level of knowledge and good attitude regarding cervical cancer and its screening procedure which is essential to conduct cancer screening programme and increase the cancer screening rates. Awareness and motivation among women to get screening done can eventually reduce cervical cancer related morbidity and mortality.

Key-words: cancer cervix , screening , knowledge , attitude, rural women

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Introduction:

Cervical cancer is the fourth most common cancer affecting women worldwide and a large majority (85%) of the global burden occurs in less developed regions..⁽¹⁾ Cervical cancer is the commonest cancer cause of death among women in developing countries and its detection at an early stage is associated with excellent survival but most women in developing countries present with advanced and

often untreatable disease, with very poor survival.⁽²⁾ India bears about one-fifth of the world's burden of cervical cancer. ⁽³⁾ The proportion of women who undergo Pap smear testing ranges from 68% to 84% in developed countries as compared to India where the rates range from 2.6% to 6.9% among women in communities.^{(4), (5), (6), (7)} The recommended age of women for screening of cancer cervix is from 21 to 65 years.⁽⁸⁾ The reported barriers to screening include unawareness of risk factors, symptoms and

prevention.⁽⁹⁾ Screening is underutilized in the developing countries due to a number of factors like poor educational background, lack of knowledge regarding the availability and benefits of screening, lack of information from part of health care workers, affordability of screening tools by the individual, cultural barriers and unavailability of facilities at all health centers.⁽¹⁰⁾ Therefore, it is the women's knowledge level, motivation for screening and other psychosocial factors that determine her health seeking behaviour. For successful implementation of community based cervical cancer screening programmes, prior-understanding of the knowledge and attitude of women in the target community is required which would help in removing the barriers for screening.

Hence this study was conducted with the following objectives :a) To determine the knowledge and attitude about cervical cancer and its screening among rural married women aged 21-65 years in Nemam village, Kanchipuram district, Tamilnadu . b) To find the sociodemographic factors associated with women's willingness to participate in screening procedure.

Material and Methods:

A community based cross sectional study was conducted in Nemam village in Kanchipuram district, Tamilnadu. Nemam village had a total population of 2334. Total number of married women in the age group 21-65 years was 654. Based on the previous study's⁽¹¹⁾ prevalence of knowledge about cervical cancer of 63%, the required sample size calculated for the study was 200. Among the 654, two hundred women were chosen by simple random sampling technique using lottery method. Ethical clearance for the study was obtained from Institutional ethical clearance committee. Informed consent was obtained from the participants. Interview schedule was used to collect the socio demographic details, knowledge and attitude regarding cervical cancer and its screening. Socioeconomic status was assessed using BG Prasad classification.⁽¹²⁾ Data entry has been made in excel sheet in codes and Epi Info software version 7 was used to do statistical analysis. Descriptive statistics analysis consisted of calculation of frequencies of

variables which were expressed as percentage and also mean age with standard deviation. Chi square test was used to find association between socio demographic factors and level of acceptance of cervical cancer screening . *P* value < 0.05 was considered statistically significant.

Results:

Mean age of women was 39.66 ± 11.48 years. Awareness about cancer cervix was 69% and television was the most important source of information .The most important risk factor for cancer cervix was considered to be smoking followed by having many sexual partners and long term use of oral contraceptives. Only 10.9% knew human papilloma virus (HPV) infection as risk factor [table 1]. The warning signs of cancer cervix which more women knew about were vaginal bleeding in between periods and foul smelling vaginal discharge [table 1].

Knowledge about screening programme for cervical cancer among those who knew about cervical cancer was 73.9% and among them 71.5% women knew that recommended age of women for screening of cancer cervix is from 21 to 65 years [table 2] . Regarding the frequency of getting Pap smear done only 10.78% women knew that once in every 3 year it should be done [table 2]. Only 17.3% knew that there is vaccination to prevent cancer cervix and none of them knew at what age the vaccine is ideally offered.

Pertaining to the attitude towards cervical cancer nearly 47.8% women felt they were at risk of developing cancer and 63.04% of women believed in precancerous lesion [table 3] . Nearly 81.16% were willing to be screened among those who knew about cervical cancer screening [Table 3] and among them majority of the women were willing to be screened by a gynaecologist (63.77%) and the preferred place of screening was government hospital (82.61%).

Most important barrier for cervical cancer screening was the results of the screening test would make the women worried (34.6%) followed by the reason that pap test is too expensive to be done (30.7%) [Table 4].

