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SHORT ARTICLE

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ASSESSMENT OF CARDIO-VASCULAR RISK AMONG ADULTS ATTENDING A RURAL HEALTH CENTRE USING WHO/ISH RISK PREDICTION CHART

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Abstract

Background: Most of the Cardiovascular disease (CVD) have multiple risk factors showing a cumulative effect on fatal outcomes like myocardial infarction and stroke. WHO/ISH Risk Prediction chart is a tool used to detect the individual risk of developing such an event which aid in taking preventive measures.**Objectives:**1. To assess the individual risk of developing fatal cardiovascular event in the next 10 year among adults (>40 years) visiting a Rural Health Training Centre (RHTC) based on the WHO/ISH (SEAR –D) risk chart 2. To analyse whether the study participants were motivated to adopt preventive measures on knowing their individual risk. **Methods**: A cross sectional study was done among 200 adults availing health services from RHTC between September to October 2017. The desired information was acquired using a pretested questionnaire. The WHO/ISH risk prediction chart for South East region used to assess the CVD risk among the participants. **Results**: Mean age of study participants was 55.26 ± 8.35 years. Proportion of male and female were 59% and 41% respectively. Our study found 28.5% to have more than 20% risk of which 6.5% of adults had more than 40% risk of developing CVDs in the next 10 years. Around 71 % of adults were motivated to take necessary precaution based on their risk score. **Conclusion**: The study indicates that there is huge burden of CVD risk among adults attending the RHTC. There is a need to conduct community based survey to assess the real burden and also to assess if perception and practise of individual changes on knowing their risk of CVD.

Key-words: Cardiovascular disease, WHO/ISH prediction chart, Rural.

Introduction

The major cause of mortality worldwide as well as in India are cardiovascular diseases (CVD). They comprise disorders of the heart and blood vessels, and includes coronary heart disease, cerebrovascular disease, raised blood pressure, peripheral artery disease, rheumatic heart disease, congenital heart disease and heart failure.[1] It was estimated that 17.7 million people died in 2015 from CVDs which constitutes 31% of all global deaths. Of these deaths, approximately 7.4 million and 6.7 million deaths were due to coronary heart disease and stroke respectively[2] .Several studies have proved that this mortality can be decreased by screening and specific intervention.[3,4,5]

In 2007, WHO in collaboration with the International Society of Hypertension (ISH) published two sets of CVD risk prediction charts for each of the 14 WHO epidemiologic sub-regions. One set of charts for settings where blood cholesterol can be measured and the other for those where it cannot.[6]Both sets included age, gender, smoking, diabetes and blood pressure. It was prepared based on standardized data on risk factor prevalence and relative risk for heart attack and stroke from each of the 14 specific WHO epidemiologic sub-regions, from the Comparative Risk Assessment Project conducted by the organization.[7]These risk prediction chart are simple ways to assess the approximate combined risk due to all risk factors and is expressed as 10 years risk of developing a heart attack or stroke. The usage of this chart has been recommended by WHO especially in low and middle income countries that do not have their own refined risk prediction charts.[8]

Currently India is facing a rapid health transition from Communicable disease to Non-Communicable Diseases (NCD) which account for around 60% of all deaths causing a considerable loss in productive years of life. These losses due to premature deaths attributed to heart diseases, stroke and diabetes etc. are also projected to increase over the coming years. The government of India has launched the National Programme for Prevention and

Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS) in 2010 with focus on strengthening infrastructure, human resource development, health promotion, early diagnosis, management and referral to prevent and control major NCDs. One of the strategies employed under the programme is opportunistic screening at all levels in the health care system.[9]Keeping this in view and due to paucity of studies on usage of this tool to predict the risk of CVD among the general population, the current study was undertaken with the following objectives (1) To assess the individual risk of developing fatal cardiovascular event in the next 10 year among adults (>40 years) visiting an Rural Health Centre based on the WHO/ISH (SEAR –D) risk chart[10](2) To analyse whether the study participants were motivated to adopt preventive measures on knowing their individual risk.

Material and Methods

A cross-sectional study was conducted among 200 adults seeking health care at a Rural primary health carecentre in Sangendhi, Trichy during the period of September to November 2017. Inclusion criteria was those aged more than 40 years and willing to give consent. We excluded those with a known past history for any major cardiovascular disease (myocardial infarction and stroke). Consecutive sampling on participants was done till the required sample was obtained. Pre-structured interview questionnaire was used to collect sociodemographic details and to identify risk factors for CVDs. Physical examination of participants included measurement of height, weight and blood pressure. Blood sample was taken for those whose diabetic's status was not known. Informed and written consent was obtained from all participants. Institutional Ethics Committee approval was obtained before proceeding with the study.

Colour- coded WHO/ISH risk prediction chart for South East Asia (SEAR D)[10] was used to predict the 10-year risk of a fatal or non-fatal cardiovascular event based on gender, age, systolic blood pressure, smoking status and presence or absence of diabetes mellitus. Participants were considered to be diabetic if they were on medication or if the Random blood sugar showed a value >200mg at the time of investigation. Two reading of systolic blood pressure was recorded for each individual and mean value was taken to assess the CVD risk using WHO/ISH chart. Individual was classified as smokers, if they currently smoked or had quit smoking <1 year before the assessment.

Data entry was done Microsoft excel and descriptive analysis was done using SSPS version 21. The results are expressed in frequency and percentage.

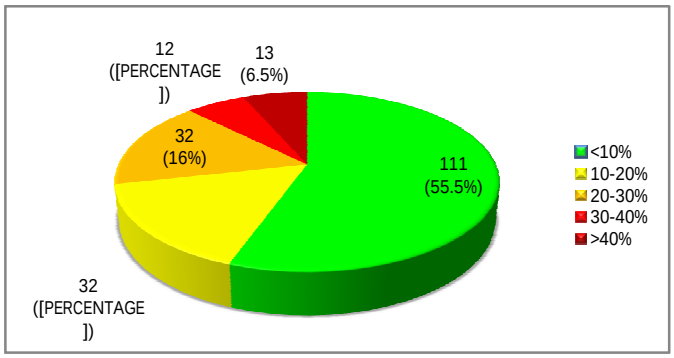
Results

Of the total 200 study participants, 118 were male (59%) and 82 female (41%). The mean age was 55.26 (± 8.35) years and mostly aged less than 60 years (67%). Only 22% were illiterate with others having at least primary schooling and above. Most of the elders (68%) were involved in skilled and semiskilled work relating to agriculture and had their monthly per capita income less than 3,100 Rs. Around 90% of the study participants were residing at a distance of less than 5 kms from rural health carecentre.

Table 1: Proportion of CVS risk factors among study participants (n=200)

CVS risk factors		Frequency	Percentage (%)
Diabetes mellitus	Present	137	68.5
	Absent	63	31.5
Family h/o of diabetes mellitus	Present	99	49.5
	Absent	101	50.5
Blood pressure	Normal	82	41
	Above normal	118	59
Family h/o of hypertension	Present	107	53.5
	Absent	93	46.5
BMI	<25.00	131	65.5
	≥25.00	69	34.5
Smoking	Present	59	29.5
	Absent	141	70.5

Graph 1: Risk of fatal cardiovascular event over the next 10 year among the study participants based on WHO/ISH risk prediction chart (n=200)



Graph 2: Proportion of study participants motivated to take preventive action on knowing their risk score (n=200)

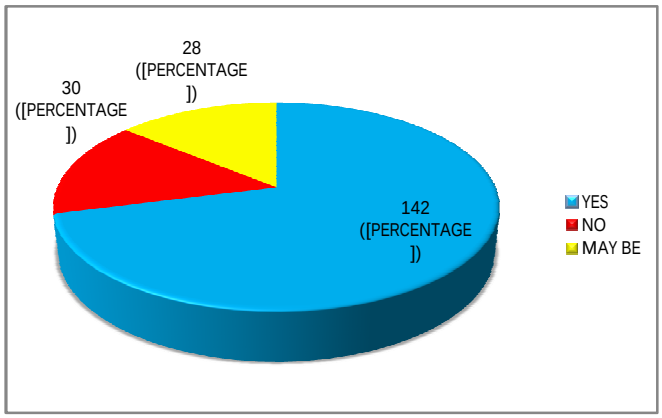


Table 1 shows the proportion of various cardiovascular risk factors among the study adults. We found 68.5 % and 59 % with diabetes and hypertension respectively, of which 43 elders (21.5%) had both. Around 34% had their body mass index (BMI) above 25 and 29.5% smoked tobacco among the study participants.

Graph 1 shows the prediction of cardiovascular event among the adults over the next 10 years using the WHO/ISH risk prediction chart (SEAR-D). More than half of the adults (55.5%) had less than 10 % risk of developing fatal cardiovascular event in the next 10 years. About 12.5% elders were at a risk of more than 30% of fatal cardiovascular outcome. Following the assessment of risk score, 71% of elders were motivated to taken some preventive action to decrease their risk of cardiovascular event in the future, where as 15% were not bothered. Another 14% felt they might try to take some measure (graph 2).

Discussion

Several studies[11,12,13] have documented increased mortality due to CVD in India. A study by ICMR[14] in Delhi during 2013 revealed that the rate of increase in cardiovascular risk factor was greater in rural area than compared to urban. Hence screening should be implemented at every possible level of healthcare to detect the risk factor and provide timely preventive measure. Our study which was done in rural setting found 44.5% of participants having >10% risk of CVD event. Similarly a study by Priya et al[15] done at a rural health training centre in north India during a camp revealed similar results (44.4%). This was the only other study we found that had used the WHO/ISH risk prediction chart without cholesterol measurement. Shanthi et al [16] in their research found this tool in predicting CVD risk equally effective as compared to the tool including the measurement of cholesterol. On the other side, Logaraj et al[17] in their study found only 20.1% aged more than 40 years to have >10% risk of CVD, but this was a community based study which explains the lower proportion as compared to a health centre based study which is mainly visited by those who have greater proportion of risk factor.

In our study there was very high proportion participants with diabetes (68.5%) and hypertension (59%). This was an expected finding since most of the patient visit our health centre to take treatment for the same. About 30% were smokers among our participant while a study[15] done in north India only 1.5% were found to be smoker. The reason stated that was, the participants were mostly followers of Sikh religion which prohibits smoking. Among the five risk factors (age, sex, diabetes, hypertension and smoking) that were included in WHO/ISH risk prediction chart used for this study, smoking is the only variable that can be easily controlled in a cost effective manner. Hence we suggest all health care provider to keep reinforcing this to their patients and explain the consequences of not doing so.

We found 34.5% with BMI of more than 34.5%, which was similar to a study done among rural population by Arunetal[18] and Logaraj et al [17]. We assessed the BMI of study participants even though it was not included as a risk factor in WHO/ISH chart. The purpose was to motivate them to reduce their weight which can be monitored in their next visit. Moreover most of the participants (93.5%) lived at a distance of less than 5kms from our health centre which we might encourage them to make frequent visit to monitor their gain at regular intervals.

Most of the studies[15,17,18,19,20] done to predict the risk of developing a fatal cardiovascular event over the next 10 year using the WHO/ISH chart have calculated the association between CVD risk percentage obtained from the chart with socio-demographic factors (age, sex, education etc.) and other individual variables like diabetes, hypertension, obesity etc. We have not done any such analysis in our study since the chart itself has been developed based on the most significant risk factors contributing to CVDs and finding significant association between them serves no purpose. Our objective wasonly to asses and identify those individual at greater risk of developing a fatal cardiovascular event in next 10 years and provide them with dietary advice, motivation for weight reduction and to get blood lipid profile tested so as to decide on the need to start antidyslipidemic drugs.

Apart from identifying individuals at greater risk to develop CVD, we also tried to analyse the impact of risk score in motivating them to adopt preventive measure. In our study 71% seemed willing to take some preventive measures on knowing their risk score. We suggest the WHO/ISH chart can also be used as an educational tool to encourage individuals to follow healthy lifestyle. But we need to conduct prospective follow up study to ascertain the proportion of individual actually practising healthy habits and taking their medications for diabetes or hypertension regularly.

A study[21] done using this screening tool in three low and middle income Asian countries concluded its benefits at both population and individual level. At population level it will benefit the policy planners to provide health service. At individual level it will be useful tool for clinician to decide the overall risk of patients based on multiple risk factors rather than a single risk factor. Moreover this tool is very simple to use, so even field staffs and community health workers can be trained on how to use it.

Conclusion: The WHO/ISH risk prediction chart is a very convenient tool that can be used for opportunistic screening of individuals at primary care centre to identify individual at greater risk of developing cardiovascular

disease. The participants in our study also found it motivating to follow healthy lifestyle which needs to be assessed on their follow up visit. We recommend community based study using the same to assess the burden at community level and implement large scale preventive measures.

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ORIGINAL RESEARCH ARTICLE

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STUDY ON PROPORTION OF MENSTRUAL DISORDER AMONG PROFESSIONAL COLLEGE STUDENTS IN GADAG CITY – A CROSS SECTIONAL STUDY.

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Abstract

Background: Menstruation is a physiological phenomenon in women. Any deviation from this normal physiology is known as menstrual disorder. Prevalence of menstrual disorder ranges between 34. 6% to 95%. **Objectives:**1)To know the proportion of menstrual disorder among college students in Gadag city. 2) To study the factors related to dysmenorrhoea. **Methodology:** An observational cross sectional study was conducted among 2 professional college students in Gadag city for a period of 2 months. A semi structured questionnaire was used to collect the information and anthropometric measurements were taken as per the WHO guidelines. **Results:** Out of 246 students 90.24% of students were suffering from menstrual disorders. Proportion of each menstrual disorders were dysmenorrhoea 84.55% , menorrhagia 2.85%, hypo menorrhea 15.45% , poly menorrhea 3.25% , oligomenorrhea 9.76%, emotional PMS 50.41% and physical PMS 75.61%. There is significant association between dysmenorrhoea and age of students, age of menarche and BMI status. **Conclusion:** Our study concludes that there is a higher proportion of menstrual disorder that is 90.4%. Majority of the students were suffering from dysmenorrhoea and next is premenstrual symptoms.

Key-words: Menstrual disorder, Dysmenorrhoea, Students.

Introduction

Menstruation is a physiological phenomenon in women. Women will become reproductive after commencement of menstruation and this determines the reproductive health of a women. Normally menstruation starts in the female between the age group 10 – 16 years. Normal menstrual pattern is such that mean age of menarche is around 12.5 years, length of menstrual cycle between 21-35 days, the length of flow 3-7 days and amount of flow 50 - 80ml.[1] Any deviation from this normality is known as menstrual disorder.

Menstruation pattern varies due to physiological factors, psychological factors and biological factors. Because of these factors deviation in the normal menstrual cycle pattern leads to menstrual disorders or menstrual cycle irregularities. Oligomenorrhea is a infrequent, irregularly timed episodes of bleeding usually occurring at intervals of more than 35 days. Polymenorrhea denotes frequent episodes of menstruation, usually occurring at intervals of 21 days or less. Menorrhagia denotes regularly timed episodes of bleeding that are excessive in amount (>80ml) and /or duration of flow >5days. Hypomenorrhea refers to regularly timed but scanty episodes of bleeding.[2] Dysmenorrhoea is a cramping pain accompanying the menstruation and premenstrual symptoms is the cyclic appearance of one or more of large constellation of symptoms just prior to menses, occurring to such a degree that life style or work is affected followed by a period of time entirely free of symptoms.[3]

These disorders in cycles or its irregularities are major gynaecological problems among women during their reproductive years and they are the major cause of anxiety to them and their family.[4]

Prevalence of menstrual disorder ranges between 34. 6% to 95%.[5,6] The most prevalent menstrual disorders among young females are dysmenorrhoea,[7,8] premenstrual syndrome.[9]The current study was designed to know the proportion of menstrual disorder and factors related to dysmenorrhoea.

Methodology

An observational cross sectional study was conducted among undergraduate students of professional colleges of Gadag for a period of two months from 1st

February 2017 to 31st March 2017. By convenient sampling technique randomly we have taken 2 professional colleges of Gadag city. Before conducting the study Ethical clearance was obtained from the Gadag institute of medical sciences, Gadag. A prior permission was obtained from the college principal after explaining the study protocol. Written informed consent was obtained from the female undergraduate students. All the female students were taken in a separate class room andprovided a preformed semi structured questionnaire wihch includes Age, Height, Weight, Physical activity, Stress, questions related to menstrual disorder like pain during menstruation, Episodes of bleeding, Duration of flow etc. Anthropometric measurements like height and weight of study subjects were taken as per the WHO guidelines. Girls who were present at the time of visit were included in the study and girls who were absent and not willing to participate were excluded from the study.

Data was entered in the Microsoft excel sheet and analysed using Epi info 7 software. Frequency of each menstrual disorder was obtained. Association was drawn between the variables and dysmenorrhoea by using Chi square test.

Results

An observational cross sectional study was conducted among undergraduate student of 2 professional colleges of Gadag. Among 246 girls 13.82% of girls belongs to 18 years, 26.02% of girls belongs to 19 years, 19.51% of girls belong to 20 years, 23.98% girls belongs to 21 years and 16.61% girls belong to 22 year age groups.

In our study we found that 90.24% of students were suffering from menstrual disorders. Out of 246 students 84.55% students suffering from dysmenorrhoea, 2.85% of students suffering from menorrhagia, 15.45% of students suffering from hypo menorrhea, 3.25% of students suffering from poly menorrhea, 9.76% of students suffering from oligomenorrhea. 50.41% of students were having emotional PMS and 75.61% of students were having physical PMS. (Figure1).

In our study prevalence of dysmenorrhoea was high among 18 years age group compared to 22 years age group which shows significant association at p value <0.05. Prevalence of dysmenorrhoea was more among students with age of menarche between 15 – 17 years(93.65%) compared to 10 – 14years (81.42%) which shows significant association at p value <0.05. dysmenorrhoea prevalence was high among obese students and students under stress and this shows significant association at p value <0.05. but dysmenorrhoea not shows any significant association with physical activity. (Table 1)

Figure 1. Proportion of each menstrual disorder.

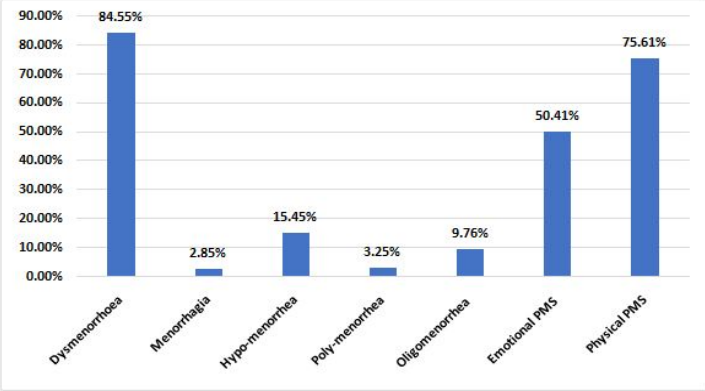

Table 1. Association between dysmenorrhoea and various factors.

Variables		Normal N(%)	Dysmenorrhoea N(%)	Total N	Chi square &P value
Age	**18 years**	6(9.38)	58(90.63)	64	
	19 years	4(9.76)	37(90.24)	41	13.74
	20 years	4(11.76)	30(88.24)	34	0.008
	21 years	6(12.50)	42(87.50)	48	
	22 years	18(30.51)	41(69.49)	59	
Age of menarche	**10-14years**	34(18.58)	149(81.42)	183	
	15-17years	4(6.35)	59(93.65)	63	5.36, 0.02
Body Mass Index	**Normal**	18(12.16)	130(87.84)	148	
	Underweight	8(50)	8(50)	16	
	Obesity	12(14.63)	70(85.37)	82	15.88, 0.0004
Physical activity	**Mild**	6(18.75)	26(81.25)	32	
	Moderate	30(14.42)	178(85.58)	208	
	Severe	2(33.33)	4(66.67)	6	1.9, 0.386
Stress	**Yes**	6(8.45)	65(91.55)	71	
	No	32(18.29)	143(81.71)	175	3.74, 0.053

Discussion

In our study proportion of menstrual disorder was 90% which was higher compared to study conducted by C. E. Ekpenyong 34.6% in South Eastern Nigeria[5] and lower compared to study conducted by AE Olowokere 95%.[6]

In our study proportion of each of the menstrual disorder was different and higher percentage of the students were suffering from the dysmenorrhoea which was 84.55% and others were 75.61% of physical premenstrual symptoms, 50.41% of emotional PMS, 15.45% of hypo menorrhoea, 9.76% of oligomenorrhoea, 3.25% of polymenorrhoea and 2.85% menorrhagia. Study done by Lakkawar NJ[8] showed dysmenorrhoea 76%, premenstrual syndrome 69% and irregular menstruation 29%. Similarly study done by C. E. Ekpenyong[5] showed commonest menstrual disorder was menorrhagia 37.5% and others were pre-menstrual

Syndrome 33.1%, oligomenorrhea 19.9%, and amenorrhea 5.9%. Other study shows 30% were suffering from irregular menstrual cycle, 77% were experienced dysmenorrhea and 68% were suffering from PMS.[10] Typical menstruation in adolescence includes pain (93%), cramping (71%), premenstrual symptoms (96%) and mood disturbance (73%).[9] The variation in the percentage of menstrual disorders may be due to their geographical area and the physical activity of students.

In our study prevalence of dysmenorrhoea was more among the 18 years age group compared to 22 years age group. Some of the studies have showed that prevalence of dysmenorrhoea decreases with increasing age.[11] Similarly study done by Shivani Sinha in UP shows 10-13 years age group students had 29.4% of irregular cycle compared to 17-19 years age group students that is 16.1%.[12] This earlier occurrence of menstrual problems may be associated with hormonal changes and adjustment with the menstruation at the earlier periods of menstruation.

Students with age of menarche 15-17 years shows increased prevalence of dysmenorrhoea compared to 10-14 years age. Several studies have shown a significant association between early age at menarche and dysmenorrhoea.[13] Study done Kural MR et.al. shown no significant difference in the mean age of menarche between presence and absence of dysmenorrhea.[14]

In the present study normal and overweight students shows higher percentage of dysmenorrhoea compared to underweight. Similarly, few studies shows association between BMI with dysmenorrhoea.[13] Kural MR et.al. study findings were consistent with this and showed no association with BMI.[14] Study done by Lakkawar NJ, et.al. shows higher prevalence of dysmenorrhea in normal and underweight category in comparison to over weight ($p \leq 0.001$).[8]

Conclusion: Our study concludes that there is a higher proportion of menstrual disorder that is 90.4%. Majority of the students were suffering from dysmenorrhoea and next is premenstrual symptoms. There is significant association between dysmenorrhoea and age of students, age of menarche and BMI status.

Recommendations: Female undergraduates should be taught about premenstrual sympoms and how to adequately prepare themselves for menstruation to minimize the effect of menstrual disorders through informative, educative and communication materials.