Table1. Knowledge about risk factors and warning signs of cervical cancer

Particulars	Yes N(%)	No N(%)
Knowledge about Risk Factors Of Cervical Cancer*		
Infection with human papilloma virus	15(10.9)	26(18.8)
Smoking	93(67.4)	14(10.1)
Long term use of contraceptives	72(52.2)	23(16.7)
Sexually transmitted infection	57(41.3)	33(23.9)
Starting to have sex at a young age	61(44.2)	25(18.1)
Having many sexual partner	73(52.9)	15(10.9)
Having many children	35(25.4)	49(35.5)
Knowledge about Warning signs of Cancer cervix*		
Vaginal bleeding between periods	96(69.6)	14(10.1)
Heavier or longer menstrual periods	88(63.8)	19(13.8)
Vaginal bleeding after menopause	82(59.4)	20(14.5)
Persistent lower abdomen pain	75(54.3)	27(19.6)
Foul smelling vaginal discharge	95(68.8)	21(15.2)
Discomfort or pain during sex	58(42.0)	33(23.9)
Unexplained weight loss	61(44.2)	25(18.1)

* Multiple response

Table 2: Knowledge about cervical cancer screening programme

Particulars	Number	%
Knowledge about screening programme		
Yes	102	73.90%
No	36	26.00%
Total	138	100.00%
Recommended age of women for screening of cancer cervix		
< 21 years	5	4.90%
21-65 years	73	71.50%
>65 years	2	1.90%
Don't know	22	21.50%
Total	102	100.00%
Frequency of getting pap smear done		
only one time	13	12.70%
once in a year	72	70.50%
once in every 3 year	11	10.70%
once in every 5 year	6	5.80%
Total	102	100.00%

Willingness to be screened was significantly associated with age and educational status of the women. However no significant association was found between socioeconomic status, parity and willingness to be screened [table 5].

Table 3: Attitude about cancer cervix

Particulars	Number	%
Do you think you are at risk for cervical cancer?		
Yes	66	47.83%
No	72	52.17%
Total	138	100.00%
Do you believe in precancerous lesion?		
Yes	87	63.04%
No	51	36.96%
Total	138	100.00%
Are you willing to be screened?		
Yes	112	81.16%
No	26	18.84%
Total	138	100.00%

Table 4: Barriers to cervical cancer screening *

Barriers to cervical cancer screening	Yes N (%)	No N (%)
Worried about results of screening test	9 (34.6)	17 (65.4)
Fear of pain	5 (19.2)	21 (80.8)
Financial reason	8 (30.7)	18 (69.3)
If being examined by a male provider	2 (07.6)	24 (92.3)
Not needed because asymptomatic	5 (19.2)	21 (80.8)
Embarrassing	4 (15.3)	22 (84.7)
Not aware where to get screening done	1 (03.8)	25 (96.1)

*Multiple response

Discussion:

Awareness about cancer cervix was 69% and the television was the most important source of information. In a study conducted in a rural area of Uttar Pradesh 72% of the total women were aware of the cervical cancer.⁽¹³⁾ Puri et al ⁽¹⁴⁾ reported more than 80% of the respondents were aware of the term cancer and also the symptoms of the disease. Smoking (67.4%) was considered important risk factor for cancer cervix followed by having many sexual partners (52.9%) and long term use oral contraceptives (52.2%). Only 10.9% knew HPV infection as risk factor. Dasgupta et al ⁽¹⁵⁾ reported that various risk factors of cancer cervix like early marriage, increased parity, low literacy, poor genital hygiene and symptoms of reproductive tract infection were highly prevalent among subjects

Table 5 :Socio demographic factors associated with women's willingness to participate in screening procedure.

Socio demographic factors	Willing To Be Screened N(%)	Not Willing To Be Screened N(%)	Total	Chi Square, P-Value
			N(%)	
Age group (years)				
21-30	30 (68.1)	14 (31.8)	44(100)	10.36, 0.015
31-40	33 (91.6)	03 (08.3)	36(100)	
41-50	34 (87.1)	05 (12.8)	39(100)	
51-65	15 (78.9)	04 (21.0)	19(100)	
Total	112 (81.1)	26 (18.8)	138(100)	
Education Status				
Illiterate	22(70.9)	9(29.0)	31(100)	11.31, 0.045
Primary school	25(83.3)	5(16.6)	30(100)	
Middle school	24(82.7)	5(17.2)	29(100)	
High school	14(82.3)	3(17.6)	17(100)	
Higher Secondary	11(84.6)	2(15.3)	13(100)	
Graduate	16(88.8)	2(11.1)	18(100)	
Total	112(81.1)	26(18.8)	138(100)	
Socio economic Status				
Class 1	7 (87.0)	1 (12.5)	8 (100)	6.6, 0.158
Class 2	23(79.3)	6(20.6)	29 (100)	
Class 3	35(89.7)	4(10.2)	39 (100)	
Class 4	36(73.4)	13(26.5)	49 (100)	
Class 5	11 (84.6)	2(15.3)	13(100)	
Total	112(81.1)	26 (18.8)	138(100)	
No of Children				
One	22(78.5)	6(21.4)	28(100)	1.13, 0.565
Two	40 (78.4)	11(21.5)	51(100)	
Three and above	50 (84.7)	9(15.2)	59(100.)	
Total	112(81.1)	26(18.8)	138(100)	

under study. Another study reported more than two-thirds (76.75%) of patients thought that sexually transmitted infections were high risk factors for developing cervical cancer, while early age at intercourse (62.67%), multiparity (51.92%), multiple partners (51.33%) and smoking (37.83%) were also selected as high risk factors.⁽¹⁶⁾ Ravikiran in his study reported that the rural women were aware that multiple sexual partners, smoking tobacco and prolonged use of Oral Contraceptive Pills (OCPs) for duration of 5 years or more for family planning would pose a risk for development of cervical carcinoma in women.⁽¹⁷⁾

Vaginal bleeding in between periods and foul smelling vaginal discharge were the warning signs which more women knew about. In a study conducted among Indian rural women irregular per vaginal bleeding (13.16%) was the most commonly

known symptom followed by blood-stained discharge (12.1%) and bleeding after intercourse (13.95%).⁽¹⁸⁾ Menorrhagia (58.5%) was opted as one of the symptoms of cervical cancer, while symptoms like foul smelling vaginal discharge (57.75%), post-coital bleeding (46.62%) were correctly identified in another study.⁽¹⁶⁾ Knowledge about screening programme among those who knew about cervical cancer was 73.9% and among them 71.5% women knew that recommended age of women for screening of cancer cervix is from 21 to 65 years. Regarding the frequency of getting pap smear done only 10.78% women knew that once in every 3 year it should be done. In a study conducted in Kerala three fourths of the population (74.2%) knew that cervical cancer could be detected early by a screening test but majority of women (89.7%) did not know when it should be done, 2.8% said it should be done only when there is any problem and 7.4% said it should be done after age of 30 years and with regard to periodicity, 1.5% said it should be done monthly, 2.5% said 1-2 yearly and 28% every 2 to 3 years.⁽⁷⁾ However a study also reported majority of the study population (98.5%), had poor knowledge regarding cervical cancer screening.⁽¹⁹⁾ Majority of women (82.61%) did not know about the vaccination to prevent cancer cervix. In a study conducted in a rural area around 43.25% had heard of Human Papilloma virus and only 32.42% thought that vaccination can prevent cervical cancer.⁽¹⁶⁾

Pertaining to the attitude towards cervical cancer nearly 47.8% women felt they were at risk of developing cancer and 63.04% of women believed in precancerous lesion conditions. Nearly 81.16% were willing to be screened among those who knew about screening as against 18.84% women who were not willing to be screened. Getting a pap test done and the results of it would make the women worried was found to be the most important reason for not getting a pap smear done (34.6%) followed by the reason that pap test is too expensive to be done (30.7%). Smitha Asthana in her study found that about 30 per cent women were desirous of undergoing screening test, but had not done it due to various reasons like absence of disease symptoms (18.1%), not suggested by health professional (16.9%), lack of time (4.8%), fear of having a bad result (3.6%), fear of pain (1.2%), financial reason (1.2%), and embarrassment (1.2%).⁽¹³⁾

Willingness to be screened was more among women

in the age group of 31-40 years (91.67%) and was significantly associated. As the educational status increased the level of acceptance of cancer cervix screening increased among women and was found to be statistically significant. Aswathy in her study reported women more than 35 years of age were significantly more likely to undergo the Pap test and educational status of the woman was not found to be a factor affecting whether a woman had done Pap test or not.⁽⁷⁾

In conclusion there is reasonable level of knowledge and good attitude regarding cervical cancer and its screening procedure. Thus there is an urgent need to establish an aggressive and sustainable campaign on the preventive nature of cervical cancer and further establish an organized cancer screening programme. Understanding the factors associated with the underutilization of cervical cancer screening is important in order to increase overall cancer screening rates and eventually reduce cervical cancer related morbidity and mortality. Cases of cancer could be tackled to a large extent by simple cost effective methods that emphasize on primordial, primary and tertiary levels of prevention. The promotion of preventive measures could be done by giving impetus to public awareness activities and early detection and screening programmes.

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Original Research Article

Effectiveness of Educational Intervention on Knowledge and Attitude About Rabies and its Preventive Measures Among Nursing Students of a Tertiary Care Hospital in Puducherry.