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USE OF AGE INDEPENDENT ANTHROPOMETRIC INDICES FOR COMPARING THE NUTRITIONAL STATUS OF CHILDREN IN RURAL ICDS AND NON-ICDS VILLAGES: COMMUNITY BASED CROSS SECTIONAL STUDY

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Abstract

Background: ICDS scheme continues to be one of the largest and unique schemes in the world underpinning holistic development of under-six years of children in the country. This study aims at finding the nutritional status of the children from 3 to 5 years age group in rural I.C.D. S villages and to compare with same number of children in nearby non I.C.D.S villages. **Methods:** The study was done with house to house survey with the help of a prepared scheduled proforma by personal interview and taking necessary anthropometric measurements and clinical examination. In the present study the following age independent criteria's are taken into account for the assessment of the nutritional status of the (3-5 years) age group of children in both the I.C.D.S and non I.C.D.S area separately: Mid upper arm circumference; Kanwati's index; Rao's index; Bangle screening method. **Results:** Most of the children are from the low socioeconomic group class IV and class V. In all the age independent anthropometnc criteria, the nutritional status is better in I.C.D.S than in non – I.C.D.S area.Rao's index reveals better picture of chronic malnutrition. The difference of the nutritional status in both the I.C.D.S and non – I.C.D.S are significant (P<0.05).The sensitivity and specificity of mid upper arm circumference with standard Weight/Age method for comparison of the mutational status in I.C.D.S and non – I.C.D.S area Sensitivity - 70.5% Specificity - 76.5%. Immunisation status is better in I.C.D.S area in comparison to non – I.C.D.S area. **Conclusion:**I.C.D.S is a biggest multisectorial involvement project in Asia which has a tremendous potential for improving health and nutrition. Therefore Government of India should make some bold innovation to give further momentum in achieving better service facility. The Intensive study is carried out especially for public utility and utilization of data for future research.

Key-words: Nutrition, Anthropometry, villages, mid- arm circumference, Integrated child development services (ICDS).

Introduction

The nutritional status of children has become an important indicator of the development status of the country.An increased rate of morbidity and mortality in children is also directly related to malnutrition or in other hand nutritional status [1]. This is more seen among pre-school children Nutrition plays the primary role with paramount importance to achieve, promote and maintain the physical growth.Children population constitute about 40 % of our national population, who are our natural resources upon which our country's future, prospect entirely stands [2]. In India around 80 million children fall below normal nutritional status.Prevalence of under-nutrition as almost 47 per cent of urban poor children are reported to be underweight and 54 per cent as stunted with almost 60per cent of urban poor children miss total immunization before completing one year (NFHS-4)[3].The scenario of Broad Mortality data shows that 50 % of all the deaths occur below 5 yrs. of age. Owing to above important reasons, simple and basic health care has to be provided to millions of children important to preserve their normal physical growth or the nutritional status throughout the growing phase of life.

ICDS scheme continues to be one of the largest and unique schemes in the world underpinning holistic development of under-six years of children in the country [4]. Being implemented nationwide under the aegis of the Union Ministry of Women and Child Development (MWCD), the scheme is a powerful driving force designed to break the vicious cycle of child malnutrition, morbidity, reduced learning capacity and mortality. I.C.D.S is also a result oriented programme. By the way of feedback method it provides facility to evaluate the health status of children by monitoring device in the shape of field survey. On our rural setup where exact date of birth cannot be properly ascertained and the weighing machine is not available, age independent anthropometric measurement in the shape of mid upper arm

circumference and other age independent indices (ratios) are taken into account to assess the nutritional status in children [5].

Owing to all above reasons this study aims at finding the nutritional status of the children from 3 to 5 years age group in rural I.C.D. S villages and to compare with same number of children in nearby non I.C.D.S villages adapting similar natural environment so as to asses and evaluate the impact of the I.C.D.S which subserves the monitoring mechanism of I.C.D.S function and further course of the action can be formulated to augment the action of the project towards better survival of the children to whom the programme is designed and totally meant.

Material And Methods

Type of Study: Community based, Cross sectional study. Study Population: The study was carried out in 3 subcentres each in 2 PHCs of Bargarh District. In I.C.D.S areas, 300 children registered for supplementary nutrition and Preschool education were included in study. In non I.C.D.S. areas, 300 children in age group 3-5 years obtained during house to house survey were included. Study Period: 05 January 2014 to 05 January 2015.

Selection criteria: For this study three subcentre area as (Tejagola, Kamagaon and Mulbar) of the primary health center, Bhatli (covered by I.C.D.S scheme more than 3 years) were selected as rural I.C.D.S area which is situated in Baragarh District and is about 60 km away from V.S.S. Medical College, Burla. The population of this area is 15818 and consists of the 21 Anganwadi centers. The rural non I.C.D.S area was also selected from the adjacent P.H.C Paharsirigida P.H.C also in Bargarh District. Three subcentre area of this P.H.C (Kharmunda, Tangarpali and Lachidal) which are adjacent to the above I.C.D.S area with a population of 14661 were selected. These two areas are selected because for comparison, both areas are found identical with respect to their Geographical location, climate communication of the place, identical socioeconomic status, literacy status, social habit and food habit of the people.

Sample size:Standard 30 cluster sampling methods 'described by W.H.O was employed to select the cohorts to be studied in both the I.C.D.S and non I.C.D.S area. In each area 30 clusters were randomly selected taking panchayat ward as the clustering unit, 300 children in 3-5 years age groups (10 against 7 per cluster for better appreciation) and their mothers were taken by door to door survey, with of prepared schedule.

Methods:The study was done with house to house survey with the help of a prepared scheduled proforma by personal interview and taking necessary anthropometric measurements and clinical examination. All the data were primarily collected by single person to avoid bias, who is a pediatrician and well trained already in assessing anthropometry and nutritional status of children. Modified Kuppuswamy socioeconomic scale was adopted to assess the socioeconomic status of the parents [6]. In the present study the following age independent criteria's are taken into account for the assessment of the nutritional status of the (3-5 years) age group of children in both the I.C.D.S and non I.C.D.S area separately: Mid upper arm circumference; Kanwati's index; Rao's index; Bangle screening method [7] In Bangle screening method, a particular Bangle was tried to pass over the elbow, which is possible only in children with malnutrition. Kanawati-Mc Lauren's index is MUAC/Head circumference ratio. The normal value is 0.32-0.33 and value <0.25 suggests severe malnutrition. Similarly, Rao and Singh's index is weight in kg/height in cm^2 X 100, 0.12-0.14 is normal value and value <0.12 suggests malnutrition. Statistical analysis: All collected data was tabulated, t-test, chi-square test is used and statistically analysed by using SPSS.20 Software

Results

Baseline demographic profiles of children in I.C.D.S as well as non I.C.D.S. areas were comparable. Male children are predominant in both the I.C.D.S and non I.C.D.S area. Maximum numbers of children were of middle and low socioeconomic status, predominant in both the groups. Socioeconomic status was overall comparable in both the area. In both Male and Female children, in I.C.D.S and Non I.C.D.S areas MUAC were less than I.C.M.R standard. Average mid upper arm circumference in I.C.D.S area was higher than the non I.C.D.S area. Average height in male and female in both I.C.D.S and non I.C.D.S area were less than I.C.M.R standard. Height of the children in I.C.D.S area was marginally higher than the non I.C.D.S area. Head circumference was almost equal in both the I.C.D.S and non I.C.D.S group of children and Average head circumference was < ICMR standard (Marginally less).Mean average weight was higher in I.C.D.S area than non I.C.D.S area. In our study children having mid arm circumference >13.5 are more in the I.C.D.S than non I.C.D.S i.e. the children having normal nutritional status were more in I.C.D.S than non I.C.D.S area. Children having mid-arm circumference Between 13.5 to 12.5 cm were the predominant group, which are having mild and moderate malnutrition. Children with normal nutritional status were more in I.C.D.S group than non I.C.D.S group. Mild, moderate and severe malnutrition all were higher in Non I.C.D.S group.

In our study, MAC/HC ratio was higher among the 4-5 years age group in both the I.C.D.S and non I.C.D.S areas. In non I.C.D.S area all grades of malnutrition were higher, especially for severe malnutrition difference was statistically significant (p=0.04). Our study showed that malnourished children are more present in 4 – 5 years are group. Malnourished children were more present in the non I.C.D.S area.

Table 1: Comparison of the nutritional status in I.C.D.S and non I.C.D.S area with relation to mid arm circumference.

No Malnutrition	Number of children			
	I.C.D.S		Non I.C.D.S	
	No.	%	No	%
Normal	114	38%	87	30.30%
Mild and moderate	177	59%	198	65.30%
Severe	9	3%	15	4.40%

Degree of freedom=2, Chi square=6.3, p=0.04(difference is statistically significant)

Table 2: Comparison of the children in both the I.C.D.S and non I.C.D.S area age wise having different kanawati ratio.

Kanawati ratio	Number of children			
	I.C.D.S		Non I.C.D.S	
	(37-48m)	(49-60m)	(37-48m)	(49-60m)
>.310	57	65	47	55
.310-.280	47	57	41	51
.280-.250	28	36	45	48
<.250	4	6	5	8
Total	**136**	**164**	**138**	**162**

Table 3: Comparison of the nutritional status of children by kanawati ratio in both the I.C.D.S group and non I.C.D.S group.

Grade of Malnutrition	Number of children			
	I.C.D.S		Non I.C.D.S	
	No.	%	No.	%
Normal	122	40.60%	102	34%
Mild	104	34.70%	92	30.60%
Moderate	64	21.60%	93	31%
Severe	10	3.10%	13	4.30%
Total	300	100%	300	100%

Degree of freedom=3, Chi square=8.27, p=0.04(difference is statistically significant)

Table 4: Immunization status of the children in I.C.D.S and non I.C.D.S areas

Immunization status	ICDS area	Non ICDS area
Immunized	240(80%)	210(70%)
Partially immunized	52(17.4%)	74(24.6%)
Non immunized	8(2.6%)	16(5.4%)
Total	**300(100%)**	**300(100%)**

Degree of freedom=2, Chi square=8.51, p=0.01(difference is statistically significant)

The Bangle method was also used for the comparison of the nutritional status of 3-5 years age group children in I.C.D.S and non – I.C.D.S area. The number of children in I.C.D.S area with passing of the bangle above the elbow are only 28 and in non – I.C.D.S area, it is 42. That shows the picture of severe malnutrition and to some extent of moderate malnutrition in both the I.C.D.S and non – I.C.D.S area. The difference between two groups are statistically significant (p=0.03). The correlation between Age/Weight and the MUAC/HC ratio in relation to comparison of the nutritional status and assessment was good (Pearson's co-efficient 0.6). The specificity and sensitivity of the MUAC/HC ratio (Kanawati index), when compared with standard Weight/Age method for comparison of the nutritional status in I.C.D.S and non – I.C.D.S area were found to be 91.9% and 85.3% respectively .This is a reliable age independent indicator for assessment nutritional status. The correlation between Weight/Age and mid arm circumference in relation to the assessment of nutritional assessment was also good (Pearson's co-efficient 0.7). The sensitivity and specificity of mid upper arm circumference compared with standard Weight/Age method for comparison of the nutritional status in I.C.D.S and non – I.C.D.S area were 70.5% and 76.5% respectively.

MAC/HC ratio was higher in all grade of malnutrition in non I.C.D.S area and the difference was statistically significant (p=0.04), more for moderate and severe grades of malnutrition [table 3]. The age wise distribution and comparison of the nutritional status by the Rao's index in both the I.C.D.S and non – I.C.D.S area showed children with normal nutritional status are found more in the age group of 4-5 years and malnutrition cases are found more in 3 to 4 years age group in the both the I.C.D.S and non – I.C.D.S area.

In I.C.D.S area, the immunization status was better where compared to non I.C.D.S. area with immunization coverage being 80% in I.C.D.S. area and about 70% in non I.C.D.S. area [table 4]. The difference between the immunization status of two areas is statistically significant (p=0.01)

Discussion

The study showed that age independent anthropometric indices can be successfully used to assess nutritional status in community surveys with accuracy and nutritional status of children in I.C.D.S areas are better than those in non I.C.D.S. areas. The mean mid-arm circumference of the children in I.C.D.S. area was higher than their counterpart in non I.C.D.S. areas. It was seen that the average height, weight and head circumference of the children of the different age, sex were lower than the I.C.M.R standard in both areas. The difference in malnutrition status between both areas was more significant for severe grade malnutrition group, who are most likely to have more serious life threatening complications. Thereby, this study establishes the usefulness and justification for universalization of I.C.D.S scheme over the country.

This is more due to the low socioeconomic status and poor health awareness and illiteracy in non I.C.D.S. areas. Supplementary nutrition might be taking the main role in

lowering incidence of malnutrition in I.C.D.S area. The difference in the nutritional status of both I.C.D.S and non I.C.D.S was significant. (P=0.04)

Kanawati ratio was found to be a better index than only MUAC measurement for the assessment of the nutritional status in our study. Rao's index reveals better picture of chronic malnutrition. Similar findings were also reported in literature by Bashir et al [8]. Kanawati suggested the use of mid-arm / head circumference for detection of marginal cases of malnutrition as they claimed it as a useful age independent method of assessment of the nutritional status in pre-school children [8]. The difference between I.C.D.S. and non I.C.D.S. areas remained statistically significant, while using all the three indices without ambiguity. Previously, Mitra et al and Bhatia et al have used these indices in Indian setting successfully and the result of this study more firmly favors its use in routine clinical practice for precise nutritional status assessment [10, 11].

UIP program states that immunization is to be done to keep the child free from vaccine preventable disease like tuberculosis, and others which indirectly affects the nutritional status of the child. Here immunisation status is better in I.C.D.S area in comparison to non – I.C.D.S area, where the complete immunization is 70% only. Population in I.C.D.S and non – I.C.D.S area.I.C.D.S project had covered BCG 39.6%, DPT 35%, and Polio 37.3% in project with 5 years old[9,10]. In both the area upper respiratory tract infection is predominant, which mainly contributes the major morbidity of the children. Anemia cases are more found in I.C.D.S area than non – I.C.D.S area. The vitamin A and other deficiency are also more or less present in both the I.C.D.S and non – I.C.D.S group. Oral dehydration therapy no doubt help to avert deaths but not to correct malnutrition induced by repeated episodes of infection[11].Number of the children suffering from the diarrhea is decreasing as the popularity of use of ORS is increasing and health awareness too.

Conclusion: In this study better nutritional status and immunization coverage seen among children of I.C.D.S area than non-I.C.D.S area area. Children of parents with better socioeconomic status show better nutritional status, attempts must be taken to avoid this discrepancy among our people as far as possible. Both the Anganwadi worker and MPW health worker should work jointly in field for the distribution of the fortifier tablet and vitamin A solution in field for the control of anemia and vitamin A deficiency. Proper health education and motivation must be imparted regarding the health awareness and personal hygiene. Good supplementary nutrition programme can be made by the regular supply of the ration without any disruption. Food distribution must be good and community participation must be adequate. Effective intersectoral coordination particularly between Anganwadi worker and health worker in distribution of Fortifier tablets, vitamin A solution among children delivery of the nutritional health education and delivery of the other health care package can help further in the improvement of the nutritional status of children beneficiary. I.C.D.S is a biggest multisectorial involvement project in Asia which has a tremendous potential for improving health and nutrition. Therefore Government of India should make some bold innovation to give further momentum in achieving better service facility. The Intensive study is carried out especially for public utility and utilization of data for future research, so that the shortcomings can be found out by then and there by field survey and monitoring technique and the course of action can be designed to intensify better service to the children and mothers of our country for whom the intensive service is entirely meant.

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"BLUNDER LECTURE" – NO MORE A BLUNDER: A REVISION TOOL IN COMMUNITY MEDICINE FOR MBBS STUDENTS

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Abstract

Background: Community Medicine is considered to be a volatile subject and retention levels are low which demands for revision. Blunder lecture is an instructional strategy, which comprises the presentation of anomalous data or contradictory information which stimulates students to formulate their own queries and solve them by using their previous knowledge. **Materials and methods:** This mixed method study was conducted among Seventh term MBBS students. After 15 days of initial lecture on the topic 'Rabies', blunder lecture was delivered incorporating 20 blunders. Each student was asked to identify them and mention in a checklist. Immediately after this all the blunders were revealed and perception of students was collected in a pre tested semi - structured questionnaire and focus group discussions. A structured long essay on the same topic was given in a subsequent internal assessment examination. Data was analyzed using Pearson's correlation and unpaired t test. **Results**: Among 118 students who participated in the study, 64.4% identified $\geq$ 15 blunders. 97.5% students mentioned that blunder lecture helped them to recollect previous concepts, was useful in knowledge retention and 23.5% students opined that this method may result in remembering wrong information. The Focus Group Discussions (FGDs) also revealed similar information/response. There was a significant positive correlation between the number of blunders correctly identified and marks secured in internal assessment exam. The students who attended the blunder lecture secured significantly higher marks. **Conclusion:** Blunder lecture was found to be effective revision tool. This method had led to high retention level and performance of students in examination.

Key-words: Blunder lecture, Rabies, Community Medicine, Revision.

Introduction

Learning is a phenomenon that involves complex mental activities such as comprehension, recall, critical thinking and problem solving.[1] The goal for any facilitator or educational instructor is to provide the learners with the best learning tools available, so that they in turn can have thorough understanding, knowledge and relevant skills for their career.[2] There are multiple ways to impart knowledge on the learners, starting from the most ancient methods like lectures to the recent and most advanced techniques like virtual, simulation based and e learning platforms.[3] Over the years it has been realized that interactive teaching methods are educational best practices and yield better student satisfaction compared to traditional didactic lectures. [4]

Adult learners like medical students are quite different in their learning style as they are not the clean white slates (tabula rasa) like children. Students come to learning situations with preconceived knowledge and understanding. A constructivist teacher uses this previous knowledge to act as a base for the new knowledge that the student will create. Blunder lecture is one such method of challenging the students previous knowledge with anomalous information which stimulates students to formulate their own queries, allows them their own interpretations (reflection and synthesis of new knowledge), and encourages them to arrive at a correlation or conclusion in group work (collaborative learning).[5]

Blunder lectures are tried as teaching tools at different settings, but their utility is more if used as revision methods to reinforce the information which is already acquired by different means. Even though Community Medicine is taught across seven semesters in most of the MCI regulated Medical institutions, it is often seen that students start reading the subject only during the final year.[2] Thus the subject necessarily requires one or the other modes of revision or reinforcement in order to refresh the information and concepts among students.[6] In the present study, we have tried to use Blunder lecture as a revision tool in Community Medicine among pre final

year MBBS students and assess its effectiveness in terms of their perception regarding the method and their performance in subsequent internal assessment examination.

Material and Methods

This mixed method study (Qualitative and Quantitative) was conducted among 7th term MBBS students studying in JSS Medical College, Mysuru in the year 2017. The study was approved by Institutional Ethics Committee. After obtaining informed consent from the students, an initial lecture on the topic **"Epidemiology and Prevention of Rabies"** was taken using Power Point Presentation. The date and schedule on which the blunder lecture will be conducted was not announced to the students.

After 15 days of initial lecture, blunder lecture was delivered incorporating 20 mistakes spread over different domains of cognitive learning using same instruction method. These students were asked to identify these blunders and mention them in a checklist. Immediately after the lecture, all the blunders were revealed to the students and the doubts on why these were blunders were clarified. Perception of students on this method of revision was collected in a pre tested semi - structured questionnaire which was self administered.

A week later, the students were categorized into three groups based on number of blunders they had correctly identified (<7 blunders, 8-14 blunders, 15 and above) and three focus group discussions were conducted to gather more in-depth information on what went well and what did not go well in the blunder lecture using a structured focus group guide which was face and content validated by three experts. The proceedings of the FGDs were recorded using a digital voice recorder along with field notes taken down by the recorder. At the end of three FGDs, when there was data saturation further enquiry was stopped.

A structured long essay on the same topic was given in a subsequent internal assessment examination to find out whether there was any correlation between the blunders they have identified and marks secured for the question. Effort was made to find out whether any of the blunders have been reproduced in the examination.

Statistical Analysis

Quantitative data analysis

Data collected was entered in MS Excel Spreadsheet and analyzed using SPSS version 23. Descriptive statistical measures like percentages, mean and Standard deviations were applied. Inferential statistical tests like Pearson correlation was applied to correlate number of blunders with marks obtained in the exam and Unpaired t test was used for testing difference in marks between those attending and did not attend blunder lecture.

Qualitative data analysis

Qualitative data obtained from Focus Group Discussion using digital voice recorder were transcribed. The transcripts were analyzed manually by two analyzers trained in transcript analysis. The perceptions of students were listed across three pre defined themes namely, what went well, what did not go well and suggestions for improvement.

Triangulation of data was conducted by comparing the information through FGDs with that obtained by semi structured questionnaire.

Results

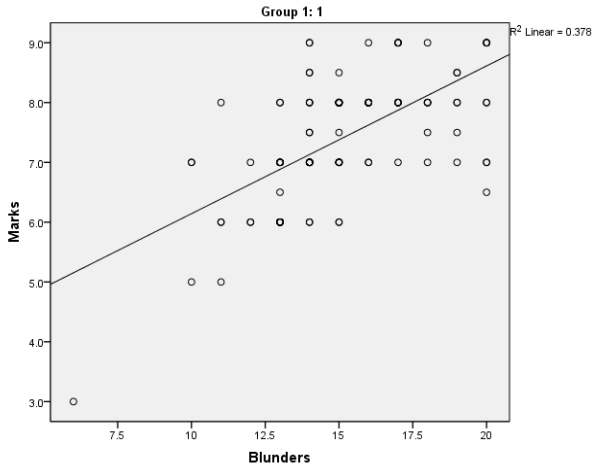
In the class of 206, 118 students were present for both initial lecture and blunder lecture. Among these students, majority 76 (64.4%) have correctly identified $\geq$ 15 blunders, 29(24.6%) detected 8-15 and only 13 (11%) students could identify less than 7 blunders.

115 (97.5%) students mentioned that blunder lecture helped them to recollect previous concepts, and was useful in knowledge retention. 113 (95.7%) mentioned that learning was more fun and helped them being alert in the class. 28 (23.5%) students opined that this method may result in remembering wrong information. There was a strong positive correlation between marks obtained by the students for question on Epidemiology of Rabies and its prevention (Maximum marks of TEN) and the number of blunders identified by the students (r= 0.67, P<0.001). The student who had attended the blunder lectured had secured 7.39 ±1.30 marks compared to their counterparts who did not (4.41 ±1.70). This difference was found to be statistically significant. Content analysis of answers suggested that none of the blunders were repeated in the examinations.

Table 1: Distribution of study subjects based on their perception on blunder lecture

Particular	Number	%
Helped us to recollect previous concepts	**115**	**97.5**
Was useful in retention of knowledge	110	93.2
Helped in memorizing the points quickly	104	88.1
Our concepts got cleared by such lecture	105	89
Helped to find one's learning needs	95	80.5
Learning was much more fun	113	95.7
Kept me alert in the lecture session	115	97.5
We were more attentive in class	113	95.5
The method may result in remembering incorrect information in the examination	28	23.7

Graph 1: Correlation between no. of blunders detected and marks secured in examination



Pearson's correlation coefficient r = 0.67, P <0.001

Table 2. Comparison of Marks of students who attended and not attended blunder lecture

Measures	Attended (n-118)	Did not attend (n-87)	P
Marks secured (Maximum Marks 10)	**7.39** ±1.03	**4.41** ±1.70	**.001**

Results of Focus Group Discussions

The results of focus group discussions are brought under the following three pre-defined themes, namely what went well, what did not go well and suggestions for future.

What went well?

Majority of students opined that blunder lecture is an innovative tool for revision of the concepts learnt in previous sessions in classroom. The session improves attentiveness, concentration level and retention of knowledge from previous classes.

"One of the best revision tool"
"Blunder lecture helped me to concentrate in class"
"Made me realize my mistake"
"Improves memorizing power related to lecture",
"Helps us to understand how much we remember of last class",
"Motivated us to be alert and learn"
"Makes us think in depth"
"Blunder lecture rocks !!"
"We learn better when we find the mistakes of others"
"Will not bunk lectures if it is continued"

Students also felt that blunder lecture was better than the contemporary revision and reinforcement tools like seminar, tutorial and unit test etc.