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Abstract

Background and Aim: Rabies is a major public health problem in India. Nursing personnel needed to be well equipped in the management of patients with animal bite. The present study was aimed to assess the knowledge, attitude about rabies and its preventive measures among nursing students and to assess the effectiveness of the educational intervention measures on the same. **Materials and methods:** A pre and post test intervention study was conducted among first year nursing students in Indirani College of Nursing. A pre designed and pre tested semi structured questionnaire was self administered to 145 students with an universal sampling design and the study was conducted from June to July,2015. Following the initial assessment an educational intervention through a lecture for a duration of 1 hour was conducted. Post intervention assessment was conducted one month after the educational intervention session. Statistical analysis-McNemar's chi-square test, paired t test was done and data analyzed by SPSS version 17. **Results:** The educational intervention showed a statistically significant improvement in both the knowledge domain ($p < 0.0001$) and attitude score ($p = 0.0001$). Awareness about prevention of rabies by vaccine and immunoglobulins after educational intervention, increased by 22.7% and 84.2% ($p < 0.0001$) respectively. The mean attitude score before and after intervention were 1.45 (± 1.04) and 8.9 (± 3.04) respectively. **Conclusion:** The study suggests that there is a need to create awareness about the importance of rabies among the nursing students. The educational intervention made a substantial improvement in knowledge and attitude about the disease amongst the study subjects.

Key words: Nursing students, Puducherry, Rabies.

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which is inoculated into the bite wounds and enters peripheral nerves and spreads to the central nervous system where it causes a lethal encephalomyelitis in humans and other warm-blooded animals¹. Rabies is present in all continents except Antarctica, but more than 95% of human deaths occur in Asia and Africa². Today more people die from rabies than from yellow fever, dengue and Japanese encephalitis combined³. Rabies continues to be a major public health problem killing an estimated 20,000 people annually in India⁴. India has the largest animal population in the world⁵ and rabies has been

considered in India as a disease of low public health priority both in the medical and veterinary sector. Among the animals, rabies is most commonly transmitted by dogs and cats in India as these animals are commonly grown as pets and greatly loved by the people.

After 'exposure', rabies takes between 4 and 6 weeks to incubate and once the person develop symptoms, death is inevitable. However, 'exposure to rabies' can be treated. Vaccines given shortly after exposure may stop the onset of the disease. Rabies is one of the deadliest infectious disease on earth; it kills hundreds of people and animals every day⁶. Nursing personnel are often the first point of contact with the patients and hence needed to be well trained in the management of patients with animal bite. In this regard, the current study aims to assess the knowledge, attitude about rabies and its preventive measure and the effectiveness of the educational intervention measures on the same amongst the first year nursing students of a nursing college.

Materials and methods

The present pre-test, post test intervention study was conducted in Indirani College of Nursing attached to Sri Venkateshwaraa Medical College Hospital and Research Centre, Ariyur, Puducherry. A total of 145 students participated in the study, 84 of them were BSc nursing students, 12 of them were post basic BSc nursing and the remaining 49 were GNM (General Nursing and Midwifery) students and the sampling design was universal sampling. The study period was from June to July, 2015.

Formal administrative permission to conduct the study was obtained from the concerned authority. The ethical clearance was sought from the Institutional Ethics Committee. Informed written consent from each participant was obtained. Confidentiality and anonymity of the subjects were maintained. The data was collected using a self administered, pre tested and semi structured questionnaire which was prepared by referring various published articles and validated by experts. The questionnaire consists of two sections- Section I consists of 13 items related to knowledge regarding rabies and its prevention and Section II consist of seven items related to attitude regarding rabies and

its prevention. Scoring was done using Likert scale for the attitude assessment, a score of less than zero was considered to have negative attitude and score more than zero was considered to have positive attitude. The scores were generated individually for each question with a mean score before and after the intervention for assessment of attitude. Following the initial assessment an educational intervention was conducted amongst the students through a lecture using audio visual aid by the investigator in the nursing college lecture hall for duration of 60 minutes. The intervention session focused on the epidemiology of the disease, clinical manifestations, prevention and management of the disease. Post intervention assessment was conducted amongst the study participants using the same questionnaire one month after the educational intervention session.

Statistical analysis:

Descriptive statistics- Mean and standard deviation for quantitative variables were estimated. Proportions (%) were estimated for qualitative variables. McNemar's chi-square test was done to test the association between two categorical variables. Paired t-test was done to determine the significance of difference between the mean pre test and post test score. The data was analyzed by SPSS version 17.

Results

Majority (91%) of the study population were in the age group of 17 – 20 years. The mean age (SD) of the study population was 18.9 year (\pm 1.62 year). Majority (87.5%) of the study population were females. The educational intervention showed a statistically significant improvement in both the knowledge domain ($p < 0.0001$) and attitude score ($p = 0.0001$), which got reflected in their post intervention assessment.

The pre and post intervention for knowledge assessment were focused on three components:

A. Awareness about rabies

The study participants were assessed on their knowledge regarding general aspects of the disease. Prior to the intervention, 86.9% of the participants had heard about the disease rabies, post intervention 100% knew about it and the difference being statistically significant ($p < 0.0001$). Among the study

participants, only 45.5% of the students knew about the causative agent prior to the intervention which increased to 93.1% after the intervention ($p < 0.0001$).