"More effective than seminars"
"It is better than mere revision classes"
"Better alternatives to tutorials, in which hardly few participate"

Students also felt that blunder lectures break monotony and introduce fun in learning.

What did not go well?

Few students were of opinion that, the blunder lecture may end up in remembering wrong information.

"Method may result in remembering incorrect information"
"Sometimes it is confusing"
"In the heat of the moment in exam we may reproduce wrong answer"

Students also raised the concerns on time consumption by blunder lecture as the same topic has to be repeated and also the amount of efforts to be put forth in designing and executing blunders.

Suggestions for future

Majority of students felt that blunder lecture should be used as a regular revision tool in Community Medicine in place of seminar and tutorials.

"Make it regular revision tool"
"We want blunder lectures more than regular classes"

Students also gave important suggestions like using blunder lectures as assessment tool, making willingness of students conduct the sessions instead of teachers, extend the mode to all the topics in Community Medicine etc. Students also felt that the schedule of blunder lecture should be announced well in advance so that they can brush up their memory and attend the class.

"Blunder lecture can be used as an assessment methods also..!!"
"Should be extended to all the topics"
"Should be done for small group"
"All the other departments can use this technique"

Overall students thoroughly enjoyed the session and felt that the theory lecture classes can be made more interactive by introducing techniques of this kind. They have described that Community Medicine is a volatile subject and taught over three years, revision classes are most essential and hence innovative methods like blunder lecture will surely help them to recollect the concepts.

Discussion

The concept of active learning is gaining much momentum especially in the field of medical education because the students do not want to be just the passive observers in the learning process.[7] Hence, it is recommended that every effort should be made to encourage the use of active methods on firsthand experience.[8] Blunder lecture is one such method of active learning which uses the cognitive conflict strategy by stimulating student ability of inquiry, reflection, and collaborative learning. The present study revealed that about three quarter of the student community could correctly identify the blunders incorporated in the class, similar observations were a made by Satendra Singh in

his study where the response rate was 80%. The very design of blunder lecture is so participatory that students are eager to spot the mistakes and in the process they learn and remember the concepts.[5]

Perception of students on blunder lecture, that the method improves the attentiveness, motivated to be alert, fun filled learning, improving memorizing power were similar to the studies conducted by Satendra Singh[5] and Nayak et al.[9] The common fact that emerges out of these statements is that, something which is uncommon is more interesting. Thus students enjoy the innovations and achieve larger level of satisfaction at the end of an educational experience.[9] Our idea of using blunder lecture as a revision tool was fully endorsed by the students in the focus group discussion. They further recommended this mode of revision in all the other specialties as well. A unique observation of present study is strong positive correlation between blunders identified and the marks secured in the examination. This may be attributed to the fact that students remember the key points out of blunder lectures (which are correct) and stress them well in their examination, the same key points which the examiner identifies for his delight during assessment. My informal interaction with the paper assessors has also revealed the similar point, where one of the assessor mention " I could easily get to see, the one which I wanted" .

Major concern at the beginning while designing the study was reproduction of blunders in examination ???? Similar to the previous two studies conducted in Anatomy and Physiology, none of the blunders were repeated in the examination. This might be because all blunders were corrected in the class itself and an opportunity was provided to discuss the issues further.

Our perceptive and experience of designing and executing a blunder lecture was encouraging in terms of students enthusiasm in terms of active participation and offcourse scoring better than their counterparts.

To conclude, the learning is a process directed towards developing ability for indepth thinking. Indepth thinking is essential because understanding is residue of thinking. Memorizing of contents delivered by teacher kills deep thinking. To encourage thinking we must create a joy, an excitement, and a love for learning. We must make learning fun; because if we are successful, our students will be impatient to run home, study, and contemplate-to really learn.[10] Blunder lecture is one such technique which facilitates deep thinking with fun in learning. There is a need to give a serious thought on incorporating such interactive teaching tools in medical education in order to enhance the quality of output.

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COMPARISON OF SELF-CARE PRACTICES AMONG DIABETIC PATIENTS BETWEEN A SELECTED RURAL AND SEMI URBAN AREA IN SALEM DISTRICT

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Abstract

Background: Type 2 Diabetes Mellitus is a chronic progressive disease with an increasing trend of epidemic proportions throughout the world.There have been very few studies addressing self-care practices among diabetic patients, far fewer in rural areas.**Objectives:** To evaluate self-care practices among diabetic patients in urban and rural areas and to study the difference in them. **Materials & Methods**: The study was a cross sectional study, done in known diabetic patients in Urban field practice area, Annapoorana Medical college and Hospital and rural field practicing area of Vinayaka Missions KirupanandaVaariyar Medical College and Hospital. A total of 200 patients 100 from each area were interviewed. Data was collected by utilizing a demographic questionnaire and the Summary of Diabetes Self-Care Activities questionnaire (SDSCA), which evaluates the status of patients' self-care during last eight weeks and it was compared. **Results**: Of the 100 rural diabetic patients who participated in the study, low levels of self-care were recorded in the domains of foot care (3%), physical activity (39%), regular follow up (31%) and medication adherence (38.4). Urban diabetic patients who were with a higher per capita income were largely found to have better self-care practices.(Chi square-33.31, p-0.001) **Conclusions**: It is usually found that appropriate patients knowledge of self-care is the key to achieving therapeutic goals in ambulatory care. Because the vast majority of day-to-day care in diabetes is handled by patients and/or families, there is an important need for reliable and valid measures for self-management of diabetes.

Key-words: Self-care practices, Diabetics, Field practice area, Domains, SDSCA Questionnaire.

Introduction

Learning Diabetes is one of the most common chronic diseases, and because of its growing trend, is considered to be one of the most important public health problems in the world. The disease has led to 9% of all deaths worldwide, and it is the fifth leading cause of death in Western societies, also the fourth reason for going to a doctor. (1)The prevalence of diabetes mellitus (DM) has been increasing all over the world in past 30 years, and particularly higher prevalence is seen in the Indian Subcontinent. India leads the world with largest number of diabetics subjects earning the dubious distinction of being termed the "diabetes capital world" The prevalence rates have been estimated to be 12% in urban areas and 4% in rural areas. More concerning is the fact the diabetes prevalence over the past four decades has increased fourfold.(2) Diabetes is characterized by a state of chronic hyperglycaemia resulting from several environmental and genetic aetiologies acting jointly.(3)

Increased prevalence in India is attributed to the lifestyle transition coupled with urbanization, industrialization. (4) Diabetic patients are required to follow certain self-care practices to achieve an optimal glycaemic control and prevent complications. These practices include regular physical activity, appropriate dietary practices, daily foot care practice, compliance with treatment regimen, and tackling complications such as hypoglycaemic episodes.(5)Self-care in diabetes is defined as behaviours undertaken by people with or at risk of diabetes in order to successfully manage the disease on their own.These self-care practices are found to be highly beneficial in helping out in preventing them from complications of diabetes mellitus.

There have been very few studies addressing self-care practices in diabetics, far fewer in rural areas where people lack knowledge about the disease. We, therefore, planned to conduct a study in the urban field practice area of Annapoorna Medical College & rural field practicing area of Vinayaka Missions KirupanandaVariyar Medical College and Hospital to document the patterns of self-care

practice among diabetic patients and study the factors associated with self-care practices in these diabetic patients.

Material and Methods

Patients with Type 2 Diabetes Mellitus seeking care at the urban health centre of Annapoorna Medical College, Karungalapatty, Salem and rural health centre of Vinayaka Missions KirupanandaVaariyar Medical College and Hospital, Attayampatty, Salem were interviewed in this cross sectional study. Prior to the onset of the study, ethical approval was obtained from Institutional Ethics Committee (IEC) of AMCH, Salem. A written informed consent was obtained from all the study participants. All the collected information was kept confidential, and it is being used for research purpose only.Total participants of the study were 200 patients 100 from each centre. Known diabetics with more than one year duration had been included in this study. Those diabetics who were seriously ill and unable to practice self-care were excluded from the study.

A sample size of 92 was calculated using reported prevalence of 60% (6) of adequate self-care practices, with 5% level of significance and 95% confidence interval with 10% of true estimate. Data had been collected from April 2017 to Dec 2017. Convenience sampling was used to recruit patients for this study.

The questionnaire was being administered to each patient by one of the investigators. The study questionnaire was adapted from The Summary of Diabetes Self-care Activities (SDSCA) Measure.(7) The questionnaire had captured the socio demographic details, the medical history of the patient, the diabetic history in particular. Prior to the onset of the study, the questionnaire was translated into local language (Tamil) and pre-tested among small group of patients with diabetes and necessary modifications were made in terms of content of the questionnaire and of comprehensibility.

A score of 8-10 is considered as good self care, 5-7 as moderate and 0-4 as poor self care practice.Adherence to medication was being assessed using the Morisky, Green, and Levine (MGL) Adherence Scale. (8) Apart from the self-care aspects, information also been collected in relation to socio-demographic characteristics of the participants such as age, gender, literacy level, occupation, family type and financial dependence etc., Data had been coded and analyzed using Epi info software. Association between categorical variables were analyzed by chi-square test and Fisher's exact test and $p<0.05$ was considered as significant association.

Results

Study found that 46% of the respondents from the rural area were females and 54% of the respondents were males. Majority of the male respondents were in 56-65 years (47.9%).Majority of the female respondents was in 46-65 years (58.8%). With respect to urban respondents, 60% were males and 40% of the respondents were females. Majority of the male respondents were in 46-55 years. (72.2%) Majority of the female respondents were in 65-75 years (56.3%). (Table.1)

Table 1.Socio demographic variables of participants

Socio- demographic variables		Area				
		Urban		Rural		Total
		N	%	N	%	
Age group	26-35	12	20	42	80	54
	36-45	43	50	43	50	48
	46-55	63	51.4	43	48.6	70
	56-65	21	47.7	23	52.3	44
	65-75	11	53.1	16	46.7	30
	>75	2	66.7	1	33.3	3
Education	Illiterate	0	0	5	100	5
	Up to High School	65	42.2	89	57.8	154
	PUC and above	35	85.4	6	14.6	41
Occupation	Skilled	15	75	5	25	20
	Semiskilled	23	44.2	29	55.8	52
	Unskilled	24	44.4	30	55.6	54
	Retired	02	83.3	04	16.7	24
	Housewife	18	36	32	64	50
Family type	3 generation	86	66.7	43	33.3	12
	Nuclear	65	53.6	47	46.4	112
	Joint	23	39.7	35	60.3	58
Financial dependence	Extended	9	50	9	50	18
	Complete	2	20	8	80	10
	Partial	83	53.9	71	46.1	15
	None	09	51.4	85	48.6	175
Socioeconomic status(Monthly Income in Rs)	≥5570	47	64.4	26	35.6	73
	2785-5569	04	47.6	44	52.4	84
	1671-2784	11	42.3	15	57.7	26
	835-1670	2	13.3	13	86.7	15
	<835	0	0	2	100	2
Habits	Smoking	18	32.7	37	67.3	55
	Non-smokers	82	56.6	63	43.4	145
	Alcohol	35	42.7	47	57.3	82
	Non-alcoholic	65	55.1	53	44.9	118

In our study, we found that urban respondents who were better educated, and those with a higher per capita income

were largely found to have better self-care practices in most aspects (Table2-3).

Table.2.Comparison of socio- economic status of Urban and Rural respondents with Total self care score

Socioeconomic status	Total self care score							
	Good		Medium		Low		Total	
(monthly Income in Rs)	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
5570	11	7	29	15	7	4	47	26
2785-5569	4	1	20	12	16	31	40	44
1671-2784	1	1	4	5	6	9	11	15
835-1670	0	0	0	7	2	6	2	13
<835	0	0	0	0	0	2	0	2
Total	16	9	53	39	31	52	100	100

Fisher's exact test -Calculated value-15.5 , P value -0.016 – Urban, df=6
Fisher's exact test - Calculated value-29.2, P value -0.0001- Rural, df=8

Table.3 Comparison of educational status of Urban and rural respondents with Total self care score

	Total self care score							
	Good		Medium		Low		Total	
Education	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Illiterate	0	0	0	2	0	3	0	5
Up to high school	2	4	33	36	30	49	65	89
PUC and above	14	5	20	1	1	0	35	6
Total	16	9	53	39	31	52	100	100

Fisher exact test - Calculated value-33.31 P value -0.0001 – Urban, df=2
Fisher's exact test - Calculated value-43.42 P value -0.0001- Rural, df=4

Table 4.Assessment of six domains to identify the levels of self-care in the respondents

	Area					
	Urban		Rural		Chi	
Domain assessed	No.	%	No.	%	square	P value
Followed advise on diet	61	61	33	33	15.7	0.0001
Physical activity	58	58	48	48	2.01	0.157
Regular blood sugar testing	81	81	39	39	36.8	0.0001
Adequate Foot care	14	14	3	3	7.78	0.005
Regular follow up	78	78	43	43	25.6	0.0001
Adherence to medications						
3&4 (low)	19	19	63	63		
1&2(medium)	64	64	22	22		
0 (good)	17	17	15	15	44.2	0.0001

Six domains were assessed to identify the levels of self-care in the respondents. (Table.4) Better reception of advice regarding food modification and practice of diabetic diet was observed in urban respondents (61%) when compared with the rural respondents (33 %.) and the difference was found to be statistically significant (p=0.0001). Considering the physical activity component, of the urban participants (58%) practiced a physical activity of at least 30 min on at least 5 days in a week whereas rural respondents were lagging behind in their routine physical activities (48%) and the p value not found to be significant(p=0.157).Urban respondents were far better in regular blood glucose monitoring (88%) when compared with rural respondents in which only 39% were regularly monitoring their blood sugar levels which was statistically significant(p=0.0001). Regarding the foot care, both rural and urban areas were found be poor with urban respondents practicing adequate foot care for only 14% whereas rural response was as low as 3% and the observation was found to be statistically significant(p=0.005). Adherence to medication was found to be medium (score1&2) in urban respondents (64%) when majority of rural respondents scored poorly (63%) and it was statistically significant (p=0.0001). (Table.5)

Table 5. Total Self-care Score

	Area					
	Urban		Rural		Chi	P
Score	No.	%	No.	%	square	value
0-4 (low)	31	31	52	52		
5-7 (medium)	53	53	39	39		
8-11(good)	16	16	9	9	9.4	0.009

Discussion

The present study was done to assess the practice of diabetes self-care activities among patients attending rural health and urban heath training centres' of two tertiary care institutions. The authors found that urban respondents who were better educated, and those with a higher per capita income were largely found to have better self-care practices in most aspects and it was found to be statistically significant also. Chiou et al also found that high income was correlated with high self-care ability.(9) Tang et al also found that higher educational attainment were associated with high level of physical activity, and regular glucose monitoring which was similar to our study.(10)

The importance of following a regular dietary plan in terms of both quality and quantity lies in the fact that proper weight management and adequate blood sugar control are linked to it. Present study found that better reception of advice regarding food modification and practice of diabetic diet was observed in urban respondents (61%) when compared with the rural respondents (33 %.) which was in contrast to the study done by Dinesh et al(11) at rural Karnataka reported that good dietary behavior was present only in 24% of the study participants. In contrast to the present urban study results, a study done by Rajasekharan *et al* (12) and Padma et al (13) reported that 46% of the urban participants followed a diet plan regularly. It is important

to stress upon this aspect of dietary self-care behaviors for all the patients with diabetes.

Exercising regularly will have many benefits ranging from reduced insulin resistance, blood pressure control, and cardio-protective role. The present study found that of the urban participants (58%) practiced a physical activity of at least 30 min on at least 5 days in a week whereas rural respondents were lagging behind in their routine physical activities (48%). In contrast to this, the physical activity component of self-care activities appeared to be practiced poorly, as only 43.4% were doing a 30 min exercise every day (Rajasekaran et al (12)), and a study done by Dinesh et al(11) reported that only 19% of the study participants followed the recommended 20–30 min exercise per day for at least 5 days a week which is similar to a study done by Hailu *et al*.(14) Regular exercises are recommended for people with diabetes as they have got many beneficial effects like better blood sugar control, reduction in insulin resistance, better control of blood pressure levels and cardio-protective action.(15) More stress should be placed on the physical activity component of diabetes self-care education.

Regular monitoring of blood sugar levels is vital in the management of diabetes, as it helps in assessing the effectiveness of the ongoing treatment regimen of the patient. In the present study, urban respondents were far better in regular blood glucose monitoring (88%) when compared with rural respondents in which only 39% were regularly monitoring their blood sugar levels. Similar observation has been made by Rajasekaran et al(12) that more than three-fourth of the study participants checked blood sugar levels at least once in 3 months. Similar results were also observed in studies conducted elsewhere(16,17,18). Emphasis should be laid on checking blood sugars as the effectiveness of the treatment regimen can be ascertained only by checking their blood sugars.

The practice of foot care components is essential for the prevention of foot ulcers and subsequent development of a gangrenous lesion that can lead to limb amputations thus resulting in increased disability and handicap. The present study observed that both rural and urban areas were found to be poor, with urban respondents practicing adequate foot care for only 14% whereas rural response was as low as 3%. Similar to this, Dinesh et al(11) found a very low percentage (0.5%) of the study population checked their feet. In contrast to these two studies, in the Chandigarh study, foot care was done by 63.3% of the participants through regular washing (19). In another study by Raithatha et al(20) also showed a higher percentage (82%) washing their feet with soap and water on a daily basis. Present study reported a lower percentage when compared to other studies may be due to the different socio-cultural background. Hence a great deal of improvement in the practices of foot care is required. The fact of poor adherence to medications coupled with poor foot care puts additional risk for the study population. Hence, awareness must be generated in this regard.

Adherence to medication was found to be medium (score 1&2) in urban respondents (64%) when majority of rural respondents scored poorly (63%). Similar observation has also been reported by Rajasekaran et al(12) that adherence to oral hypoglycemic drugs (60.5%) and insulin injections (66.9%) was found to be high among the study participants. The adherence rates to pharmacotherapy in the present study was less compared with the study conducted by *Gopichandran et al*(16) in which an adherence rate of 79% was identified.

Conclusion

It is usually found that appropriate patients knowledge of self-care is the key to achieving therapeutic goals in ambulatory care. Because the vast majority of day-to-day care in diabetes is handled by patients and/or families, there is an important need for reliable and valid measures for self-management of diabetes**.** So enhanced health education activities are to be planned in rural areas to improve the self-care practices in diabetic patients**.**

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QUALITY OF LIFE AMONG PEOPLE OF KNOWN NON-COMMUNICABLE DISEASES IN A RURAL NORTH KARNATAKA.

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Abstract

Introduction: Non communicable diseases (NCDs), such as cardiovascular diseases, cancer, diabetes and chronic respiratory diseases are the leading global cause of death and are responsible for 70% of deaths worldwide.Reliable data on NCD morbidity and Health related quality of Life (Hr-QOL) are unavailable **Objectives:** To assess Quality of Life among Previously diagnosed Non-communicable disease patients in a sub centre of Rural Health & Training Centre of Gadag Institute of Medical Sciences Gadag **Methodology**: A Community based Survey was done in persons already diagnosed Non-communicable diseases and the effect of these NCDs on quality of Life of the individuals. Information regarding socio-demographic profile & quality of life was collected using Standardized WHO-QOL Questionnaire. Data was analyzed using statistical methods with the help of SPSS software. **Results:** In our survey 398 persons having one or more Non Communicable Diseases. Maximum Number of study subjects (50.75%) was in the age group of 40- 59 years. 76.88% were married, 63. 32% were unskilled workers. Among Known NCD persons 32% had Hypertension followed by Diabetes (24%), Arthritis (24%),Asthma (6%) and other diseases like Congestive cardiac failure, Stroke, Blindness contributed 2% each for NCD's. Overall Mean of Quality of life Domain score was 51. 17% ±11. 53. For physical, psychological, Environmental & social Domain mean percentage score were 47.72 ±9.97, 49.93 ±10.88, and 56. 90±13.12 & 49. 97 ±10.9 respectively. **Conclusion:** Overall mean domain percentage score for Environmental domain was greater compared to other domains like Social, Psychological and Physical domains signifying good environmental supports like satisfactory transportation, healthy physical environment, enough money to meet daily requirements, availability of information, ample opportunities for leisure activities, satisfactory living place.

Key-words: Quality of Life, Non-Communicable Diseases, rural area

Introduction

Non-Communicable Disease (NCD), is defined by EURO symposium as "An impairment of bodily structure and/or function that necessitates a modification of the patient's normal life, and has persisted over an extended period of time".[1] NCDs such as cardiovascular diseases, cancer, diabetes and chronic respiratory diseases are the leading global cause of death and are responsible for 70% of deaths worldwide.[2] An estimated 36 million deaths, or 63% of the 57 million deaths that occurred globally in 2008, were due to Non-communicable diseases, comprising mainly cardiovascular diseases (48%), cancers (21%), chronic respiratory diseases (12%) and diabetes(3.5%).[3]The global burden and threat of non-communicable diseases constitutes a major public health challenge that undermines social and economic development throughout the world, and intern has the effect of increasing inequalities between countries and within populations.[4]NCDs contribute to over 60% of the mortality in India that is Cardiovascular Diseases 26%, chronic respiratory diseases 13%, Injuries 12%, Cancers 7%, Diabetes 2%, and Other NCDs 12%.[5]

WHO defines[6] Quality of Life as individuals' perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. It is a broad ranging concept affected in a complex way by the person's physical health, psychological state, level of independence, social relationships, personal beliefs and their relationship to salient features of their environment.

Information about NCD- related morbidity data are important for the management of health- care system and for planning and evaluation of health service delivery. However, comprehensive data on all NCD morbidity and Health related quality of Life (Hr-QOL) is scares . Hence this study is undertaken to find out the Hr-QOL in NCDs Which will help to render required services.

The objective was to assess Quality of Life among Previously diagnosed Non-communicable disease patients in a sub centre of Rural Health and Training Centre of Gadag Institute of Medical Sciences Gadag.

Material and Methods

A Community based Cross-sectional study was conducted after obtaining ethical clearance from institutional ethical committee. Survey was done from January to March 2017 in a sub centre of Rural Health & Training Centre of Gadag Institute of Medical Sciences Gadag to find out already diagnosed Non-communicable diseases and the effect of these NCDs on quality of Life of the individuals.

Rural health and training centre of Gadag Institute Medical Sciences has four sub-centers, of which one sub-centre Binkadakatti having population of 3473 was randomly selected for the study. All the (403) persons having one or the other Non-Communicable disease is enrolled in the study; out of which only 398 persons consented for the study were included in the study and those who did not consent were excluded.

House to house survey was done by trained personnel to collect information regarding socio-demographic profile & quality of life of study participants was collected using Standardized BRIF-WHO-QOL Questionnaire[6] consisting of 26 questions covering quality of life assessment for Physical, Psychological, Environmental and Social domains.

Mean domain percentage score was orbirararily considered to be poor for <40, fair for 40-60, good for >60. Data was collected and entered into Microsoft Excel and analyzed using statistical methods like mean, standard deviation, percentage with the help of SPSS software.

Results

In our survey there were 398 persons having one or more Non Communicable Diseases, out of which 202 were males 196 were females. Maximum Number of study subjects (50.75%) was in the age group of 40- 59 years. 76.88% were married, 36.68% were illiterate, 27.89% were educated till primary education, 63. 32% were unskilled workers, 22. 36% were unemployed.

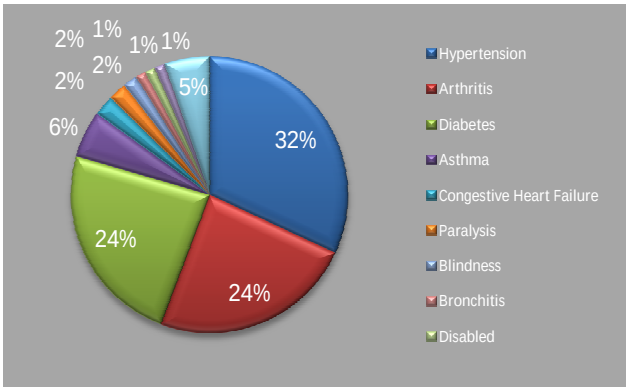
Among the persons already diagnosed having Non communicable Diseases 32% had Hypertension, followed by diabetes & arthritis (24% each),Asthma(6%) , Congestive cardiac failure, paralysis due to stroke, blindness.(2% each)

Overall Mean of Quality of life Domain score was 51. 17% ±11. 53. For physical, psychological, Environmental & social Domain mean percentage score was 47.72 ±9.97, 49.93 ±10.88, and 56. 90±13.12 & 49. 97 ±10.9 respectively. Overall mean domain percentage score for Environmental domain was higher than social domain score follower by psychological & physical domain percentage score.

Table-1: Distribution of study subjects with Non-Communicable Diseases according to their Socio-demographic Profile

Particulars	Male	Female	Total
Age in Years			
20-29	8	12	20
30-39	25	30	55
40-49	63	50	113
50-59	49	40	89
60-69	29	40	69
70-79	22	15	37
>=80	6	9	15
Marital status			
Married	170	136	306
Unmarried	15	11	26
Widow/widower	17	49	66
Educational status :			
Illiterate	57	89	146
Primary	50	61	111
Secondary	43	29	72
PUC	15	9	24
Degree	34	8	42
Master degree	3	0	3
Occupation:			
Unemployed/Retired	56	33	89
Unskilled	100	152	252
Semiskilled	11	2	13
Skilled	10	4	14
Clerical/Business	6	1	7
Semi-professional	0	1	1
Professional	19	3	22
Total	202	196	398

Figure1 :Distribution of Diagnosed Non-Communicable Diseases in survey area.



Discussion

In our survey, among the persons already diagnosed having Non communicable Diseases 32% had Hypertension, followed by diabetes & arthritis (24% each),Asthma(6%) , Congestive cardiac failure, paralysis due to stroke, blindness.(2% each).

Table -2: Distribution of various domain scores for quality of life of persons with Non-communicable diseases

Particulars		Physical Domain percentage Score		Psychological Domain percentage Score		Environmental Domain percentage Score		Social Domain percentage Score		Total Number of Persons
		< 50	≥50	< 50	≥ 50	< 50	≥ 50	< 50	≥ 50	
Number of Persons With Non- Communicable Diseases	**Hypertension**	57	53	47	63	17	93	49	61	**110**
	Arthritis	52	47	46	53	17	82	34	65	**99**
	Diabetes	38	44	35	47	14	68	25	57	**82**
	Asthma	14	7	7	14	8	13	10	11	**21**
	Diabetes & Hypertension	12	6	9	9	4	14	7	11	**18**
	Congestive Heart Failure	7	3	7	3	2	8	5	5	**10**
	Paralysis	4	5	3	6	0	9	6	3	**9**
	Blindness	4	3	5	2	2	5	3	4	**7**
	Bronchitis	5	0	4	1	1	4	4	1	**5**
	Accident	3	1	3	1	0	4	1	3	**4**
	Cancer	3	1	2	2	1	3	3	1	**4**
	COPD	4	0	2	2	1	3	2	2	**4**
	Deaf	3	0	3	0	0	3	2	1	**3**
	Disabled	4	1	3	2	2	3	2	3	**5**
	Dumb	1	1	0	2	0	2	2	0	**2**
	Psychiatric Illness	1	1	1	1	0	2	1	1	**2**
	Renal Failure	2	1	0	3	1	2	1	2	**3**
	Epilepsy	1	0	0	1	1	0	1	0	**1**
	Hypothyroidism	0	1	1	0	0	1	0	1	**1**
	Migraine	0	1	1	0	0	1	0	1	**1**
	Skin Disease	0	1	0	1	0	1	1	0	**1**
	Diabetes, Hypertension &Asthma	1	0	0	1	0	1	0	1	**1**
	Hypertension & Arthritis	1	1	1	1	0	2	0	2	**2**
	Hypertension & Asthma	0	2	0	2	0	2	0	2	**2**
	Hypertension & Epilepsy	0	1	0	1	0	1	0	1	**1**
		217	**181**	**180**	**218**	**71**	**327**	**159**	**239**	**398**
Mean domain scores		**47.72, SD =+/- 9.97**		**49.93, SD=+/- 10.88**		**56.90, SD=+/-13.12**		**49.97, SD=+/-10.09**		**51.17, SD=+/- 11.53**

Similarly in a study done in Manipal in 2015 by Anju Rose, majority (52.5%) had hypertension followed by diabetes (18%).[7] In a study done in Udupi [8] in 2012, by Asadullah Md et.al in Old age inmates , hypertension (47. 8%) & Diabetes (43. 5%) were most common morbidities. In a study done in Malaysia[9] in 2012 by Sazlina, S.G, 41.8% and 33.7% of the participants had hypertension and type 2 diabetes, respectively; Other NCDs included asthma (4.8%), hyperlipidaemia (1.7%), coronary heart disease (1.2%), and osteoarthritis (0.2%).

Overall Mean of Quality of life Domain score was 51. 17% ±11. 53. For physical, psychological, Environmental & social Domain mean percentage score was 47.72 ±9.97, 49.93 ±10.88, and 56. 90±13.12 & 49. 97 ±10.9 respectively. Overall mean domain percentage score for Environmental domain was higher than social domain score follower by psychological & physical domain percentage score.

In a study done in old age home in Udapi [8] by Md Asadullah**,** the mean score of physical, psychological,

environmental & social domains were 53.71±15.64, 58.16±13.57, 34.66±14.87 and 60.46±10.14 respectively. The poor social domain scores may be because of the miserable social relationship of inmates of old age homes with family, friends and community.
In a study by Sazlina, S.G [9] Increasing age, presence of comorbid conditions were predictors of poor physical quality of life; older women, poor social support were predictors of poor mental quality of life.

In a study done in Belgaum [10] by Raghavendra N, to assess the quality of life of type 2 diabetes mellitus patients, 48.6% had good QOL. Diabetes had significantly affected Hr-QOL particularly the social relationship domain. Participants with older age, obesity, longer duration of DM had poor QOL.

In a study conducted Mandya [11] by MP Sheethal to Asses the quality of life among anganwadi workers overall quality of life percentage score was 61. AWWs had higher scores among the social (69) and physical (63) domains compared with the psychological (56) and environmental (56s) domains People with diabetes mellitus have good quality of life when compared to other diseases such as hypertension, asthma and both diabetes mellitus& hypertension.

Conclusion: Overall mean domain percentage score for Environmental domain was greater compared to other domains like Social, Psychological and Physical domains signifying good environmental supports like satisfactory transportation, healthy physical environment, enough money to meet daily requirements, availability of information, ample opportunities for leisure activities, satisfactory living place.

Recommendation: Despite presence of NCD clinic, awareness and its utilization is poor. Awareness needs to be created on self care in the general population and need to be motivated to utilize services.
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DEPRESSION AND ITS PREDICTORS AMONG ELDERLY POPULATION IN AN URBAN COMMUNITY IN PUDUCHERRY

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Abstract

Background: Depression is commonly encountered in elderly population. The symptoms associated with depression are likely to be dismissed as 'normal' by self as well as family caregivers. Other than organic causes, social factors play a significant role in development of depression. In many primary care settings, patients presenting with depression often do not get diagnosed. **Objectives:** To assess the burden of depression and its association with socio demographic predictors among elderly population in a selected urban community in Puducherry. **Material and Methods:** A community based cross sectional study was conducted among 150 randomly selected elderly persons in the urban service areas of a medical college. Socio demographic details, activities of daily living, family care and social interaction particulars were collected. Geriatric Depression Scale-15 screening questionnaire was used to assess depression. **Results:** The mean age of the participants was 69.8±7.2 years. Two-thirds participants (70.3%) reported good family care. About half (52.4%) of the participants had good social interaction and 38.6% had depression. More women (48.6%) reported depression than men (28.2%). Female gender, living alone, poor family care, dependency in activities of daily living, perceived burden and less social interaction were significantly ($p<0.05$) associated with depression. **Conclusion:** Community screening of elderly for depression can be a made a routine practice in primary health care settings. Risk factors could be identified and alleviated to improve the quality of life of the elderly.

Key-words: Caregivers, Depression, Interpersonal relations, Social isolation.

Introduction

People worldwide are living longer and the pace of population ageing is also increasing dramatically.[1] In India, the proportion of elderly population (≥ 60 years) is likely to increase from the current 8.1% to 11% in 2025 and 20% by 2050.[2,3,4] A major concern among this rapid ageing population is the increasing prevalence of cardiovascular diseases, respiratory diseases, neurological and mental disorders. Among the mental disorders, depression is commonly encountered.

Depression is associated with an increased risk of decreased cognitive and social functioning of the elderly.[5] Depression when compounded with cardiovascular morbidities worsens their clinical outcomes. It also reduces the activities of daily living of a person and his ability to rehabilitate.[6] Late identification of depression affects the quality of life of the elderly.[1,7] Studies have reported association between socio demographic factors and depression among the elderly. Female gender, lower educational attainment, income inadequacy, and major life events are predicted as possible risk factors associated with geriatric depression.[5,7,8,9].

Most often, the symptoms that the older people present with does not meet the diagnostic criteria for a depressive disorder. Hence they are under-identified by healthcare professionals, family caregivers and the aged people themselves. [1,4] In many primary care settings, depression of elderly patients does not get screened often. If identified early, depression can be treated at primary care level with locally available cost-effective interventions.[5]

Given the significant impact of depression on elderly and need for its early identification, this study was conducted to assess the prevalence of depression and its relationship with socio demographic factors in selected urban areas of Puducherry where no prior studies had been conducted on this aspect. The identified protective and risk factors can help in formulating interventions to improve quality of life of elderly in these areas.[5]

Material and Methods

Study Design, Area & Population: A community based cross sectional study was conducted among elderly persons aged 60 years and above during the period November 2015 to February 2016, in the service areas of Urban Health Training Centre (UHTC), attached to Community Medicine Department of a Medical College in Puducherry. The Centre has been providing outpatient as well as outreach services to the surrounding 11 wards, comprising a population of 7379.

Sample Size :Taking the prevalence of depression among elderly as 47% from a study done in Tamilnadu[10], relative precision as 18% and an expected non-response rate of 10%, the sample size was calculated as 150 using OpenEpi software.

Data Collection Instrument:The data collection instrument included three sections. The first section comprised of socio demographic information covering parameters namely age, gender, marital status, education, socio economic status, present employment status, financial dependence and type of family system, the participant was currently residing in. Modified Kuppusamy scale was used to assess the socio economic status.[4] The second section included questions to assess information on activities of daily living, family care and social interaction status of the participants. Activities of daily living were assessed using Katz Index of Independence in Activities of Daily Living (ADL) Scale.[11] Family care and Social interaction questions were adopted from an earlier study [12] and modified to local culture. Content validity was obtained from experts. There were 5 questions related to family care and 5 questions related to social interaction. The responses were scored 0,1,2 and 3. A score of $\geq$ 6 was considered good and a score of < 6 was considered as poor family care. Similarly for social interaction, a score of $\geq$7 was considered good and a score less than 7 was considered as poor interaction. The third part comprised of Geriatric Depression Scale (GDS-15). It had 15 questions designed to elicit symptoms found in depression by means of yes / no answers. The maximum score was 15. Depression was considered to be present for a score of >5. This scale has a sensitivity of 80% and specificity of 75%.[13] Suggestions were obtained from a psychiatrist in appropriate translation of the GDS -15 english version to tamil.

Data Collection:The questionnaire was pretested with elderly patients in the outpatient department of UHTC and necessary modifications were made. From the family registers of the wards, the required sample was randomly selected. The elderly persons were identified with the help of field workers, informed about the study, assured confidentiality and enrolled, after obtaining consent. Sick persons were excluded from the study.

Statistical Analysis:Statistical analysis of the data was done using SPSS Version 23. Mean, Standard Deviation and Proportions were calculated. Chi Square Test and Odds Ratio were applied to check association of socio demographic variables with depression. Logistic Regression model was used to analyze the independent effects of the variables on depression.

Results

The mean age of the participants was 69.8$\pm$7.2 years. The mean age of women (70.4$\pm$7.5 years) was higher than men (69.2$\pm$6.9 years). More women (14.2%) were above 80 years than men (9.6%). Among the illiterates, there were more women (70.7%) than men (29.3%). Among the widowed, majority (78.8%) were women. While 17.3% of the participants were still working, 12% were retired and 18.7% were receiving old age pension. Nearly half (52%) had no source of income (Table I).

Table 1: Socio Demographic Characters of the Study Population

Baseline Characters	Males (n=73)		Females (n=77)		Total (N=150)	
	No.	%	No.	%	No.	%
Age Group (years)						
60-64	25	34.2	22	28.6	47	31.3
65-69	17	23.3	16	20.8	33	22.0
70-74	15	20.5	17	22.1	32	21.3
75-79	9	12.4	11	14.3	20	13.3
80-84	4	5.5	6	7.8	10	6.7
85- 89	3	4.1	5	6.4	8	5.4
Marital Status						
Married	58	79.4	21	27.3	79	52.6
Widowed	15	20.6	56	72.7	71	47.4
Education Status						
Nil	29	39.7	70	90.9	99	66.6
Primary	31	42.5	6	7.8	36	24.0
Secondary	10	13.7	1	1.3	11	7.4
High School	3	4.1			3	2.0
Income Status						
Currently Working	14	19.3	12	15.6	26	17.3
Retired	15	20.5	3	3.9	18	12.0
Old age Pension	15	20.5	13	16.9	28	18.7
No source of Income	29	39.7	49	63.6	78	52.0

Good family care was reported by 102 participants (70.3%). Only half (52.4%) of the subjects had good social interaction. About 31.7% perceived being a burden to their family members. The GDS scale was administered to 145 participants. About 38.6% of the subjects had depression. More women (48.6%) reported depression than men (28.2%). It was statistically significant (<0.01). In univariate analysis, female gender [OR 2.4(95% CI 1.2 - 4.8)], living alone[OR 4.6(95% CI 1.3-15.5)] , poor family care [OR 6.7(95% CI 3.1-14.8)], dependency in ADL [OR 2.7(95% CI 1.1-7.8)], perceived burden[OR14.2(95% CI 6.1-33.4)] and less social interaction [OR4.5 (95% CI 2.2-9.2)] were significantly ($p<0.05$) associated with depression (Table II). In logistic regression analysis, perceived burden [OR 11.48 (95% CI 4.19-31.48)], family care [OR 3.52 (95% CI

1.31-9.50)] and social interaction [OR 5.55(95% CI 2.15-14.31)] were independently associated with depression (Table III).

Table II: Univariate Analysis of Socio Demographic Variables and Depression (N=145)

Socio Demograhic Variables	Depression		Odds Ratio (95%CI)	X^2 (p value)
	Present (n=56) No. (%)	Absent (n=89) No. (%)		
Age Group(years)				
60-69	29 (36.2)	51 (63.8)	1	0.6(0.72)
70-79	20 (40.0)	30 (60.0)	1.2(0.5-2.4)	
80-89	7 (46.7)	8 (53.3)	1.5(0.5-4.7)	
Gender				
Male	20 (28.2)	51 (71.8)	1	6.4(0.01)
Female	36 (48.6)	38 (51.4)	2.4(1.2 - 4.8)	
Marital Status				
Married	28(36.4)	49(63.6)	1	0.3(0.55)
Widowed	28(41.2)	40(58.8)	1.2(0.6-2.4)	
SES				
Lower	19(51.4)	18(48.6)	1	4.7(0.09)
Middle	29(37.7)	48(62.3)	0.5(0.2-1.2)	
Upper	8(25.8)	23(74.2)	0.3(0.1-0.9)	
Family Type				
Living with children	46(35.1)	85(64.9)	1	
Alone	10(71.4)	4(28.6)	4.6(1.3-15.5)	7.1(0.007)
Burden				
No	20(20.2)	79(79.8)	1	
Yes	36(78.3)	10(21.7)	14.2(6.1-33.4)	44.6(0.001)
Family Care				
Good	26(25.4)	76(74.6)	1	
Poor	30(69.8)	13(30.2)	6.7(3.1-14.8)	25.1(0.01)
ADL				
Independent	6(21.4)	22(78.6)	1	
Dependent	50(42.7)	67(57.3)	2.7(1.1-7.8)	4.3(0.03)
Social Interaction				
Good	17(22.4)	59(77.6)	1	
Poor	39(56.5)	30(43.5)	4.5(2.2-9.2)	17.8(0.001)

Table III. Independent Association of Socio Demographic variables with Depression

SocioDemograhic Variables	Adjusted Odds Ratio (95%CI)	(p value)
Family Care	3.52 (1.31- 9.50)	0.013
Social Interaction	5.55 (2.15-14.31)	0
Burden	11.48 (4.19- 31.48)	0

Discussion

Among the study population, nearly two thirds were illiterates and half were with lack of economic independence and belonged to middle income group. Similar findings were observed in the study by Kulkarni et al. in Dharwad.[14] More than one third participants (38.6%) had depression. Community based studies from India had reported variable rates (11.4% to 61.4%) of depression.[8,15] The most likely reason for the disparity may be the non-uniform methodology adopted in the studies.[8] The high prevalence in our study could be due to small sample size.

Family system plays a significant role in health in Asian society. Respect and care for elderly and joint family system have been part of our tradition and culture in the past, but at present, with moving out of the young adults of the family on employment grounds, the joint family system and family values are gradually being eroded, which have affected the social health of the elderly. Studies have reported that incidence of depression in older adults living in joint family system is lesser than those living in nuclear family.[7,9,12,15,16] Similar finding was observed in the present study. Good family support was found to be a protective factor against depression. Perceived sense of burden was found to be a significant predictor for depression. These findings are substantiated by previous studies that have reported that negligence by family members, lack of affection and care at the later stage of life are important factors for depression among elderly.[8,9,15]

We observed that depression was associated more with female gender and widowed status. Similar findings were reported from studies in India [17,18,19] and abroad.[20] The findings highlight the fact that elderly women need special attention.[2,3] Depressive symptoms were low in the elderly who were functionally independent. This finding is supported by other studies. [15,16,18,21] In a study in Brazil , as cited by Saha[16] physically active elderly had a 68% lower probability of having depressive symptoms compared with those who were not sufficiently active. It has to be remembered that functional status can also be deteriorated by depression.[6] Early identification and treatment for depression can improve elderly persons' quality of life by reducing dependence on others. [21]

In the present study, less social interaction was linked to high depression scores. Similar observation was noted in the study by Borges et al.[22] This signals the importance of a social network in staying healthy and in preventing depression in the elderly. It is also possible that it may increase the increase the self-esteem of older people. People who are socially isolated and with less interaction have poor quality of life. It would be important to motivate them for better interaction, identify and rectify the reasons for poor social interaction. [22]

Limitation

GDS 15 was a screening tool. Further confirmation of diagnosis by psychiatrist could not be made for the identified subjects. The low sample size restricts the generalizability of the findings of the study to entire urban elderly in Puducherry. As it was a cross-sectional design, the cause and effect relationships between the variables

and depression could not be defined. On the other hand, the high response rate contributed to the study's internal validity. Further analytical studies are needed to find out the association between predictors and depression.

Ethical Consideration

Permission was obtained from Institutional Ethics Committee prior to the study. During the course of the study, all the participants were provided a general health check up and appropriate health counseling.

Conclusion

The high prevalence of depression observed in the study warrants the need for effective, community level primary mental health care for older people. As good general health and social care is important for improving the quality of life of elderly, training health providers for early identification of depression among the elderly is essential.[23] It is equally important to provide caregivers with counseling, education, training and support. Social security and rehabilitation measures schemes should be made reached for the needy elderly people.

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EVALUATION OF WEEKLY IRON AND FOLIC ACID SUPPLEMENTATION PROGRAM FOR ADOLESCENTS IN RURAL KANCHIPURAM, INDIA

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Abstract

Background: Adolescent anaemia is a long standing public health problem in India. The NFHS-3 data suggests that the prevalence of anaemia among adolescent Indian girls (15–19 years) is 56%. The Government of India launched weekly Iron and Folic Acid Supplementation (WIFS) Programme on 2013 to cope up with the problem of iron deficiency anaemia among adolescent boys and girls. **Objective:** The present study was done to assess the knowledge, attitude and practice regarding anaemia and weekly iron and folic acid supplementation program by government of India for adolescents in rural Kanchipuram **Material and Methods:** A Cross sectional study was carried out among all the teachers and adolescents studying at schools located in the Field practice area of Meenakshi Medical College and Research Institute, Kanchipuram using a structured questionnaire. Data was entered and analyzed by using Statistical Package for Social Sciences (SPSS) (version 21.0) software package. **Results:** Among 353 respondents, 331 were students and 22 were teachers. Out of 331 students, 53.8% were males and 46.2% were females. Majority of the students (83.7%) consumed Iron and Folic acid (IFA) tablets regularly. 79.2% of the respondents have not experienced any side effects. Although 76.2 % of the students were aware about anemia and 55.1 % stated that the source of information is from school, 70.5 % students were not aware of the symptoms of anemia. More than half the respondents were able to identify correctly the composition of the Iron and folic acid tablets. The teachers reported that the supply, stock and storage of IFA tablets was regular and adequate.**Conclusions:** Giving IFA supplementation alone is not sufficient to correct anemia, this has to be combined with improving the the awareness about anemia and how to prevent it.

Key-words: Adolescence, anemia, Iron and Folic acid tablets

Introduction

Adolescence is a period of transition from childhood to adulthood, During this period in life there is significant increase in nutritional requirements, especially iron.[1] Adolescent anaemia is a long standing public health problem in India. According to the National Family Health Survey III, 56% adolescent girls and 30% adolescent boys in India are anaemic.[2] Studies have shown that rural areas had a better compliance to iron folic acid (IFA) tablet consumption in rural areas as compared to urban areas.[3] Efficiency of weekly iron supplementation in the control of nutritional anaemia has been demonstrated in various research settings of India. The Weekly Iron and Folic Acid Supplementation (WIFS) program had shown various benefits in the health of adolescent girls like an increased appetite, reduction in the symptoms of anaemia like menstrual irregularities,tiredness and weakness.[4-8] The Ministry of Health and Family Welfare, Government of India had launched the Weekly Iron and Folic Acid Supplementation (WIFS) program for school going adolescent girls and boys to address this problem. The program is implemented at schools by teachers and principals of respective schools and through anganwadi workers for adolescent girls who are out of school.The present study was conducted to evaluate the Weekly Iron and Folic Acid Supplementation program implemented in schools in a rural Kanchipuram, Tamilnadu.