B. Awareness about transmission of rabies

In the post intervention, knowledge regarding the transmission of rabies increased by 46.2% ($p < 0.0001$) among the study subjects.

C. Awareness about prevention of rabies

Among study participants 75.2% were aware of the first aid measures to be undertaken following an animal bite during the pre intervention assessment and during the post intervention assessment, 96.6% of the study subjects knew about it and the difference being statistically significant ($p < 0.0001$). Awareness about prevention of rabies by vaccine and immunoglobulins after educational intervention increased by 22.7% and 84.2% respectively and the difference being statistically significant ($p < 0.0001$). In the post intervention, majority of the study population had their awareness towards prevention of rabies increased and the difference being statistically significant ($p < 0.0001$).

Participant attitudes towards rabies during pre and post intervention are shown in tables 3&4 respectively. Among the study participants, around 120(82.7%) respondents before intervention believed dog bite should be washed with soap and water and this was increased to 141(97.2%) after intervention. Around 71(48.9%) respondents, before intervention believed rabies can be cured, but this was reduced to 25(17.3%) after intervention. Among 145 respondents, 97(66.9%) respondents before intervention believed that anti rabies vaccination may have serious adverse effects, but this was reduced to 6 (4.2%) after intervention. Similarly, it was observed that there was significant improvement in all the attitude variables after intervention.

The mean attitude score before and after intervention were 1.45 (± 1.04) and 8.9 (± 3.04) respectively. The educational intervention showed a statistically significant (p value = 0.0001) improvement in the attitude domain, which is reflected in their post test attitude score.

Table 1: Distribution of the study population by age and sex

Age group (in years)	Sex		Total No (%)
	Male (%)	Female (%)	
17 – 20	18	114	132(91.0)
21 – 25	0	12	12(8.3)
> 25	0	1	1(0.7)
Total	18	127	145(100)

Table 2: Pre and Post intervention for knowledge assessment (n=145)

Study variable	Pre intervention test (%)	Post intervention test (%)	Chi square test	p value *
Awareness about rabies				
Heard of a disease called rabies	126 (86.9)	145 (100.0)	20.33	<0.0001
Causative agent for rabies	66 (45.5)	135 (93.1)	77.18	<0.0001
Rabies is a fatal disease	74 (51)	141 (97)	80.73	<0.0001
Awareness about transmission				
Mode of transmission	24 (16.6)	91 (62.8)	64.69	<0.0001
Awareness about prevention				
First aid measures	109 (75.2)	140 (96.6)	27.3	<0.0001
Able to prevent rabies in humans by anti-rabies vaccination	110 (75.9)	143 (98.6)	33.74	<0.0001
Antirabies vaccines can also be given through intradermal route	66 (45.5)	138 (95.2)	85.69	<0.0001
Antirabies vaccines can also be given to pregnant women	19 (13.1)	133 (91.7)	179.7	<0.0001
Antirabies vaccines are available in both Government and Private hospitals	102 (70.3)	139 (95.9)	33.62	<0.0001
Knowledge about rabies immunoglobulin	18 (12.4)	140 (96.6)	207	<0.0001
Antirabies vaccines given to people at risk of Dog/animal bite	116 (80.0)	140 (96.6)	19.19	<0.0001
Observation of biting animal (Dog/Cat) for symptoms of rabies	127 (83.6)	144 (99.3)	16.28	<0.0001
Number of days the biting animal need to be observed	36 (24.8)	137 (94.5)	146.2	<0.0001

*McNemar's chi square test applied

Table 3: Pre intervention for attitude assessment

Attitude variable	Agree/Strongly agree(%)	Disagree/strongly disagree (%)
Dog/animal bite wound should be washed with soap and water	120(82.7)	25(17.3)
The biting animal should be killed	85(58.6)	60(41.4)
Antirabies vaccination may lead to severe adverse effects	97(66.9)	48(33.1)
Rabies can be cured	71(48.9)	74(51.1)
People do not afford for anti rabies treatment because it is very costly	63(43.4)	82(56.6)

Table 4: Post intervention for attitude assessment

Attitude variable	Agree/Strongly agree (%)	Disagree/strongly disagree (%)
Dog/animal bite wound should be washed with soap and water	141(97.2)	4(2.8)
The biting animal should be killed	16(11)	129(89)
Antirabies vaccination may lead to severe adverse effects	6(4.2)	139(95.8)
Rabies can be cured	25(17.3)	120(82.7)
People do not afford for anti rabies treatment because it is very costly	34(23.4)	111(76.6)

Table 5: Pre and post intervention score for attitude assessment (n=145)

	Pre intervention score	Post intervention score	Paired t test	p value
	Mean (SD)	Mean (SD)		
Attitude score	1.45(±1.04)	8.9(±3.04)	29.342	0.0001

Discussion:

Appropriate knowledge and attitude about the diseases are essential for an individual to lead a healthy life. Hence educational Information about a fatal disease like rabies may improve an individual's *knowledge* about the disease or contribute to a change in the *attitude* towards it. A right knowledge and positive attitude are important for the nursing students to serve the patient. Our

study revealed that the knowledge and attitude about rabies amongst the study subjects needed to be strengthened. About the awareness of rabies, the nursing students had comparatively better knowledge about the awareness of the disease, when compared to the awareness about the mode of transmission and the prevention of the disease. As in our study, a study conducted by Dixit et al⁷ in Madhya Pradesh among the nursing students also had better knowledge about the awareness of the disease. The similarity found in the study could be due to the reason that rabies is a major public health problem in our country. Bhalla et al¹¹ in a study amongst general practitioners in Jamnagar and Hasan et al¹² in a study amongst general practitioners in Karachi observed that while they had good knowledge regarding the infection and causative agent of the disease, correct management of cases of animal bites was specifically lacking. A study by Kakkar et al¹³ on knowledge regarding zoonosis among 364 medical students in India revealed poor knowledge about zoonosis in the study subjects; specifically only 5.5% respondents correctly stated that rabies is transmitted by animals other than dogs. The above findings indicate poor understanding of the critical issues as regards rabies management even among general practitioners and medical students.

Hence, nursing students should be given clear information about the management of fatal diseases like rabies. In a developing country like India where the animal bite cases are of heavy burden, academic curriculum of all cadres of health workers should have rabies prevention and case management lessons added. This should not just be restricted to the theoretical aspects but the students needed to be given demonstrations about the management of rabies by professionally equipped persons and should include hands on training by making students visit anti rabies clinics during the course of their study. Appropriate training material should be provided to the students and displayed at key locations in the hospitals so that rabies management issues are appropriately done.

The study revealed poor knowledge regarding the usage of rabies immunoglobulins, vaccine administration to pregnant woman and the importance of observation of the suspected animal after the animal bite amongst the study subjects.

This should be brought to awareness among the nursing students as category III animal bite injuries with suspect rabid animal require immunoglobulins along with vaccination, which is not practised effectively despite the availability of rabies immunoglobulins in major health centres. The present study almost finds a similar association with a study carried out in Jamnagar city among the general practitioners by Dzikwi et al where nobody knew about immunoglobulin or sera and they were not at all using them for treating patient with animal bite.⁹

In the pre intervention assessment, majority (82.7%) of the participants were already aware of the importance of washing the animal bite with soap and water. This may be due to the reason that the study participants were oriented to some of the basics in first aid. Among the 145 study participants in the pre intervention assessment, 71 participants (48.9%) believed that rabies can be cured. Also in a study conducted in Ethiopia among animal bite victims by Kabeta T¹⁴, 75% of the respondents concurrently believed that rabies can be cured and this suggest that inappropriate assistance may be sought following bite. This may be due to the incomplete understanding of the underlying principle about the disease.

Conclusion:

The study findings demonstrated a significant improvement of knowledge and attitude amongst the nursing students by the educational intervention. Thus there is a need to create awareness about the importance of rabies related knowledge amongst nursing students, particularly in rural areas. As rabies continues to be a major public health problem in India and the disease is preventable following proper application of first aid, rabies vaccine and rabies immunoglobulins, health care providers like nursing personnel who are often the first point of contact with the patients needed to be well equipped with adequate knowledge and attitudes for effective management of patients with animal bite.

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Short Article

Component Skill Approach in Microteaching to Improve Teaching Skills of Faculty Members in a Medical College

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Abstract

Context: Medical teachers most often do not receive a special training in pedagogic techniques. It is not considered necessary for their recruitment. The class cannot be used as a learning platform for acquiring basic teaching skills. The pedagogic skill for teaching can be acquired only through more structured and inexpensive faculty training techniques. **Objectives:** to estimate quantitative evidence on teaching skills through expert observation and to demonstrate the process used to identify individual areas of teaching skills that are effective or need improvement using the component skills approach. **Methods:** Component skill approach was used to evaluate the participants on 10 basic skills of microteaching by 5 expert evaluators of the rank of Associate Professor and Professor who had already undergone Medical Education Technology Training and have themselves conducted several Medical Education Technology Training Programmes. **Results:** The participants mean score was highest for planning the session (8.1) and use of audio visual aids (8.1) followed by eye contact (7.1) and voice modulation (6.9). The least mean score was obtained for interaction and learner's participation (4.8) followed by body language (5.7) and learning objectives (5.9). **Discussion:** Component skill approach in microteaching helps the teachers not only in improving the content but also methods of teaching and specific teaching skills. **Key words:** component skill approach, medical education, medical education technology, microteaching, teaching skill.