Materials and Methods

The present study was a community based Cross sectional study carried out among all the teachers and adolescents studying at schools located in the Rural field practice area of Department of Community Medicine, Meenakshi Medical College Hospital and Research Institute. We interviewed all the teachers and adolescent students to evaluate the impact of WIFS program in the schools. The sample size for the study was 353 respondents, among them, 331 were students and 22 were teachers. From the students, we recorded information

regarding Knowledge & Awareness about anaemia, WIFS program, consumption of Iron Folic Acid tablets, Side effects experienced, Reason for not taking tablets, experienced Benefits of Iron folic acid supplementation. From the teachers we collected information regarding supply, stock and storage of IFA tablets. Information regarding health education provided to the teachers and students were also recorded. Data was entered and analyzed by using Statistical Package for Social Sciences (SPSS) (version 21.0) software package. The study was carried out after obtaining necessary permissions from the concerned authorities. Assent and informed consent was obtained from the students and parents prior to initiation of the study.

Results

A total of 331 students (178 boys and 153 girls) were interviewed. Most of the students were from class seven and eight[Table 1]. More than 70% of children had no idea about the symptoms of anemia, while 42(12.75%) and 37(11.15%) students mentioned tiredness and breathlessness as the main symptom of anemia respectively [Table 2]. Most of the student 125(37.85%) said that they have heard about anemia from their teachers and 57(17.25%) students have heard it from some health personnel [Table 2].

Table 1: Distribution of student respondents based on age & class (n = 331)

Class Distribution	Male (n=178) n (%)	Female (n=153) n (%)	Total
6 std	37 (20.8)	31 (20.3)	68(20.55)
7 std	51 (28.7)	38 (24.8)	89(26.75)
8 std	41 (23.0)	42 (27.5)	83(25.25)
9 std	22 (12.4)	16 (10.5)	38(11.45)
10 std	27 (15.2)	26 (17.0)	53(16.1)

Table 2: Knowledge & Awareness regarding anemia among students (n=331)

	Male (n=178) n (%)	Female(n=153) n (%)	Total n(%)
Are IFA tablets good for health?			
Yes	119 (66.9)	131 (85.6)	250(76.4)
No	59 (33.1)	22 (14.4)	81(23.75)
IFA tablets contains			
Iron	37 (20.8)	43 (28.1)	80(24.16)
Folic acid	-	-	
Both Iron & Folic acid	47 (26.4)	47 (30.7)	94(28.39)
Don't know	94 (52.8)	63 (41.2)	157(47.43)
Most important benefit of IFA tablets			
Improved sense of wellbeing	18 (10.1)	5 (3.3)	23(6.7)
Reduction in tiredness	13 (7.3)	11 (7.2)	24(7.25)
Weight gain	8 (4.5)	11 (7.2)	19(5.85)
No benefit	139 (78.1)	126 (82.4)	265(80.25)

Table 4: Consumption of Iron & Folic Acid tablets among students (n=331)

	Male (n=178) n (%)	Female (n=153) n (%)	Total
Whether consumed Iron Folic Acid tablets?			
Yes	178 (100)	153 (100)	331(100)
No	-	-	
Total tablet consumed in last 4 weeks			
1	17 (9.6)	8 (5.2)	25(7.4)
2	10 (5.6)	5 (3.3)	15(4.45)
3	10 (5.6)	5 (3.3)	15(4.45)
4	141 (79.2)	135 (88.2)	276(83.7)
Time tablets were taken			
Before food	14 (7.9)	2 (1.3)	16(4.6)
After food	164 (92.1)	151 (98.7)	315(95.4)

Table 5: Most Important Reason for not taking all 4 tablets (n=55)

Particulars	Male (n=37) n (%)	Female(n=18) n (%)	Total
Not given	12 (32.4)	8 (44.4)	20(38.4)
Side effects	10 (27.0)	5 (27.8)	15(27.4)
Absenteeism	10 (27.0)	2 (11.1)	12(19.05)
Taste not good	4 (10.8)	2 (11.1)	6(10.95)
Parent opposed	1 (2.7)	1 (5.6)	2(4.15)

Table 6: Side effects experienced by students (who have taken all 4 tablets) (n=276)

Particulars	Male (n=141) n (%)	Female(n=135) n (%)	Total
Abdomen pain	12 (8.5)	16 (11.9)	28(10.2)
Nausea	2 (1.4)	2 (1.5)	4(1.45)
Headache	4 (2.8)	7 (5.2)	11(4)
Black stools	3 (2.1)	8 (5.9)	11(4)
Bad taste	-	3 (2.2)	3(2.2)
No side effects	120 (85.1)	99 (73.3)	219(79.2)

Only 94 (28.39%) students could correctly mention that IFA tablet contains both iron and folic acid [Table 3]. Regarding the benefits of IFA tablet, most of the students 265(80%) said it had no benefit at all [Table 3]. All 331 students reported to have consumed IFA tablets at school [Table 4]. Most of the students, 276(83.7%), had taken all the four tablets in the last 4 weeks [Table 4]. Again most of them, 315(95.4%) had taken it after food [Table 4]. Among those who had not taken all the four tablets in last four weeks, 20(38.4) reported not being given the tablet and another 15(27.4%) attributed the reason for not taking tablets was due to various side effects of the tablet [Table 5]. On the other side those who had taken all the four tablets in last four weeks, most 219(79.2%) students had no side effects. Among those who had side effects, majority experienced abdominal pain [Table 6]. All teachers reported regular supply of IFA tablets for the

program. Further they maintained that they have adequate stock of IFA tablet and storage is not an issue.

Discussion

Our study assessed the awareness about anemia and its symptoms among the school students. We found that, 76.2% students were aware about anemia but most of them (70.5%) could not correctly mention the symptoms of anemia. Similar findings were reported in another study done in Chennai which conclude that the awareness of anemia and its causes are very low among school students, especially in government schools.[9] In our study only 28.3% students correctly told the composition of IFA tablet. This is in contrast to a previous study done in rural Puducherry, where majorities (88.7%) of adolescents were able to identify the composition of IFA tablet.[10] There is a need to make the students more aware about the IFA tablets and its benefit. This can be done directly by the teachers who can explain the students about the benefits of IFA and also indirectly by sensitizing the parents on the issue. Eighty three percent (83.7%) students, in our study, reported to have consumed all the four tablets in the last four weeks. This was in agreement with previous study in rural Puducherry which reported 85.8% of students had consumed all four tablets. [10] Our study reported that majority(79.2%) of students had no side effects. This was similar to the findings in another study, which reported 87.5% respondents had no side effects. [10] This should be emphasized to parents and children who are taking as well as to those who are not taking the IFA tablets regularly. Teachers reported that supply, stock and storage of IFA tablets were regular and adequate. Among those who had not taken all the four tablets, 38.4% said that it was not given to them. Viewed in the light of no stock issue, this needs serious attention. The teachers should also be periodically motivated to keep the program going.

Conclusion

Periodic evaluation is required to assess the impact of the weekly iron folic acid supplementation program. There is an increased need for promoting awareness among all concerned stakeholders (teachers, parents and school children) in order to increase the compliance. Effective awareness programs could increase the increased utilisation of the program.

Limitations:

The comparison of the before and after effects of the WIFS program in terms of hemoglobin levels could have been more insightful in understanding the effectiveness of the program, Since the pre-program data was not available the hemoglobin estimation was not carried out.

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PREVALENCE OF INTENTIONAL AND UNINTENTIONAL INJURIES AMONG ADOLESCENTS OF RURAL AND URBAN SHIVAMOGGA – A CROSS-SECTIONAL STUDY

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Abstract

Introduction: adolescents constitute 20.9% of the Indian population. The problems of adolescents are multi-dimensional in nature and require a holistic approach. **They** are particularly susceptible to high-risk behaviour. Hence, it is important to assess the risk behaviour possessed by the adolescent population. **Objectives:** to determine the prevalence of intentional and unintentional injuries among rural and urban adolescents. **Methods:** the study was conducted in urban and rural field practice areas of Shivamogga institute of medical sciences, Shivamogga. Multistage random sampling done to get sample size of 193 in each urban and rural areas. Data was collected after informed consent using pre-tested semi-structured questionnaire and analyzed in epi info. **Results:** among bike riders in urban 50 (31.25%) wear helmet while driving whereas in rural only 33(25.98%) wear helmet while driving. In urban 46 (73.02%) never wear seat belt, 9 (14.29%) adolescents sometime wear seat belt and 8 (12.70%) adolescents always wear seat belt promptly whenever they drive car. In rural 51 (70.83%) never wear seat belt, 16 (22.22%) adolescents sometime wear seat belt and 5 (6.94%) adolescents always wear helmet promptly. 114 (7.50%) adolescents in urban claimed to involved in physical fight where in rural, 111 (46.25%) adolescents were involved in physical fight. **Conclusion:** There has been an increasing need of inculcating health practices in this age group through different channels to unleash their true potential. The findings will help the policy makers to device appropriate measures to cater to the needs of this vulnerable section of the society.

Key-words: adolescent health, health risk behaviour, intentional injury.

Introduction

Adolescence Latin meaning of the word "*Adolescere*" is to grow, to mature. It is a period of transition from childhood to adulthood. They are no longer children, but yet, not adults. 20.9% of the Indian population consists of adolescents.[1]More than 33% of the disease burden and almost 60% of premature adult deaths can be associated with behaviours that begin or occur during adolescence.[2] In the year 1990, CDC Atlanta has developed the tool by the name "The Youth Risk Behaviour Surveillance System (YRBSS)" to monitor priority health risk behaviours that contribute markedly to the leading causes of morbidity and mortality among youth and adults.[3] The tool classify health risk behaviours into six categories. They are behaviours that contribute to unintentional injuries and intentional injuries, Tobacco use, Alcohol and other drug use, Sexual behaviours that contribute to sexually transmitted diseases, HIV and unwanted pregnancies, Unhealthy dietary behaviours, Inadequate physical activity[4]. The process surrounding high-risk behaviours can be complex. Risk behaviour is defined as specific form of behaviour, which is proven to be associated with increased susceptibility to a specific disease or ill-health.[5]These behaviours are often established during late adolescence. Hence, it is important to assess the risk behaviour possessed by the adolescent population. Problems in this age group are multi-dimensional and require a holistic approach. The findings will help to plan the interventions at earlier stages of life. Objective of this study was to assess some of the health risk behaviours which contribute to intentional and unintentional injuries like not wearing helmet and using mobile phone while driving, carrying weapons, involving in physical fight, bullying and suicidal tendencies among rural and urban adolescents.

Material and Methods

A descriptive community based cross-sectional study is selected at rural and urban field practice areas of SIMS Shivamogga. One ward and a sub-centre will be selected by simple random sampling, will form the primary sampling units. The households in these areas will be the secondary sampling units. The households for collection of data in these locations will be selected by systematic

random sampling. First house was selected randomly, and then on, every 4th house was selected for the study. All the eligible adolescents (10- 19 years age group) from each household were interviewed till the sample size is reached. If the required sample is not attained, wards or sub centre in the immediate adjacent area will be included. Anticipated population prevalence 50%, the sample size comes to 193 in each urban and rural areas.[6]Considering 20% of nonresponse rate and after rounding off 240 subjects were included each in urban and rural areas. Data was collected by House-to-house visit through interviews using a standardized, pre-tested, semi-structured questionnaire. Confidentiality was given utmost importance by maintaining anonymity. Informed written consent was taken. Epi info (Version 7) was used for performing the statistical analyses.

Results

Out of 480 study participants, 240 were from urban and rural each. In urban, 64 (26.67%) were early adolescents of age group 10-14 and 176 (73.33%) were late adolescents of age group 15-19. In rural, 87 (36.25%) were early adolescents of age group 10-14 and 153 (63.75%) were late adolescents of age group 15-19 (Table 1). Among 240 urban adolescents 148 were boys and 92 were girls and among rural adolescents 114 were boys and 126 were girls(Table 1).

Table 1. Age and sex wise distribution of adolescents.

PARTICULARS	URBAN	RURAL
AGE		
Early (10-14yrs)	64(27%)	87(36%)
Late (15-19yrs)	176(73%)	153(64%)
SEX		
Boys	148(61.6%)	114(47.5%)
Girls	92(38.3%)	127(52.9%)

In urban, 160 (66.67%) adolescents ride bike compared to 127 (52.92%) adolescents in rural. Among all 287 adolescents who ride bike only 83 (28.92%) adolescents use helmet. In that 50 (31.25%) bike riders are from urban who wear helmet whereas 33 (25.98%) were from rural. This study shows almost half of the adolescents both in urban and rural are involved in physical fight in past 30 days (Table 2).

In urban, 104 (43.33%) adolescents were bullied by their peer one or the other time in comparison to rural [71 (29.58%). This difference among rural and urban is statistically highly significant (Chi-Square-12.203, p-0.0022).In urban, 17 (7.08%) adolescents thought of committing suicide whereas 7 (2.92%) thought the same in rural. This difference is statistically significant (Chi square-4.39, $p < 0.05$).In urban, 10 (4.17%) adolescents have planned a suicide attempt and 6 (2.50%) have tried to attempt suicide.

Table 2. Prevalence of Risk Behaviours among adolescents.

Risk Behaviours	Urban N = 240	Rural N = 240	Significance
Wearing Helmet			
Yes	50 (31.25%)	33(25.98%)	X^2 =0.955
No	110(68.75%)	94(74.02%)	p = 0.32
Mobile Usage WhileRiding			
Never	221 (92.08%)	220 (91.67%)	
Sometimes	16 (6.67%)	17 (7.08%)	X^2 =0.032
Always	3 (1.25%)	3 (1.25%)	p = 0.98
Carried Weapon			
Yes	3 (1.25%)	1 (0.42%)	
No	237 (98.75%)	238 (99.17%)	X^2 =2.002
Can't Tell	0 (0.00%)	1 (0.42%)	p = 0.36
Physical Fight			
Yes	114 (47.50%)	111 (46.25%)	
No	126 (52.50%)	126 (52.50%)	X^2 =3.04
Can't Tell	0 (0.00%),	3 (1.25%)	p = 0.21
Got Bullied			
Yes	104 (43.33%)	71 (29.58%)	
No	136 (56.67%)	166 (69.17%)	X^2 =12.203 p = 0.0022
Can't Tell	0 (0.00%),	3 (1.25%)	**significant**
Suicidal Thought			
Yes	17 (7.08%)	7 (2.92%)	X^2 =4.39
No	223 (92.92%)	233 (97.08%)	p = 0.036
			significant
Suicide Attempt			
Can't Tell	0(0.00%)	2(0.83%)	X^2 = 5.45
Tried	6(2.5%)	1(0.41%)	p = 0.06
Planned	10(4.16%)	4(1.66%)	

Discussion

The low prevalence of helmet usage is may be because study was conducted before government made wearing helmet mandatory.These findings are similar to the study done in Kerala by Sreedharan J *et al* where only 31.4% used a helmet.[7] There is not much of a difference between urban and rural adolescents with regards to using mobile while riding but the usage of mobile should be strictly avoided by adolescents while riding.In urban, 3 (1.25%) of adolescents carried harmful weapons to the school or college purpose other than playing in last thirty days (Table 2).This result is in contrast with a study by J. Kishore on risk behaviour in an urban and a rural male adolescent population 12.5% of urban and 6.6% of rural

adolescents were in possession of assault weapons such as iron rods, chains or knives sometime in the 30 days prior to the interview and another study among school and college-going adolescents in South Delhi by Rahul Sharma 65 (11.8%) reported having carried a weapon in past 30 days. These contrasting results are may be due to the difference in study setting.[8, 9]

These results are similar to the study on risk behaviour in adolescent population by J. Kishore showed About 66.8% of urban and 51.3% of rural adolescents had indulged in physical fights.[8]This increased trend of involvement in physical fight is justified by studies showing like results. A Comparison study between Urban and Rural Schoolstudents in West Bengalby Amrita Samanta1 *et al* showed 53.8% vs. 11.6% involvement in physical fights among urban and rural adolescents.[10] Almost one in every two boys (49.1%) reported being involved in a physical fight in past 12 months in a study among school and college-going adolescents of South Delhi by Rahul Sharma.[9]

Our results are in comparable with results obtained in comparison study between urban and rural schoolstudents in West Bengalby Amrita Samanta1 *et al* showed prevalence of bullying is 46.4% in urban vs. 17% in rural. These numbers must seek attention as victims of bullying have increased stress and a reduced ability to concentrate and are at increased risk for substance abuse, aggressive behaviour, and suicidal attempts.[10]

These kind of results were seen in a recent study, published in Lancet, and based extensively on Indian data has indicated that 13% of suicides in the country occur in the age group of 15-29 years and also in a study done about Suicidal behaviour amongst adolescent students in south Delhi by Rahul Sharma, Vijay L. Grover, Sanjay Chaturvedi concluded that About 15.8% reported having thought of attempting suicide, while 28 (5.1%) had actually attempted suicide.[11]

Conclusion And Recommendations: As adolescence is a physiological stage in human growth and development it has been observed all the adolescents are more or less similar in behaviour despite of their different dwelling. The low prevalence of helmet usage and high prevalence of physical fight, bullying and suicidal tendencies have been seen. There is a need to increase the use of wearing helmet promptly and to follow traffic rules.Behaviour Change Communication (BCC) is needed with regards to psycho-social disorders such as bullying and suicidal thoughts. Active involvement of people at all levels from policy-makers to implementers including Parents, Teachers, health care providers, local peer groups and NGO's should be emphasized for effectiveness of interventional programs directing towards adolescent's health.

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PREVALENCE OF DISABLING MUSCULOSKELETAL PAIN AMONG MEDICAL PROFESSIONALS IN CHENNAI

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Abstract

Introduction: Musculoskeletal disorders are one of the most common causes of disability. Despite low mortality, the morbidity of this problem is higher, and is often linked with occupations. Health care professionals are a high risk group for musculoskeletal disorders, considering various factors. In this study, we aimed to estimate the prevalence and risk of musculoskeletal disorders among health care professionals. **Methodology:** A cross sectional study was carried out among 752 health care professionals including doctors, postgraduates, interns and undergraduate medical students working in a tertiary care government hospital in Chennai. Disabling musculoskeletal pain was diagnosed based on David Coggon et al classification. Validated Orebro Musculoskeletal Pain questionnaire by Linton and Boersma was used to predict long term disability and failure to return to work. Results were analysed using Microsoft Excel spreadsheet. **Results:** The mean age of the participants was 24 ± 8.2 years. Interns formed a majority (24.2%) among the 302 doctors who participated. Among 752 participants, 23.5% (n=177) had musculoskeletal pain of which 32.7% (n=58) of participants had disabling musculoskeletal pain. Age, Body Mass Index and the Department of work were significantly found to be risk factors for musculoskeletal disorders ($p<0.05$)**.Conclusion:** The prevalence of musculoskeletal pain among doctors is on the high. It calls for necessary modifications in the working habits of medical professionals. Maintenance of ideal body weight is also recommended.

Key-words: Disability, Health care professionals, Musculoskeletal disorders, Occupational diseases, Pain

Introduction

About 1.7 billion people worldwide suffer from musculoskeletal disorders such as back pain and arthritis according to a study conducted in 2012 by American Academy of Orthopedic Surgeons. Musculoskeletal disorders are found to be the second greatest cause of disability. In the same year another study conducted in US by the National Health Interview Survey (NHIS) concluded that 126.6 million adults in the United States report musculoskeletal conditions. It accounts to more than one in two persons aged 18 and above. Chronic musculoskeletal conditions were reported at a rate 76%, which is greater than that of circulatory conditions like coronary diseases and 50% greater than chronic respiratory conditions [1][2]. The World Health Organization recognized that the burden of musculoskeletal diseases is global and declared 2000-2010 as Bone and Joint decade [3]. According to a study conducted by Dr.Sharma R et al the prevalence of musculoskeletal conditions in India varied from 7.5% to 25% [4]. Musculoskeletal pain is a very common subjective complaint among working individuals. Many factors like age, gender, work-place, physical factors like repeated, or sustained exertions, extreme postures of the body, insufficient recovery time and psychosocial factors like monotonous work, time pressure, high work load, lack of peer support, etc., have been attributed to the development of work-related musculoskeletal disorders [5].Health care professionals are more prone to develop work related musculoskeletal disorders, owing to several factors. The prevalence of musculoskeletal pain among health care professionals was found to be high in various studies [6,7]. Increased susceptibility of doctors and medical students to develop musculoskeletal pain is multifactorial. Work posture, repetitive movements, poor positioning, mental stress, handling of instruments, prolonged static posture are attributed to the development of pain.

Doctors and health care professionals play a pivotal role in providing health care to the society. In their absence, the health care system gets disrupted resulting in significant morbidity and mortality to the public. Work related musculoskeletal disorders decrease work productivity, increases work absenteeism and subsequently leads to economic loss [8].

This cross-sectional study aims at estimating the prevalence of disabling musculoskeletal pain in doctors

and medical students. With increasing prevalence of musculoskeletal pain among doctors, studies of this nature will elucidate its burden and can help officials devise a health programme to prevent musculoskeletal pain.

Objectives of the study

To estimate the prevalence of disabling musculoskeletal pain and work absenteeism in doctors and medical students.
To predict the risk of long-term disability and failed return to work in the study population with the Orebro Musculoskeletal Pain questionnaire.
To study the association between the musculoskeletal pain and the risk factors.

Methodology

Study Setting: This study was done as a cross – sectional study among all the doctors and medical students of Government Medical College, Kilpauk. The study was carried out between August and October 2016.

Sample Size and Sampling: There are a total of 363 Doctors including interns and postgraduates and 450 Medical students in our institution. All of those who consented for the study participated. A total of 752 medical professionals participated in the study.

Ethical Approval and informed consent: Approval from the Institutional Ethics Committee was obtained prior to the data collection. Each participant was explained about the study and informed consent was obtained prior to the commencement of data collection.

Operational Definitions: Pain was classed as disabling musculoskeletal pain by David Coggon et al [10] if:

Pain lasts for longer than a day at any time during the past month, and during that time, the pain had made it difficult or impossible to carry out any of a specified list of everyday activities like,

- Getting dressed
- Doing normal jobs around the house
- Cutting toe nails
- Writing
- Locking/unlocking doors or opening bottles/jars/taps
- Other day to day activities mentioned by the participant, specific for the participant's acctivities.

Data collection method: The study commenced by obtaining the list of doctors and students of our medical college. After obtaining appropriate permissions, each participant was approached and explained in detail about the study. The consenting participants were included. A structured self administered questionnaire was used to collect background information, and a validated questionnaire to assess the disability, and pain.

Data collection tools: A structured, validated and self administered questionnaire was used for data collection. The questionnaire consisted of the following parts-

Part A-Demographic profile
Part B-Validated questionnaire adopted from David Coggon et al 2013[10] (to identify disability)
Part C-Validated Orebro Musculoskeletal Pain questionnaire by Linton and Boersma 2003[11,12] (to predict long term disability and failure to return to work)
The participant was considered to have disabling musculoskeletal pain if he/she provided positive response to any of the questions in PART B of the questionnaire, following which he/she was administered with PART C.
If the participant provided negative response to PART B of the questionnaire, he/she was considered as not having disabling musculoskeletal pain and PART C was not administered to these participants. Participants having disabling musculoskeletal pain were assessed for long-term disability and failure to return to work using Orebro Musculoskeletal Pain (OMPQ) questionnaire.
The Orebro Musculoskeletal Pain Screening Questionnaire (OMPSQ) is a 21-item self-administered tool designed to identify people at risk of developing chronic pain.
It assesses five categories of risk factors for prolonged disability: pain, perceived function, psychological variables, fear-avoidance beliefs, and patient demographics and background.
Scoring instructions :

For question 1, count the number of pain sites and multiply by two – this is the score (maximum score allowable is 10). For questions 2 and 3 the score is the number bracketed after the ticked box. For questions 4, 5, 6, 7, 9, 10, 11, 14, 15 and 16 the score is the number that has been ticked or circled. For questions 8, 12, 13, 17, 18, 19, 20 and 21 the score is 10 minus the number that has been circled. Summation of the scores for questions 1 to 21 provides the total OMPQ score.

Interpreting the results: The OMPQ score is used as a predictor of risk of long term disability and failed return to work, with a higher score indicating higher risk.

S. No	Score	Interpretation
1	≤105	Low risk
2	105-130	Moderate risk
3	≥ 130	High risk

The data was analyzed with MS EXCEL, with each positive response assigned as 1 and negative response assigned as 0.

Statistical Analysis: The data collected was tabulated using MS Excel and the results were expressed as percentages with a 95% confidence interval. The prevalence of low risk, moderate risk and high risk of disability were expressed as percentages with a 95% confidence interval. Chi square test was performed manually to analyze categorical variables.

Results

This cross sectional study was conducted in the Department of Community Medicine among 752 health care professionals of a tertiary care Government Hospital. The mean age of the participants was 24 ± 8.2, the mean BMI of the participants was 23.23 ± 3.82. The average hours of work per week of the participants were 52.20 ± 16.05. The demographic details of respondents are given in Table 1.

The Department wise participants are given in Figure 1. It was observed that interns formed a majority (24.2%) among the 302 doctors who participated. This was followed by General Medicine (14.9%) and Obstetrics and Gynecology (8.3%).

Among 752 participants, 23.5% (n=177) had musculoskeletal pain whereas 76.5% (n=575) did not experience musculoskeletal pain. Among those who had musculoskeletal pain, 32.7% (n=58) of participants had disabling musculoskeletal pain. A total of 149 (49.3%) doctors had pain of which 38.9% (58) had disabling pain. The prevalence of pain and disabling pain are given in Table 2.

Among the 752 participants, 203 participants associated themselves with regular exercise, 38 of them exercised irregularly whereas 511 members did not exercise at all. In this study, among participants associated with pain doctors 149 (49.3%) and students 28 (100%) have work related pain. The particulars regarding the site of pain are given in Table 3.

In this study, among those who had musculoskeletal pain, 82.8% (n=48) of participants had low risk of disability due to musculoskeletal pain and 17.2% (n=10) had moderate risk. Among doctors while dressing 37(12.3%) have disabling pain interfering with activities. There was a significance difference of musculoskeletal pain found between age and Body Mass Index ($p<0.05$). However, the duration of work was not significantly associated with the musculoskeletal pain. The association between mean pain scores and the demographic parameters are given in Table 4. There was a significant difference in the prevalence of pain between professors, assistant professors and postgraduates, and the observed difference was statistically significant ($p<0.05$), table -5.

In this study, there were no significance difference of musculoskeletal pain found between men and women. There is a clear significance of musculoskeletal pain in comparison to department and designation. There is a significance difference of musculoskeletal pain in participants who do regular exercise with others. The results are given in Table 6.

The association between various demographic parameters and pain scores are tabulated in figures 1-5.

Table 1:Demographic characteristics of participants

Particulars	Frequency N =752	Percentage (%)
Age (in years)		
20 and below	452	60.1
21-30	182	24.2
31-40	73	9.7
41-50	27	3.6
51 and above	18	2.4
Gender		
Males	378	50.3
Females	374	49.7
Designation		
Professor	12	1.6
Assistant professor	79	10.5
Postgraduates	138	18.4
Interns	73	9.7
Undergraduates	450	59.8

Table 2 Prevalence of pain and Disabling pain among study participants

Prevalence of	Pain		Disabling pain	
	Frequency	Percent (%)	Frequency	Percent (%)
Participants		**N= 752**	**N=177**	
Yes	177	23.5	58	32.7
No	575	76.5	119	67.2
Doctors		**N= 302**	**N=149**	
Yes	149	49.3	58	38.9
No	153	50.7	91	61.1
Medical Students		**N= 450**	**N=28**	
Yes	28	6.2	0	0
No	422	93.8	28	100

Table 3: Prevalence of site of pain among Doctors

Site of pain	Doctors		Medical Students	
	n=149*	(%)	n =28	(%)
Neck	24	16.1	2	0.4
Shoulder	15	10.1	2	0.4
Arm	9	6.04	1	0.2
Low back ache	60	40.3	9	2
Upper back ache	5	3.4	0	0
Knee	10	6.7	1	0.2
Leg	12	8.1	15	3.3
Ankle	1	0.6	0	0
Generalized myalgia	13	8.7	0	0
More than one site	63	42.3	-	-

***the number will not total to 100.**

Table 4: Disabling pain interfering with activities among doctors

Activities	Frequency (n= 302)	Percentage (%)
Dressing	8	2.6
Normal household work	37	12.3
Cutting toe nails	8	2.6
Writing	9	3
Opening bottle caps/jars and unlocking home	2	0.6
Driving	8	2.6
Others	6	2

Table 5:Mean comparison between musculoskeletal pain and Parameters.

Parameters	Mean±S.D	Mean difference	95% C.I		pvalue
			Upper	Lower	
Age					
Pain	32.09±8.9	2.187	0.144	4.229	0.036*
Pain absent	29.91±9.07				
BMI					
Pain	26.08±3.88	1.308	0.466	2.151	0.002*
Pain absent	24.77±3.53				
Hours of work					
Pain	64.47±18.49	-1.955	-6.075	2.165	0.351
Pain absent	66.42±17.89				

Table 6:Factors associated with musculoskeletal pain

Particulars	Pain n(%)	Chi-sq.	Df	p value
Department				
Physicians	72(45.9)	6.085	2	0.048
Surgeons	60 (58.8)			
Pre/para clinicals	17(39.5)			
Designation				
Professor	7(58.3)	10.01	3	0.018
Assistant Professor	48(60.8)			
Post graduates	68(49.3)			
Interns	26(35.6)			
Gender				
Men	62(45.6)	1.392	1	0.238
Women	87(52.4)			
Exercise				
No exercise	120(23.5)	14.103	2	0.001
Regular	18(47.4)			
Irregular	39(19.2)			

Discussion

The prevalence of disabling musculoskeletal pain was estimated in this cross sectional study that consists of 752 doctors and medical students. Health care professionals are more prone to develop musculoskeletal pain as an

Figure 1: BMI and musculoskeletal pain

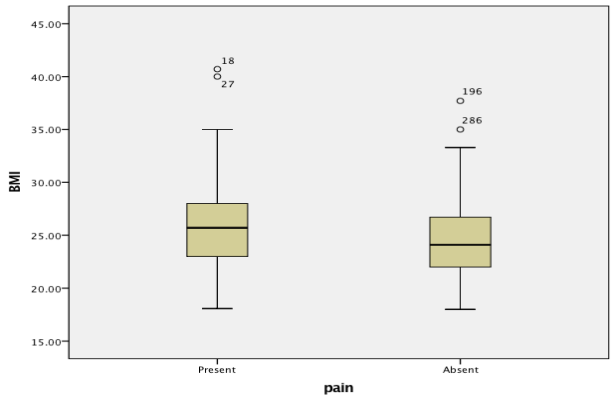


Figure 2: Age and musculoskeletal pain

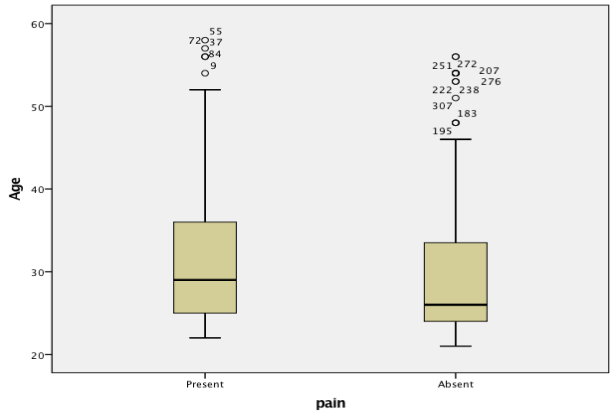


Figure 3: Hours of work and musculoskeletal pain

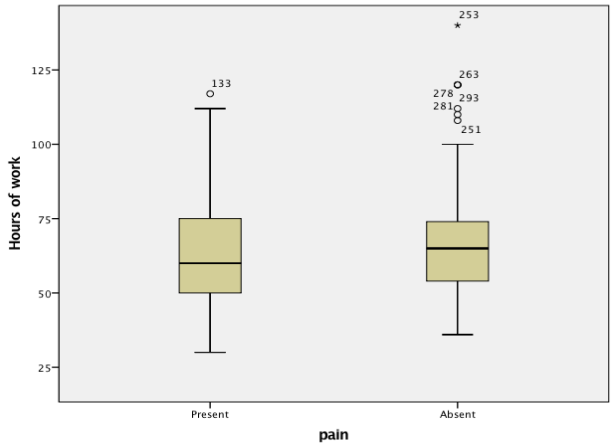


Figure 4: Age groups and musculoskeletal pain

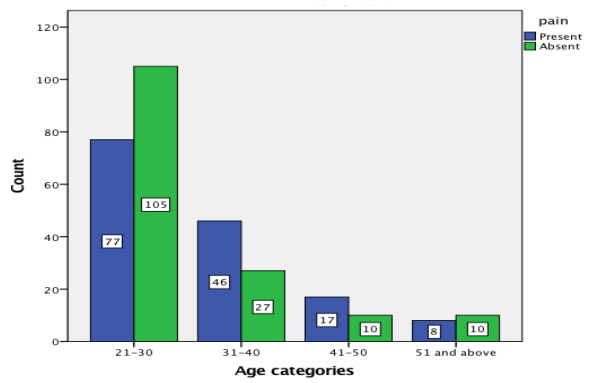
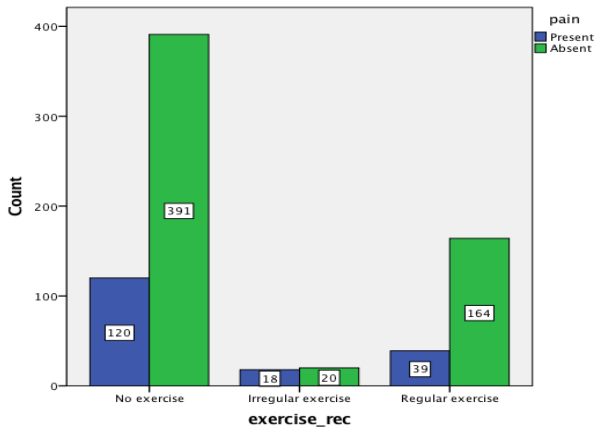


Figure 5: Exercise and musculoskeletal pain



occupational disorder. Repetitive stress injuries in medical professionals initiate a series of events, which result in the development of musculoskeletal pain.

The overall prevalence of musculoskeletal pain among 752 doctors and medical students was 23.5% (n=177). The prevalence of musculoskeletal pain among 302 doctors was 49.3% (n=149).This is in accordance with the study by Lahoti et al who had found 58% prevalence of musculoskeletal pain in doctors [13]. The prevalence of musculoskeletal pain among 450 Undergraduate students was 6.2% (n=28).This is in contrary to the study conducted by Mustaffa ahmed alshagga et al. which concluded a prevalence of 45.7%among medical students [9]. The decreased prevalence of musculoskeletal pain among undergraduate students can be explained by the fact that they were involved in physical activities in higher frequencies.

The overall prevalence of disabling musculoskeletal pain among 752 participants was 7.7% (n=58). The prevalence of disabling musculoskeletal pain among 302 doctors was 19.2% (n=58). There was no disabling musculoskeletal pain among undergraduate students. Among the 19.2% (n=58) of doctors who had disabling musculoskeletal pain, 82.8% (n=48) had a low risk and 17.2%(n=10) had a moderate risk of developing chronic musculoskeletal pain. None had high risk of developing chronic musculoskeletal pain. Among the 302 doctors, 2.6%(n=8) had pain which made it difficult for them to get dressed, 12.3% had pain which caused difficulties in doing normal jobs around the house, 2.6% had difficulty in cutting toe nails, 3% had difficulty in writing, 0.3% had difficulty in locking or unlocking the home, 0.3% had difficulty in opening bottles/jars/tap,1% had difficulty in walking, 2.6% had difficulty in driving and 1% had difficulty in carrying out their day to day activities.

The prevalence of pain among surgeons was the highest with 58.8%,followed by physicians with a prevalence of 45.9%. The prevalence of pain among PrePara clinicals / Study by Rambabu et al had also found an .%39.5was increased prevalence of musculoskeletal pain in surgeons compared to physicians [7]. Among the 302 doctors, 11.6%(n=35) had neck pain,7%(n=21) had shoulder pain,3%(n=9) had arm pain,27.5%(n=83) had lower back ache,1.7%(n=5) had upper back ache,3.3%(n=10) had knee pain,11.6%(n=35) had leg pain,0.3%(n=1) had ankle pain and 4.3%(n=13) had generalized myalgia. Among the 450 undergraduates, 0.4%(n=2) had neck pain,0.4%(n=2) had shoulder pain,0.2%(n=1) had arm pain,2%(n=9) had lower back ache,0.2%(n=1) had knee pain and 3.3%(n=15) had leg pain.

The prevalence of musculoskeletal pain increased with age. The prevalence of musculoskeletal pain was 42.3% in the age group of 21-30,63% in the age group of 31-40 and 41-50 and 44.4% in the age group of 51 and above (p=0.011).A similar relationship between age and musculoskeletal pain was proved by parsonsa et al in his study on Prevalence and comparative troublesomeness by age of musculoskeletal pain in different body locations[14]. The slight dip in prevalence of MSDs among professionals aged 51 and above can be explained by the fact that they are well trained to maintain efficient posture during activities and have better coping strategies than younger professionals [13].

The BMI of majority of the respondents were in overweight category. Those who were overweight had an increased risk of developing musculoskeletal pain. There was a significant correlation between BMI and musculoskeletal pain in our study (p=0.002). Significant relationship (P≤0.004) was observed between BMI and musculoskeletal pain in a study by Tsiros MD et al [15]. However no significant association between age, BMI and musculoskeletal pain was reported by Mirsaaed et al[16].

There was no significant association between hours of work per week and musculoskeletal pain in our study (p=0.351). Adriana Cristina et al in their study had also found that there was no significant association between hours worked and development of musculoskeletal pain [17].However Lipscomb JA et al had found a significant association between hours worked and musculoskeletal pain in their study [18]. Regular physical exercise conferred a decreased risk of developing musculoskeletal pain for the subjects in our study(p= 0.001). Wedderkopp N et al also proved this in their study [19]. Evidence suggests that yoga may be useful for pain-associated disorders [20].

The prevalence of pain among professors and assistant professors was highest at 58.3% and 60.8% respectively followed by post graduates with 49.3% followed by interns with 35.6%.

85.8% (n=152)of the doctors believed that their pain was a work related musculoskeletal disorder.100%(n=28) of the undergraduate students believed that their pain was related to work. Work absenteeism among medical professionals was not significant in our study. Only 17

doctors had work absenteeism totally accounting for 76 days. Undergraduate students had no work absenteeism because of musculoskeletal pain.

Conclusion: The prevalence of musculoskeletal pain among doctors is quite high. It is important for the doctors to remain healthy and fit in order to treat the community. Hence they must concentrate on their health. The concerned officials should implement proper health programme to prevent musculoskeletal pain. Stretching exercises should be practiced regularly. Necessary modifications in the working habits of medical professionals should be implemented. Owing to the busy schedule of medical professionals, in-built gym facilities within the hospital can be provided so that they can work out in their leisure time. Maintenance of ideal body weight should also be recommended.

Limitations: Detailed research regarding the risk factors for musculoskeletal pain should be carried out in future to eliminate those factors. Various work postures adopted by the doctors should be studied extensively and interventions to eliminate injuries should be implemented. The various postures of the doctors could not be studied in our study, which is a limitation.

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SOCIAL SUPPORT DURING THE POSTPARTUM PERIOD: MOTHERS' EXPERIENCES AND EXPECTATIONS – A MIXED METHODS STUDY IN A RURAL AREA OF SOUTH KARNATAKA.

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Abstract

Introduction: The postpartum period is a very vulnerable period, especially in terms of the psychosocial aspects of health. These women are prone to develop depression, psychosis or anxiety disorders. Social support, defined as the perception that one is cared for and has assistance from other people, thus plays a crucial role in the health of these women. **Objective**: This study was done with the aim of identifying the mainsource of social support in post partum women and to assess the most common type (emotional, informational, instrumental, appraisal and financial) of social support they received. **Methods:** A mixed methods study (both qualitative and quantitative methods) was conducted during January–March 2017 at a maternity hospital in a village in Ramanagaram district. A pretested interview schedule was administered to 172 post partum women and three focus group discussions (FGDs) were conducted. **Results:** 172 post partum women were interviewed. About 47% of the women were primipara and 97% were term pregnancies. The primary source of social support was the women's parents. Women reported receiving all types of social support- emotional and financial support mainly from the parents, followed by the spouse. Primary source of instrumental support (tangible aid/service) were the parents followed by the in-laws. In the FGDs the women perceived that support was very necessary in the post partum period. "If they love us they will support us"… "For the first baby, no one will know how to hold and carry the baby especially if the baby is small and we are scared", these were some of the verbatims in the FGDs. Cultural practice of staying in the parental home make women more dependent on their parents. **Conclusion:** Women's perceived social support though adequate, was mainly from their parents and was inadequate in the areas of family planning, keeping the child warm and in cord care.

Key-words: Post-partum period, Social support, mixed methods, Rural, Karnataka

Introduction

Postpartum period is the period immediately after delivery[1]. It is a very vulnerable period in terms of the new mother's psyco-social health. This vulnerability can impact the parenting of her child, leading to long term consequences for the child[2].

Social support is defined as the perception that one is cared for and has assistance from other people[3]. It is the verbal and non verbal communication between recipients and providers that reduces the uncertainty about a situation, one's self or others[4].

Women face a lot of anxiety and fear around early parenting and about the new role that they have to play after the birth of their child[5]. Perceived social support has shown to protect a woman's mental health against the physical and psychological disturbances[6]. The emotional and practical help in terms of household work and caring for the baby, provided by the husband and others is directly related to the mother's mental health[7]. Poor support from the spouse results in psychological adjustment issues for the mother in the first five months after birth[8]. In post partum women who do not have adequate income or education, poor support from husbands and in laws has shown to worsen their anxiety[9].

There are a number of factors causing psychological stress in the post partum period[8].New mothers are tired of the responsibility of looking after a child because of knowledge gaps and unpreparedness for motherhood[7]. They experience the physical stress of recovering from the delivery and difficulty in breastfeeding. They now have to care for themselves and also for their babies resulting in an increased need for support. Further, the support is also necessary for them to access medical care[9].

There are main 5 types of social support namely **Emotional** (Expressions of empathy, love, trust and caring), **Informational** (Advice, suggestions, and

information), **Instrumental** (Tangible aid and service), **Appraisal** (Information that is useful for self-evaluation) and **Financial** (Monetary support)[6]. Instrumental support is of utmost importance in the physical and emotional recovery of women in the post partum period[10]. Studies have shown that emotional, instrumental and informational support are positively associated with the postpartum women's mental health[7]. Thus identifying the social needs and the expectations of a mother are important for a woman after child birth[10].

Little is known about the types and sources of social support available to women in rural India during the postpartum period. Therefore, this study was conducted with the objective to identify the primary source and types of social support for post partum women availing services at a maternity hospital in Ramanagaram district.

Materials and Methods

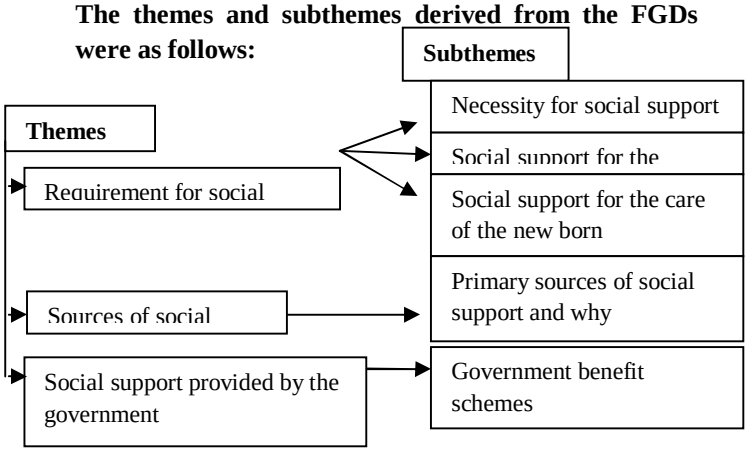
Institutional ethical clearance was obtained for this study. A mixed methods study i.e. a cross sectional study with 3 focus group discussions, was conducted at a private maternity hospital in Solur village of Ramanagaram district, which is a training centre for students, in the period between January to March 2017. Women in the late post partum period between 6 weeks and 6 months post partum were included in the study. Assuming a prevalence of social support as 50%, with a confidence interval of 99%, an absolute precision of 5% and a non-response rate of 10%, the sample size was calculated as 169. Consecutive sampling technique was employed. Written informed consent was obtained from the study subjects and they were administered an interview schedule which was previously pilot tested in a non- study area. This interview schedule assessed the experiences of the post partum women with regards to the social support that they had received after their recent delivery.

Qualitative data was collected with the help of three focus group discussions (FGDs) involving 6-8 post partum women each, to assess the expectations of the post partum women regarding social support. For the FGDs, a topic guide was developed. The interviewing team consisted of 3 members, a facilitator who asked the questions based on the developed topic guide and who led the FGD, a recorder who recorded all the conversations on a tape recorder and a third member who documented the verbal and non-verbal details of the FGD on paper, including sociogram. The FGDs were conducted in the local language (Kannada). The post partum women who availed post natal care or came for immunization services were explained about the study purpose and those who volunteered to be a part of the study were included and were assured of confidentiality of the information and were encouraged to express their ideas freely regarding the questions posed by the leader and also by the other members. Written informed consent was taken from the volunteers. Data saturation was attained with 3 FGDs.

Data Analysis: Quantitative data was entered in a Microsoft Excel sheet and analyzed using SPSS software, v.16.0. Sociodemographic and obstetric data was described using frequencies and proportions. Associations between social support and various factors were looked for using Fishers association and Chi square test. A p value of less than 0.05 was considered as statistically significant. Qualitative analysis: The data was obtained from the FGD's by transcribing the entire interview ad verbatim in Kannada and then translated into English. This raw data was then entered into a word document, and color–coded based on the emerging themes. These were then categorized into themes and subthemes based on key words.

Figure 1:

The themes and subthemes derived from the FGDs were as follows:



Results

Socio-demographic details:

A total number of 172 post partum women in the 6weeks to 6 months post partum period were interviewed. The mean age of the women was 23.69+/- 3.01 years and their husband's mean age was 29.09+/- 3.85 years. Most of the post partum women (66%) were educated up to the 12th standard (Pre-university) and 95% of them were not gainfully employed at the time of the interview. There were 4 women who were salaried employees and had availed maternity leave, which ranged from 3 to 6 months. Median family income in the study population was Rs.10,000. According to the Modified BG Prasad socio-economic status scale, 42% belonged to class III, 26% to class IV and 13% to class V. Sixty two (36%) post partum women were BPL card holders. About 40% of the women lived in three generation families. This was followed by joint families constituting 31% and nuclear families constituting 26% of the study subjects. The remaining belonged to the extended families. Majority of them were Hindu by religion, constituting 86% of the participants.