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CONTEXT

In a Medical School, it is not mandatory for the teaching faculty to be trained in teaching methods for their recruitment. Most of the faculty in a Medical School, do not receive a special training in pedagogic techniques. Their ability to teach Medical Students, therefore, almost entirely depends on self training, by observation of other teachers or by trial and error method while teaching the Medical Students. We feel that the class cannot be used as a learning platform for acquiring basic teaching skills.

The pedagogic skill for teaching must be acquired through a structured and inexpensive faculty training programme.[1] The objective of such a faculty training program on pedagogic techniques is to provide an opportunity for the teachers to learn and assimilate new teaching skills under controlled conditions; to assist teachers in developing simple, single concept lessons on any topic, and also to help teachers in building their self-confidence.[2] Microteaching is one such faculty training programme. Allen and Eve (1968) defined

microteaching as “A system of controlled practice that makes it possible to concentrate on specific teaching behaviour and to practice teaching under controlled conditions”. [3] In other words, microteaching is a simplified teaching situation where the strengths and weaknesses in teaching methodology being followed by a teacher can be brought into their perspective through constructive and non-judgemental feedback by experts. The present study was undertaken to provide quantitative evidence on teaching skills through expert observation and to demonstrate the process used to identify individual areas of teaching skills that are effective or need improvement using the component skills approach.

METHODS

The Medical Education Unit of SRM Medical College identified this lacuna in the faculty training programme and designed a programme on microteaching for the young faculty members of the Medical College. A total of four sessions were conducted in the programme. Each session was conducted on a Saturday and lasted 120 minutes. During every session a total of eight Assistant Professors – four from Clinical Departments and four from Pre- and Para-Clinical Departments – were invited to participate. We chose to select participants from different Departments in order to make the group heterogeneous so that the participants would not compare themselves to other teaching faculty of the same Department.

Every session started with a brief introduction about microteaching and the skill-sets upon which the participants were going to be evaluated. The participants were informed that the sessions were meant purely for helping the teachers and not as a tool for making value judgments of their teaching capacity. Only those Assistant Professors who had not undergone Medical Education Technology Training were invited to participate in this programme. The participants were requested to prepare a ‘micro-lesson’ for a ‘micro-class’. A micro-lesson is usually a short lesson for 5 to 10 minutes prepared to teach a small group of members, usually 8 – 10 members. In this programme, the participants were requested to

prepare a micro-lesson for about 8 minutes on a topic of their own choice in their respective field of specializations. A set of guidelines were provided to the participants on the assessment of ten basic skills of component skill approach [4] beforehand which included how they introduce topics called as set induction, use of Specific learning objectives, planning the body of lecture, voice Modulation, body Language, making eye contact, Interaction, time management, use of Audio Visual Aids and closure or summarization of the session.

Members from the Medical Education Unit & peer group (other Assistant Professors in the training program) formed the micro-class. Five Senior Faculty Members of the Medical College of the rank of Professors and Associate Professors that were also the members of the Medical Education Unit assessed the micro-teaching session taken by the participant. They were called expert evaluators because they had themselves undergone training in Medical Education Technology and had conducted several Medical Education Technology Training Programmes.

The assessment was done on the basis of methods and skills used to teach and not on the content of the session. At the end of the micro teaching session by the participant, constructive feedback was given to the participants. A checklist, prepared on the basis of component skill approach that comprised of 10 basic skills of microteaching, was used to evaluate the participants.

Expert evaluators were given instructions for every skill they had to assess and give a score of ‘2’ for the skill that they found to be effective, a score of ‘1’ for skills that they felt needed improvement and a score of ‘0’ for the skill that was completely ineffective. A faculty could get a maximum score of 10 and a minimum score of 0 for each skill tested, from five expert evaluators put together. Overall, if a participant scored more than 8 on a specific skill, he or she was considered to be effective on that skill. If a participant scored 5 – 7 on a specific skill, he or she needed to improve on that specific skill and if the participant scored less than 5 on a specific skill, the participant was considered ineffective on that skill and hence needed a lot of improvement.

At the end of each presentation the presenter first self evaluated his or her own performance with two positive aspects and two negative aspects of their presentation. This was followed by constructive suggestions and comments by the observers with positive and negative aspects of their presentation with special emphasis on the teaching skill that needed improvement. After this oral feedback, written feedback pointing out the strengths and weakness of the presentation were sent to the participants with emphasis on repetitive practice aimed at helping the novice attain eventual proficiency in executing several acquired latent skills simultaneously. Due to time constraint the re-teaching session was not followed, instead the participants were asked to correct the observations made and teach the same topic in the class.

RESULTS

A total of 31 teaching faculty of a Medical College Hospital of the rank of Assistant Professor who had not under gone the Medical Education Technology Training participated in these microteaching sessions and hence were included in the present study. Of them, 15 were males (48.4%) while 16 were females (51.6%) with their ages ranging from 25 to 35 years. The mean score obtained by the participants on the 10 skills overall was 6.5 (\pm 1.4).