Majority of the study subjects were primipara. This was followed by the confinement for their second child. About 5 women ever had an abortion and there were 10 women who had lost a child. In the present delivery, most of the women (97%) had a term gestation baby, with only 1 preterm baby and 4 post term gestations baby. Only 4 women gave history of complications in the present gestation and the post partum period. There was 1 woman with hypertension and 1 woman with anaemia in the

Table 1: Components of social support for the mother in the post natal period

Sl.no	Component of postnatal care – Maternal	No. of post partum women	Primary Source of Support			
		N = 172	Spouse	Parents	In-laws	Others
1	Assistance during your stay in the hospital immediately after delivery	172 (100%)	2 (1.2%)	147 (85.4%)	20 (11.6%)	3 (1.8%)
2	Provision for your food in the hospital	170 (98.8%)	8 (4.7%)	147 (86.4%)	13 (7.6%)	2 (1.3%)
3	Monetary support at the time of discharge from the hospital	172 (100%)	31 (18.4%)	125 (72.6%)	13 (7.5%)	1 (0.5%)
4	Monetary support for your food and medicines during your hospital stay	172 (100%)	36 (20.9%)	125 (72.6%)	10 (5.8%)	1 (0.5%)
5	Assistance during your visits to the hospital after delivery	146 (85%)	23 (15.7%)	111 (76%)	11 (7.5%)	5 (3.4%)
6	Advice about the danger signs after delivery	15 (8.7%)	0 (0%)	6 (40%)	0 (0%)	9 (60%)
7	Assistance during any illness after delivery (N = 14)	14 (100%)	0 (0%)	14 (100%)	0 (0%)	0 (0%)
8	Advice about the diet to be consumed after delivery	161 (93%)	0 (0%)	137 (85.3%)	21 (13.1%)	3 (1.6%)
9	Assistance to prepare such food items	171 (99.4%)	2 (1.2%)	144 (83.7%)	19 (11.1%)	7 (4.1%)
10	Assistance by caring for the baby while eating, bathing, resting	172 (100%)	2 (1.7%)	144 (83.7%)	19 (11.1%)	7 (4.2%)
11	Advice about rest after delivery	171 (99.4%)	2 (1.7%)	144 (84.2%)	19 (11.1%)	3 (1.7%)
12	Assistance provided to enable her take rest by helping in household chores	172 (100%)	9 (5.2%)	140 (81.4%)	22 (12.7%)	1 (0.5%)
13	Advice/ reminder about taking supplements like iron, calcium	50 (29.06%)	12 (24%)	31 (62%)	7 (14%)	0 (0%)
14	Assistance provided to procure supplements	157 (91.2%)	6 (3.8%)	123 (78.3%)	0 (0%)	1 (0.6%)
15	Advice about family planning	31 (18.02%)	19 (61.2%)	12 (38.8%)	0 (0%)	0 (0%)
16	Assistance provided for family planning (accompanying)	132 (76.7%)	122 (92.4%)	10 (7.6%)	0 (0%)	0(0%)
17	Advice on personal hygiene	160 (93.02%)	0 (0%)	141 (88.1%)	19 (11.9%)	0 (0%)
18	Assistance provided to maintain personal hygiene	166 (96.5%)	5 (3.1%)	139 (83.7%)	18 (10.8%)	4 (2.5%)
19	Advice on environmental hygiene	158 (91.86%)	2 (1.3%)	133 (84.2%)	20 (12.7%)	3 (1.8%)
20	Assistance provided to maintain environmental hygiene	168 (97.67%)	8 (4.8%)	137 (81.5%)	19 (11.3%)	4 (2.4%)
21	Assistance in case of any worry or sadness	169 (98.25%)	120 (71%)	36 (21.3%)	10 (5.9%)	3 (1.8%)
22	Assistance to register birth	172 (100%)	160 (93%)	10 (5.8%)	0 (0%)	2 (1.2%)

antenatal period. There was 1 vacuum assisted delivery and 1 woman with episiotomy infection postnatally.

Social support for the mother:

In general, the primary source of social support for the mother were the parents of the post partum women. This was followed by their mothers-in-law and then the husband. Table 1 indicates the components of postnatal care for the mother. For most of the mothers, support was provided primarily by their parents, except for assistance for family planning, assistance in case of any worry or sadness and assistance for birth registration, where the primary source of social support was the spouse. Of the 172 women, only 6% i.e. 10 women availed the government schemes available for post partum women. The Bhagyalakshmi scheme was availed by 4 women, the Janani Shishu Suraksha Karyakarm (JSSK) was availed by 1 woman and the remaining 5 women availed the Janani Suraksha Yojana (JSY). Eight out of 172 (4.65%) mothers were members of social organisations like the Mahila Mandal and Stree Shakti groups. Social support was lacking when it came to advice about danger signs in the postpartum period (postpartum haemorrhage, pregnancy induced hypertension, sepsis, mastitis, pain in the calf), where only 8% of the women had received this advice, either from a health provider or from parents. Also lacking was support for taking daily supplements like iron and calcium (26%) and for family planning (18%).

Social support for the care of the new born:

Support for care of the new born was primarily provided by the parents of the post partum mother and occasionally by the husband or the in-laws. Table 2 indicates the components of social support in the care of the newborn. The primary source of social support in all the

Table 2: Component of social support for the care of the new born

Sl.no	Component of postnatal care – New born	No. of post partum women	Primarily			
		N = 172	Spouse	Parents	In-laws	Others
1	Advice on avoiding pre-lacteal feeds	172 (100%)	2 (1.2%)	169 (98.3%)	1 (0.5%)	0 (0%)
2	Advice about exclusive breast feeding	169 (98.25%)	0 (0%)	163 (96.4%)	0 (0%)	6 (3.6%)
3	Assistance during breastfeeding of the new born	169 (98.25%)	1 (0.6%)	143 (84.6%)	16 (9.4%)	9 (5.4%)
4	Advice about keeping the baby warm	85 (49.4%)	3 (3.5%)	64 (75.3%)	18 (21.2%)	0 (0%)
5	Assistance provided to keep the baby warm	172 (100%)	3 (1.7%)	146 (84.8%)	18 (10.6%)	5 (2.9%)
6	Advice on cord care	168 (97.67%)	0 (0%)	161 (95.8%)	7 (4.2%)	0 (0%)
7	Assistance provided to care for the cord	13 (7.5%)	0 (0%)	13 (100%)	0 (0%)	0 (0%)
8	Advice about care of the child during illness (N=1)	1 (100%)	0 (0%)	1 (100%)	0 (0%)	0(0%)
9	Assistance provided when the child is ill (If child was never ill, write Not applicable/ Did not get help) (N=7)	7 (100%)	7 (100%)	0 (0%)	0 (0%)	0 (0%)
10	Advice about neonatal checkups	28 (16.27%)	4 (14.3%)	18 (64.3%)	6 (21.4%)	0 (0%)
11	Assistance during neonatal checkups	168 (97.67%)	13 (7.7%)	146 (86.9%)	8 (4.8%)	1 (0.6%)
12	Assistance in bathing the new born	170 (98.8%)	2 (1.2%)	148 (87.1%)	16 (9.4%)	4 (2.3%)
13	Assistance in changing baby's clothes	152 (88.37%)	1 (0.6%)	140 (92.1%)	9 (5.9%)	2 (1.4%)
14	Assistance in changing baby's diapers	146 (84.68%)	2 (1.4%)	132 (90.4%)	9 (6.1%)	3 (2.1%)
15	Advice about immunizing the child	18 (10.4%)	1 (5.6%)	16 (88.8%)	0 (0%)	1 (5.6%)
16	Assistance provided when the child has to be immunized	164 (95.34%)	5 (3.1%)	148 (90.2%)	9 (5.5%)	2 (1.2%)

Table 3: Parity and social support

	Total	Support for family planning N (%)	p value	Assistance provided in changing diapers N (%)	p value
Primiparous	92	63 (68.47%)	0.035*	88 (95.65%)	0.027*
Multiparous	80	67 (83.75%)		72 (90%)	
Total	172	130 (75.58%)		160 (93.02%)	

*** p value < 0.05, statistically significant**

components of newborn care was the parents of the post partum women. In addition to this, some of the post partum women also received a little support from the spouse and in-laws with regards to breastfeeding, keeping the baby warm, and bathing. Social support was lacking in the advice regarding keeping the baby warm (49.4%), cord care (7.5%), neonatal checkups (16.3%) and immunization of the newborn (10.4%).

Factors associated with social support:

Table 3 shows that primiparous women had less support for family planning as compared to multiparous women. This was found to be statistically significant (p value<0.05). However, as compared to multiparous women, primiparous women had significantly more assistance in changing the baby's diapers. It may be seen from table 4, that women with higher education were significantly more likely to receive support for postnatal visits and advice regarding daily supplements like calcium and iron tablets. There was no significant association between social support in the postnatal period and socio-economic status of the family, type of family the post natal woman lived in or the religion she followed.

Expectations of support in the post natal period (Figure 1)

Requirement for Social Support: Requirement for social support was divided into 3 subthemes to ascertain why post partum women thought it was necessary for them to receive support in the post partum period. In this theme the reasons why a post natal mother needed support and why a new born needed care were illustrated. Support was expected by the postnatal mothers. It was expressed as "Support is absolutely necessary"… "if they love us they will support us"…

"How we carefully take care of the baby, in the same way they should take care of us".

Post partum women need support to cope with pain after delivery, for food, health issues, household chores, finances and to provide reassurance. The women mentioned…"if there is bleeding or other complications to tell us" …"when we fall sick to take care of us"…"it will be difficult to get up, it becomes easy when they help" …"to accompany us outside".

The women felt that support is required to carry the baby, change and wash clothes, and take care when the baby is ill. Women said …"For the first baby, no one will know how to hold and carry the baby if the baby is small and

Table 4: Education of the mother and social support (* p value < 0.05, statistically significant)

Education of the mother (in years)	Total	Support provided for post natal visits N (%)	p value	Support provided in taking supplements N (%)	p value	Support provided in keeping the baby warm N (%)	p value
<7	17	9 (60%)	0.03*	14 (60%)	0.026*	13 (73.4%)	0.09
08-Dec	114	101 (88.6%)		110 (96.49%)		111 (97.36%)	
13-20	41	37 (90.2%)		41 (100%)		38 (92.68%)	
Total	172	149 (86.6%)		165 (95.93%)		162 (94.2%)	

we are scared"…"to help us give the baby a bath"…"to help in feeding the child properly".

Sources of social support: The post natal women had social support mainly being provided by their own mother and next in line by the mother-in-law and husband. Others who provide support are "aunts". Social organisations provide only financial support.

They mentioned…"in-laws don't help, they help their own (children). Seeing the grandchild in the hospital is only a big thing for them"…"it will be good if husbands can care more for the child"…"Friends come to see the baby and make us happy" …"whatever they (friends) know they will tell us" …"sometimes they (friends) would have faced the same problems and can reassure us and help us"

Social support provided by the government: Women were asked about what government schemes were available for post natal mothers, how do they know about it and who have availed it. Govt schemes like "JSY, JSSK, Bhagyalakshmi" are available but were not used due to tedious effort involved. Of the 172 women, only 10 women (6%), availed these schemes i.e., four (2%) of them availed Bhagyalakshmi scheme, one (1%) availed JSSK and five (3%) of them availed JSY.

They said "people in the social groups like Mahila Mandali inform us about what all benefits are available for us."

Discussion

Perceived social support is known to protect a woman's mental health against physical and psychological disturbances associated with the postpartum period. This study was conducted with the intention of documenting the types and sources of social support available to women in rural India during the postpartum period. In the present study, the primary source of social support was the women's parents. Women reported receiving all types of social support- emotional and financial, mainly from their parents, followed by their spouse. This could be because of the fact that in the Indian culture, women stay in the parents' house in the postnatal period, and are dependent on them for their every need – emotional, financial and instrumental. It was found that the primary source of instrumental support (tangible aid/service) were the parents followed by the in-laws. An extensive review of literature was not able to elicit findings from any similar studies, owing to a paucity of studies on the subject of social support for post partum mothers.

In the present study, higher parity of the mother was found to be significantly associated with support for family planning, whereas primiparous mothers were significantly more likely to have assistance to change the baby's diapers. This could because multiparous women had completed their family leading to more support for family planning, but primiparous women had more support with changing diapers because of the fact that they were still not very good at handling the baby and the baby's needs, as compared to multiparous women who had some past experience.

It was found that social support for the mother was lacking when it came to advice about danger signs in the postpartum period (postpartum haemorrhage, pregnancy induced hypertension, sepsis, mastitis, pain in the calf), where only 8% of the women had received this advice, either from a health provider or from parents. Also lacking was support for taking daily supplements like iron and calcium (26%) and for family planning (18%). Social support for the care of the baby was lacking in the advice regarding keeping the baby warm (49.4%), cord care (7.5%), neonatal checkups (16.3%) and immunization of the newborn (10.4%). These findings point to a lacuna in the knowledge regarding "essential postpartum and newborn care" among the families of these women. This indicates a need for educating the families of postpartum women, before their discharge from the health facility, regarding care of postpartum mothers and their newborns.

The mothers' educational status was significantly associated with support provided for postnatal visits and support provided for taking post natal supplements. This could be because the educated post partum mothers were better aware of the need for postnatal visits and also for the need to take supplements, and may have discussed these issues with their family members, resulting in better support. The proportion of mothers who availed government maternity benefit schemes was very low (6%). The lack of social support in availing these schemes indicate a need for better information dissemination to family members, in order for mothers to benefit from existing government programs.

In the focus group discussions the women felt that social support is absolutely necessary and that if their parents

love them, they will provide them with all the help and support they need. A study done in New York showed that support from family and spouse was expected and the women believed that their families and spouse should provide this support without asking[10]. A study done in post partum women to assess social support and its effect on post partum depression has shown that the varieties of social support that a woman receives is important in reducing her chances of developing post partum depression[11].

Overall, the parents of the women in this study, were the primary source of all types of social support during the postpartum period. This could be because post natal women stayed in their parents' house post-delivery and the parents were obliged to look after their children and the grandchild, and this limited the time spent with the husband and resulted in a perception of poorer social support from their own husband and in-laws.

Conclusion:

The primary source of social support for post partum mothers were their parents. Cultural practices of staying in the parental home make women more dependent on their parents. Women reported receiving all types of social support. Emotional and financial support was mainly from the parents, followed by the spouse. The primary source of instrumental support (tangible aid/service) was the parents followed by the in-laws. Social support for the mother was lacking in the areas of family planning, advice regarding danger signs, taking daily iron and calcium supplements, keeping the child warm, neonatal check-ups, cord care, immunisation, as well as in utilisation of government maternity benefit schemes. This indicates a need for better information dissemination regarding care of mother and baby, to all the family members and the accompanying care takers during the antenatal period and also before the mother is discharged from the health facility.

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PROBLEMS ARE LARGER THAN WHAT WE EXPECT: LEARNING'S FROM SCREENING PROGRAM, AMMAAROGYATHITTAM(AAT) IN TAMIL NADU

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Abstract

Background: States like Tamil Nadu made resonably good progress on managing health issues of its commonman and it is the right time to move towards wellness of them. The Ammma Arogya Thittam is proposed towards reaching that objective of promoting Health and Wellbeing by providing free access to basic health check-up in the primary health centers run by the Government. **Objective:** To find out the outcome of Amma Arogya Thittam (AAT) in Tamil Nadu. **Methods:** Screening for selected basic 25 tests was conducted in 400 upgraded Primary Health centers (Upgraded PHCs) for two days in a week on Thursday and Friday after the outpatient services. The secondary data of this activity was analysed. **Results**: In the past 30 months around 27 lakh, beneficiaries are screened and the results of AAT revels increasing prevalence of most of the risk factors/diseases beyond the existing reports and it needs further evaluation. **Conclusion:** There is an absolute need to follow up every screened positive individual for confirmation and treatment according to the need.

Key-words: Amma Arogya Thittam (AAT), Health screening, Basic tests, Public health system

Introduction

Tamil Nadu is one the best state in India as per health parameters are concerned. The details on health infrastructure and performance of various health programes[1] are available in the public domain. Now there is need to improve and sustain the gains along with efficiency in providing the services. The screening for diseases which are emerging as a major public health problem needs attention.

Amma Arogya Thittam (AAT) in Tamil Nadu was started with an objective of

1. Promoting Health and Wellbeing through early detection and treatment of disease conditions by providing free access to basic health check-up, to all the people in the age of 30 years and above on annual basis.
2. Anticipate positive behaviour change to seek health check up on regular basis in future.
3. State will have basic health profile of the pouplation over a period of time

It is well-known fact that, the screening, in medicine, implies a strategy used to identify the possible presence of a disease in individuals/populations without signs or symptoms and it is different from diagnostic tests which confirms the presence of disease. Though so many screening tests are available we decided to adopt those 25 tests which fulfil the Wilson and Jungner classic screening criteria along with other emerging criteria as described in the Bulletin of WHO[2] and given in Box 1 and Box 2. This study explores the outcome of Amma Arogya Thittam (AAT) in Tamil Nadu.

Box-1: Wilson and Jungner classic screening criteria

1. The condition sought should be an important health problem.
2. There should be an accepted treatment for patients with the recognized disease.
3. Facilities for diagnosis and treatment should be available.
4. There should be a recognizable latent or early symptomatic stage.
5. There should be a suitable test or examination.
6. The test should be acceptable to the population.
7. The natural history of the condition, including development from latent to declared disease, should be adequately understood.
8. There should be an agreed policy on whom to treat as patients.
9. The cost of case-finding (including diagnosis and treatment of patients diagnosed) should be economically balanced in relation to possible expenditure on medical care as a whole.
10. Case-finding should be a continuing process and not a "once and for all" project.

Box 2. Synthesis of emerging screening criteria proposed over the past 40 years

1.The screening programme should respond to a recognized need.
2.The objectives of screening should be defined at the outset.
3.There should be a defined target population.
4.There should be scientific evidence of screening programme effectiveness.
5.The programme should integrate education, testing, clinical services and programme management.
6.There should be quality assurance, with mechanisms to minimize potential risks of screening.
7.The programme should ensure informed choice, confidentiality and respect for autonomy.
8.The programme should promote equity and access to screening for the entire target population.
9.Programme evaluation should be planned from the outset.
10.The overall benefits of screening should outweigh the harm.

Materials and methods

Based on the Wilson and Jungner classic screening criteria along with emerging requirements, we selected simple 25 cost-effective tests which can be done at primary center level with health workers is devised for this program. This includes the following tests.

1. Height
2. Weight
3. Body Mass Index (BMI)
4. Blood Total count
5. Differential Count
6. Hemoglobin estimation through semi auto analyser
7. Peripheral Smear for malarial parasite and any abnormal cells
8. Blood Grouping and Rh Typing
9. Sputum Microscopy as specified under Revised national tuberculosis control program
10. Urine Albumin
11. Urine Sugar
12. Urine Deposits
13. Blood Cholesterol
14. Blood Creatinine
15. Screening for Hypertension by measuring blood pressure and history
16. Screening for Diabetes Mellitus by random blood sugar test
17. Eye Screening for acuity of vision and cataract
18. Screening for skin diseases
19. Screening for Oral Cancer
20. Screening for Cancer Cervix for females
21. Screening for Cancer Breast for females
22. X-Ray, if required based on symptoms
23. Ultrasound if required based on symptoms
24. ECG if required based on symptoms
25. General examination by medical officer

While deciding the above screening tests we also consider the Global Burden of Diseases, Injuries, and Risk Factors Study 2016[3]which indicates that high blood pressure, high fasting plasma glucose, high body mass index and high total cholesterol were among the top 10 risk factors.

After the initial screening tests, there is provision to get free confirmatory investigations and also treatment through public institutions and empanelled private hospitals under The Chief Minister's Comprehensive Health Insurance scheme[4].

The screening was conducted in 400 upgraded Primary Health centers (Upgraded PHCs) in the first phase for two days in a week on Thursday and Friday. The screening starts at 11.00 a.m after the outpatient services. Village Health Nurse (VHN) are also requested to mobilize the beneficiaries weekly twice to attend this program in addition to the direct walk-in patients. The program is designed in such a way that all the screening including investigations will be done on the same day, entered the results in the portal created for that purpose and printed report from the portal after saving it in the local system is handed over to the beneficiary with sign and seal of the duty medical officer. Since the program is conducted only for two days a week that too in the Upgraded PHCs required manpower can be mobilized from other PHCs if needed.

Data management: We created separate module for capturing the data through our existing HIMS network for PHCs. The results of preventive screening is entered immediately by NCD staff nurese. The report can be saved in the local computer and print out to be taken and issued as report to beneficiary which will display results for all 25 parameters in specific format. The analysis of data is being done at the regular intervals from the backend and shared to all the providers.

Results

The program was a massive success with around 2.7 million people screened in 30 months and we are in the process of expanding it to include 34 urban primary health centers and 99 Government hospitals at district and sub-district level. The performance of the scheme across the state in district wise is enclosed in Table 1.

The prevalence of hypertension was 18.1% in females and 20.75% in males. (Figure 1). And 32.52% of females and 35.75% of males were showing random blood sugar values (Figure 2) more than 110 mg/dl. Only 6-9 % of screened persons were normal (figure 3).

Figure 1. The proportion of screened beneficiaries showing abnormal blood pressure values, gender-wise

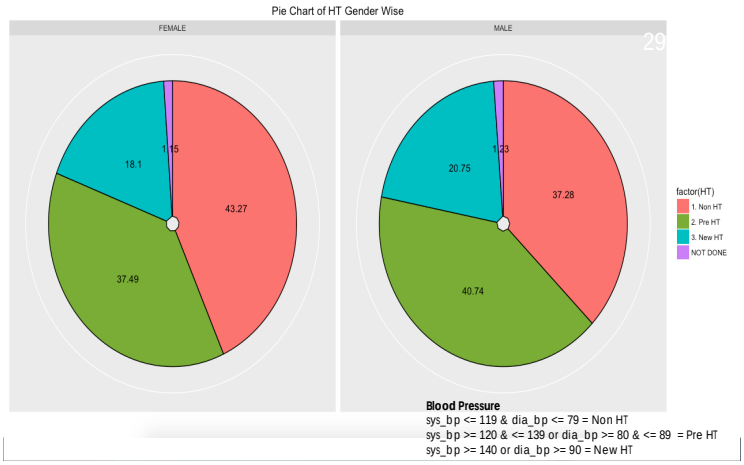


Table 1- Amma Arogya Thittam(AAT) Report (03-03-2016 to 22-09-2017)

S.No	Health District Name	AAT Centres	Male	Female	Total	Per AAT Centre
1	VELLORE	10	49932	60643	110579	11,058
2	POONAMALLE	1	2755	7517	10275	10,275
3	SAIDAPET	6	26486	33363	59854	9,976
4	TIRUVANNAMALAI	10	43841	51368	95216	9,522
5	ARIYALUR	6	23635	30188	53827	8,971
6	SALEM	20	82068	96028	178113	8,906
7	TIRUVARUR	11	45527	52099	97633	8,876
8	MADURAI	13	41705	70170	111888	8,607
9	RAMANATHAPURAM	6	19372	29135	48517	8,086
10	TIRUPUR	14	52328	60580	112912	8,065
11	KRISHNAGIRI	11	36495	51476	87982	7,998
12	PARAMAKUDI	6	18388	28128	46521	7,754
13	ERODE	14	46159	58961	105126	7,509
14	TUTICORIN	7	22908	28371	51288	7,327
15	ARANTHANGI	7	20062	29634	49698	7,100
17	TIRUVALLUR	13	38465	53812	92285	7,099
16	KALLAKURICHI	11	32237	45512	77764	7,069
18	TIRUPATHUR	11	28644	45910	74568	6,779
19	COIMBATORE	12	34080	42508	76595	6,383
20	PUDUKKOTTAI	7	17010	26656	43669	6,238
21	VIRUDHUNAGAR	6	14948	21854	36803	6,134
22	NAGARCOIL	10	24128	37029	61159	6,116
24	KANCHEEPURAM	7	18159	24312	42474	6,068
23	CHEYYAR	8	20978	27019	47999	6,000
25	KARUR	8	21158	25955	47116	5,890
26	DINDIGUL	8	20758	25087	45855	5,732
27	SIVAKASI	6	14276	20084	34363	5,727
28	TIRUNELVELI	11	22543	39544	62092	5,645
29	SANKARANKOIL	9	19661	30816	50484	5,609
30	NAMAKKAL	15	37382	45366	82753	5,517
31	SIVAGANGAI	12	22400	43140	65546	5,462
32	PERAMBALUR	5	12320	14534	26856	5,371
34	TIRUCHIRAPALLI	15	34266	45091	79364	5,291
33	VILLUPURAM	11	23165	34961	58137	5,285
35	KOILPATTI	5	10493	15189	25688	5,138
36	THANJAVUR	14	28220	42000	70232	5,017
37	CUDDALORE	14	28943	37622	66568	4,755
38	DHARMAPURI	9	18199	22836	41039	4,560
39	PALANI	8	15289	19717	35006	4,376
40	NAGAPATTINAM	11	19632	27892	47537	4,322
42	THENI	8	9835	15874	25713	3,214
41	THE NIGIRIS	4	5036	7487	12523	3,131
	Total	400	11,23,886	15,25,468	26,49,617	6,624

Dyslipidemia was seen in around 57.07% females and 58.76% of male (Figure 4). BMI more than or equal to 25 kg/m^2 was seen in 21.6% in male to 24.4% in females (Figure 5)

Discussion

It is a known fact that hypertension and dyslipidemia are the two major contributing risk factors for cardiovascular diseases (CVDs) which is increasing worldwide including India. The prevalence of Hypertension is 32.3% in urban areas and in rural areas, it is 28% in Tamil Nadu as per ICMR IndiaDia study[5]. As per our study, new hypertension which indicates the persons with a systolic blood pressure more than 140 mmHg and/or diastolic

blood pressure more than 90 mmHg is 18.1% in females and 20.75% in males Further NFHS4[6] reported the prevalence of hypertension in 8.3% of women and 15.5% of men and our study values are on the higher side which needs attention. Though the term new hypertension is used in our analysis, results include both existing hypertension patients and newly diagnosed now in the screening program who have abnormal values.