Table 1 depicts the mean score obtained by the participants in each of the skills assessed. The mean score was highest for planning the session (8.1) and use of audio visual aids (8.1) followed by eye contact (7.1) and voice modulation (6.9). The least mean score was obtained for interaction and learner’s participation (4.8) followed by body language (5.7) and learning objectives (5.9).

Table 2 depicts distribution of scores obtained by participants in microteaching session by five expert observers. The skills were effective (score >8) for planning the body of the lecture among 77.4% of the participants followed by the use of audio visual aids (67.8%) and method of closure of the session (61.6%). The skills were ineffective (score < 5) for having clear cut learning objectives (54.8%) followed by interaction and learners participation (45.2%) and Time Management (38.7%). The skills had to be improved (score of 5-8) for body language (45.2%) followed by set induction (41.9%).

Table 1: Mean score obtained by of the participants

Skills tested	N = 31 [Total score (310)]	Mean score (SD)
Introduction / Set induction	211	6.8 (2.36)
Learning objectives	185	5.9 (2.75)
Planning the body of lecture	250	8.1 (2.14)
Voice modulation	216	6.9 (2.38)
Body language	176	5.7 (2.17)
Eye contact	220	7.1 (2.26)
Interaction & learner participation	150	4.8 (3.42)
Time management	190	6.1 (3.12)
Use of AV aids	250	8.1 (1.78)
Closure/ summarization	202	6.5 (3.01)
Total	2025	6.5 (1.44)

Table 2: Distribution of the Scores Obtained by Participants in Microteaching Evaluation

Skills tested	Effective	Could be improved	Ineffective
	Score >8	Score 5 - 7	Score <5
Introduction / Set induction	14 (45.2%)	13 (41.9%)	4 (12.9%)
Learning objectives	13 (41.9%)	3 (9.7%)	15 (54.8%)
Planning the body of lecture	24 (77.4%)	6 (19.4%)	1 (3.2%)
Voice modulation	18 (58.0%)	7 (22.6%)	6 (19.4%)
Body language	7 (22.6%)	14 (45.2%)	10 (32.2%)
Eye contact	17 (54.8%)	8 (25.8%)	6 (19.4%)
Interaction & learner participation	10 (32.2%)	7 (22.6%)	14 (45.2%)
Time management	13 (41.9%)	6 (19.4%)	12 (38.7%)
Use of AV aids	21 (67.8%)	9 (29.0%)	1 (3.2%)
Closure/ summarization	16 (61.6%)	8 (25.8%)	7 (22.6%)

DISCUSSION

Component skill approach for the analysis of expert observation data enabled us to identify areas of effective skills, areas of improvements and areas where the skills are ineffective which needs more intensive training. In about two third of the participants the skill was effective in planning the body of lecture similar findings was observed by

Amani bell et al where in 81% the aims, objectives and structure of the tutorial were clear [5] and Wen-Li Wang; Ying et al reported highest mean for mastering teaching content. [6]

The skill was ineffective and needs to develop skills was highest for Interaction & learner participation. This finding was supported by Amani Bell et al, Hendricson et al, Roehrig et al and in their studies as lack of interaction and students participants. [5, 7, 8] Wen-Li Wang; Ying et al^[6] reported highest mean for eye contact or movement in the classroom.[6]

Adopting component skill approach where the activity of teaching as a whole is broken down into its individual component skills will help to assess the individual skills which were effective, which needs improvement and ineffective that will help the faculty identify their areas which needs selective improvement to excel in teaching skills.

Thus microteaching helps the faculty in developing specific skills and eliminating errors, enables to understand behavior important for classroom teaching and it strengthen our approach to teaching, enhances our understanding for a variety of effective teaching styles and increases the confidence of the teacher.

The programme was very well received by both senior as well as junior faculty members of the Medical College. A formal discussion with the senior faculty members revealed that they felt that they got an opportunity to identify the strengths and weaknesses of the junior faculty members and to rectify critical mistakes if any. Some senior faculty members also mentioned that they themselves learnt certain modern techniques used by the junior faculty members such as using different kinds of animations while doing a PowerPoint presentation. A similar formal discussion with the participants revealed that they gained a lot of self confidence after conducting the micro-teaching session; that they could identify their own weaknesses thus allowing them to work on the same; they could use different techniques such as demonstration to put forth a concept. However, both senior and junior faculty members agreed that re-teaching sessions were required in order to make this programme better.

To conclude, microteaching helps the teachers not only in improving the content but also methods of teaching and specific teaching skills such as introducing the subjects, presenting general and specific learning objectives, interaction & learner participation, effective reinforcement, voice modulation, eye contact, time management, effective use of audio visual aids and summarizing the session. Microteaching can also be made available and applicable to the senior faculty of a Medical College thus allowing them to improve their teaching skills.

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