Figure 2. The proportion of screened population showing abnormal Random blood sugar (RBS) value, gender-wise

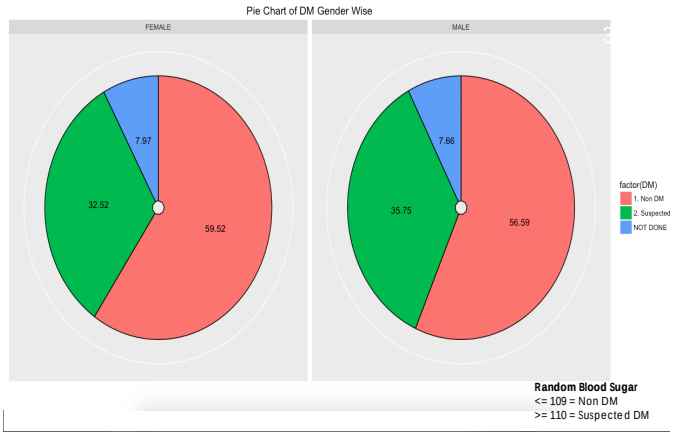
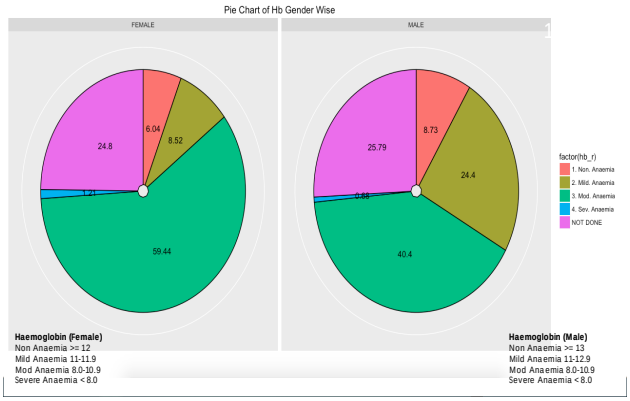


Figure 3. The proportion of public showing varying levels of Anemia levels among the screened, gender-wise



The prehypertension prevalence (values ranging from 120-139 mmHg as per Joint national committee guidelines) of 37.49% in females and 40.74% in males which is also on the higher side when compared with ICMR IndiaDia study. These prehypertension levels indicate the bomb that is waiting to explode unless suitable preventive and promotive strategy is implemented.

With regard to diabetes screening around 32.52% of females and 35.75% of males showing random blood sugar values more than 110 mg/dl in our study and it may be an indication that the prevalence of diabetes is more than the recent reports from WHO, NFHS4 and ICMR IndiaDia study. As per WHO reports in 20167 India had 69.2 million people living with diabetes (8.7%) with around 52% remained undiagnosed. The ICMR IndiaDia study shows a weighted prevalence of diabetes (both known and newly diagnosed) in Tamil Nadu was 10.4% and the prevalence of prediabetes was 8.3%. NFHS4 also reported a similar prevalence of diabetes with 11% of females and 15% of males affected.

Figure 4. The proportion of public showing abnormal Cholesterol values among the screened gender-wise

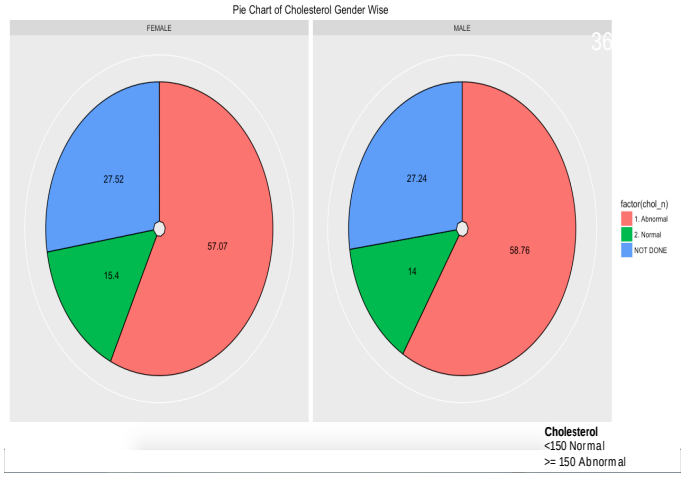
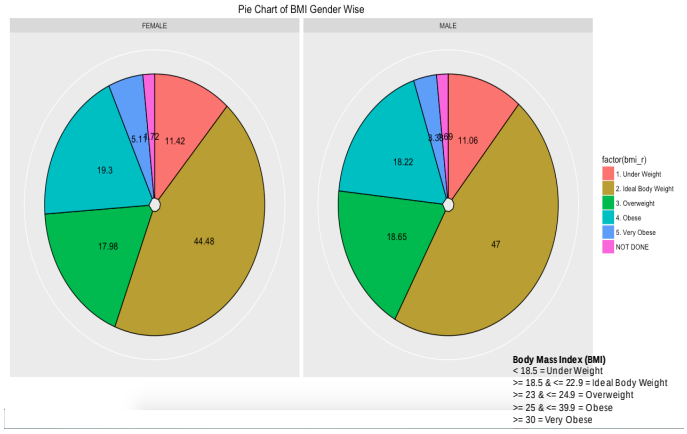


Figure 5. BMI among the screened population gender-wise.



In India, the age-standardized incidence rate of oral cancer is 12.6 per 100 000 population as per WHO8. As per our AAT report, 0.38% of the population is showing the suspected precancerous lesions in the oral cavity, which is less than the expected considering the above incidence rate and survival rate. There is scope for improvement and the co-located dental clinics in primary health centers to be suitably used for improving the performance and to take the biopsy from the precancerous lesions for histopathological examination.

Similarly, the age-adjusted incidence rate of carcinoma of the breast was found 37.9 per 100,000 women in Chennai9 and in our study, only 0.35% women who underwent clinical breast examination had suspected lesions which need further evaluation and there is potential to improve the performance.

Around 2.01 to 2.7 % of the screened population who are showing abnormal serum creatinine value needs evaluation for renal problems. Other reports need suitable

intervention and it is provided in the Government hospitals and empanelled hospitals under CMCHISTN.

With regard to anaemia, it is highly problematic as only 6-9 % of screened persons are normal (Figure 3) and rest of the population are at different levels of anaemia. When NHFS4 reported 55.1% of anaemic in women and 20.4% of men itself is an issue, this comes as a rude shock. Unless corrective measure is taken it will have an impact on increased mortality and morbidity particularly in the women of childbearing age.

Dyslipidemia is another issue confronting the state with around 57.07% females and 58.76% of male is showing abnormal values who's cholesterol value is more than 150 mg as per our AAT report, which is low when compare to 77.8% in urban areas and 76.5% in rural areas reported as per NFHS4

Our AAT reported analysis shows that obesity with BMI equal to/more than 25 kg/m^2 ranges from 21.6% in male to 24.4% in females of screened population. This is slightly less when compare to NHFS4 where obesity with BMI equal to/more than 25 ranges from 28.2% in male to 30.9% in females. As per ICMR India study prevalence of obesity in TN in urban areas is 35.7- 37.4% and in rural it ranges from 20-21%.There is an absolute need to implement the suitable measure to reverse the obesity trend in the community.

Learning and Limitations

Good start with program and needs improvement in both numbers and quality of screening. There may be quality issues in lab reports as not all the labs are following EQAS/ IQAS.All beneficiaries with abnormal values to be followed by the respective field health workers for appropriate medical care after confirmatory tests.The unique identifier (mobile, Aadhaar, ration card etc.) of the beneficiaries needs to be captured for future tracking.The results are based on people came to public health institutions and entire interpretation in this paper is based on that. The results may be different in the population going to the private sector.

Conclusion: Amma Arogya Thittam is the cost-effective solution to identify major health issues in the state through simple screening tools which can be done by health workers easily. The identified at-risk individuals should be followed up to take a confirmatory test and ensure treatment according to the need. Most of the intervention needed is available at Government facilities free of cost in Tamil Nadu and also through The Comprehensive health insurance scheme (CMCHISTN). There is a possibility of positive behaviours change in the community and overall health care cost will come down the future in view of this screening program.

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MALARIA: AWARENESS & PRACTICES AMONG RURAL COMMUNITY, EAST GODAVARI DISTRICT, ANDHRAPRADESH.

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Abstract

Introduction: India is predominantly characterized by unstable malaria transmission. In Andhrapradesh among five Endemic Districts, East Godavari is one. We made an attempt to report knowledge & practices on malaria regarding its causation, transmission, symptoms, diagnosis, treatment and prevention. **Materials & Methods:** This study was done in a rural village of Gollala.Mamidada for a period of six months. Using a simple random method a total of 200 houses was selected. Head of the household were interviewed, by using a Semi-structured questionnaire which consist questions regarding malaria causation, transmission, symptoms, diagnosis, treatment and prevention. Data were entered into excel sheets and analysed by using spss software. **Results**: Among the study participants majority were in the age group of 36 to 40 yrs. 73% have sanitary facilities in their house.68.5% have stagnated water around their house. All the study participants heard about the disease. 31.5% of the study participants obtained information regarding the disease malaria via TV & radio channels.82.5% of the participants has mosquito breeding places around their house. Ill maintained drainages were the major type of mosquito breeding places in 42.5%. 66.5% knows malaria is transmitted by Mosquitoes bite. 33.5% do not know the symptoms of Malaria. 39.5% know Malaria can be diagnosed by blood tests. 33.4% know common medicines used in Malaria.49% were using coils to protect from Mosquito bites. 40% do not know the commonly used insecticides. 97% didn't accept IRS to their houses. **Conclusion:** Good knowledge found in causation& transmission of malaria. Majority of them do not know the disease symptoms, diagnosis, commonly used medicines, insecticides for prevention and control of malaria. Poor utilization of IRS, bed nets& other protective preventive measures was noticed in this study.

Key-words: Malaria, Mosquitoes, DDT-dichloro diphenyl trichloro ethane,IRS- indoor residual srpay, LLIN'S- long losting insecticide treated bed nets.

Changes in placement and structure of human habitations as well as changes in behavior may reduce human-vector contact (WHO 1982). "The very problem of survival in India seems to be that of malaria."– Brigadier Sinton 1930.

Introduction

Malaria long a disease problem to man, was associated with the malaria parasite in 1880 by Ross al discovered that it was transmitted by the mosquito in 1885-1898. Since them, despite enormous effort in finance, manpower and others resources to combat the disease, it is still a serious problem[1].

The global toll of malaria in 2010 there were an estimated 216 million cases of malaria worldwide. In this 81% were in African region, followed by 13% in SEAR and 5% East Mediterranean. Deaths due to malaria were 6,55,000[2].

India is predominantly characterized by unstable malaria transmission. Transmission is seasonal with increased intensity to rains. Government of India is working on the control of mosquito transmitted diseases. The National Malaria Control Programme was launched in 1952 and it has been renamed as National Vector Borne Disease Control Programme in 2003.there is 6 primary vectors of malaria in India- Anopheles.culicifacies, An.stephensi, An.fluviatilis, An.minimus, An.dirus, An.epirotics.

In India about 27% population lives in malaria high transmission(>1 case/1000 population) areas and about 58% in low transmission (0-1 case/1000 population) areas. About 92% of malaria cases and 97% of deaths due to malaria is reported from North-Eastern states-Chhattisgarh, Jharkhand, Madhya Pradesh, Orissa, Andhrapradesh, Maharashtra, Gujarat, Rajasthan, West Bengal and Karnataka[3].

In Andhrapradesh 5 Endemic District namely Srikakulam, Vizianagaram, Visakhapatnam, East Godavari and Khammam. In this East Godavari District contributes to 5193 cases during 2010. Our Millennium development goal 6, target 7 denotes that malaria has to be halt by 2015. But still the situation is fluctuating[4].

The report of scientific study on perception of the community about cause, transmission, timely detection, treatment and control of the disease in this district is not readily available. In view of this the present community based study on rural population was carried out to document their knowledge and practices regarding malaria and its control.

Objectives: To assess the knowledge on malaria causation & transmission & To assess the practices on prevention and control of malaria.

Material & Methods

A cross-sectional study was done in rural field practicing area of Rangaraya Medical College, Kakinada among rural population residing in Gollala Mamidada village, in the age group of 18-60 yrs, for a period of six months starting from May to October 2012. A total of 200 houses were selected by using a simple random method[5], in each house the head of the family member were interviewed. If the head of the house is not available at the time of my visit, the next elder person was interviewed. Ethical clearance was obtained from concerned authority i.e. ethical committee from Rangaraya Medical College, Kakinada to conduct this study. We excluded uncooperative and non-responding participants from the study in the beginning itself and continued till we reach our desired sample. After obtaining verbal consent from the participants they were interviewed by using a pre-tested, semi-structured questionnaire which consist questions regarding malaria causation, transmission, symptoms, diagnosis, treatment, prevention and control measures. All the data were entered in excel sheets & analyzed by using SPSS software version 17. Results of the study were displayed in terms of means, percentage, and pie diagram & bar diagrams. The association between the two variables was checked by applying statistical test i.e chi-square test.

Results

Socio-demographic profile-

Table-1 shows the socio-demographic profile of study participants i.e among the study participants majority were in the age group of 36 to 40 yrs. Mean age of the participants 37.3 yrs. Participants gender was distributed as 33% were males & 67% were females. 76% belongs to the religion of Hindus. 55.5% were illiterates & 47% belongs to daily laborers. 41.5% were residing in semi-pucca type of house, 73% have sanitary facilities in their house & 68.5% have stagnated water around their house.

Table-1: Socio-Demographic Profile of study participants

Particulars	Percentage
AGE GROUP	
18-25 yrs	7.20%
26-30 yrs	10%
31-35 yrs	37%
36-40 yrs	10%
41-45 yrs	8%
46-50 yrs	7.50%
51-55 yrs	10.30%
56-60 & >60 yrs	10%
GENDER	
Male	33%
Female	67%
RELIGION	
Hindus	76%
Muslims	9%
Christians	15%
EDUCATION	
Illiterates	55.50%
Primary school	12.50%
High school	13.80%
Intermediate	9.40%
Graduation	8.20%
Post graduation	0.60%
OCCUPATION	
Daily labourers	47%
Unskilled	14%
Semiskilled	15%
Skilled	19%
Clerical	5%
HOUSING	
Pucca	37%
Semi-pucca	41.50%
katcha	21.50%
Stagnation of water bodies	
Present	68.50%
Absent	31.50%
Sanitary facilities	
Present	73%
Absent	27%

Knowledge on malaria causation and transmission & symptoms-

All the study participants were heard about the disease Malaria. **Figure-1** shows source of information about the disease, in that the major source of information about malaria is through TV & radio in 31.5%, followed by community health workers in 19.5%, friends in 14%, health facilities in 12%, family members in 10% and

Table -2: Educational status vs knowledge on transmission of the disease

Education	Cold weather	Mosquito bites	Dirty water	Poor personal hygiene	Don't know	Total
illiterate	3	1	0	0	0	4(2%)
Primary school	56	41	24	6	6	133(66.5%)
High school	15	4	1	0	0	20(10%)
Intermediate	21	2	1	0	0	24(12%)
Graduation	15	2	2	0	0	19(9.5%)
Total	110 (55%)	50 (25%)	28 (14%)	6 (3%)	6 (3%)	200 (100%)

Figure-1: Source of information about the disease malaria-

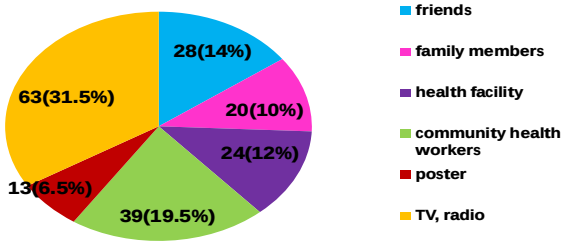


Figure-2: knowledge on Transmission of malaria

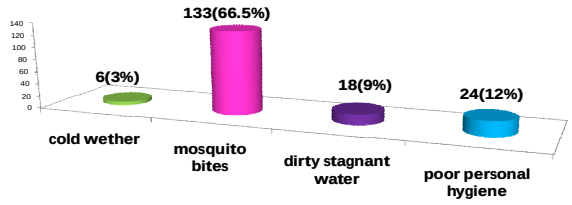
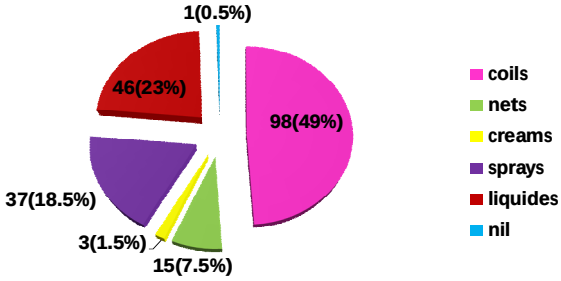


Figure-3 :Practices on protective preventive measure



posters in 6.5%. Majority 82.5% of the participants have mosquito breeding places around their house. Ill maintained drainages were the major type of mosquito breeding places in 42.5%, followed by open ditches in 30%, soakage pits in 14%, cess pools in 5%, septic tanks in 5%, and remaining 3.5% said they do not know about

Figure-4: association between educational status and knowledge on use of bed nets

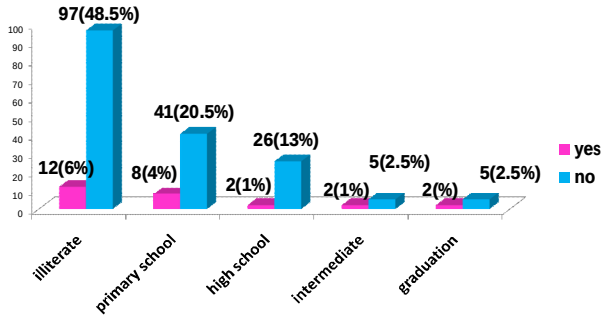
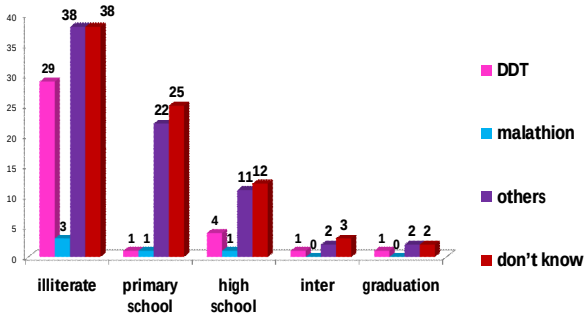


Figure-5: association between educational status and knowledge on insecticidal spray



mosquito breeding places. The association between educational status and knowledge on mosquito breeding places is significant p<0.01. 66.5% know malaria is transmitted by Mosquitoes bite, were others said 3% due to cold weather, 9% due to dirty stagnant water and 12% due to poor personal hygiene **(Figure-2)**. The association between educational status and knowledge on transmission of the disease is significant p<0.01., **(Table-2)**. 33.5% do not know the symptoms of Malaria, other responses we received as high temperature and chills in

49%, body ache and head ache in 15%, vomiting and loss of energy in 2.5 %.

Knowledge on diagnosis & treatment -

Only 39.5% know Malaria can be diagnosed by blood tests.74.6% were attacked by malaria and treated in hospital. Only 49.5% know Malaria kills the affected person if it is untreated. 24% do not know free treatment availability in Government hospital.55% had taken treatment within 24 hrs of the attack of malaria. Only 33.4% know common medicines used in Malaria i.e. Chloroquine, Quinine, Artimisinin group of drugs. The association between educational status and usage of medicine is significant p<0.01. Regarding the role of Government In control of malaria 52% said diagnosis and treatment followed by 34% spraying, 7.5% anti larval measures, 3.5% supply of bed nets, and remaining 3% do not know the answer. 90% do not have regular health workers visit to their house for providing information on malaria and diagnosis of other fever cases.

Pract qices on prevention and control-

Nearly half of the participants i.e. 49% were using coils to protect from Mosquito bites, 23% were using liquid all outs followed by 18.5% sprays, 7.5% mosquito nets, 1.5% repellant creams, and remaining 0.5% were not using any preventive measure to protect them **(Figure-3)**. Only 11.5% had Bed nets in their house. The association between educational status and knowledge on use of bed nets is significant p<0.01.,**(Figure-4)**.40% do not know the commonly used insecticides (DDT, Malathion, Permethrine). 97% didn't accept IRS to their house. The association between educational status and knowledge on insecticidal spray is significant p<0.01,**(Figure-5)**.

Discussion

In our study all the participants had heard about the disease & the source of information about malaria are through TV & radio in 31.5%. Andargie abate et al reported in their study all the respondents heard about malaria, which is similar to our study[6]. In our study 82.5% of the participants have mosquito breeding places around their house and Ill maintained drainages are the major type of mosquito breeding places in 42.5%. Kaliya perumal karunamoorthi et al reported in their study 78.1% knew that stagnant water bodies are serving as mosquito breeding sites[7], which is a more risky than our study.In our study 66.5% knows malaria is transmitted by Mosquitoes bite & 33.5% do not know the symptoms of Malaria. Bernard. A et al reported in their study 98% of the households knew malaria and it is transmitted by mosquitoes. 69% identified malaria symptoms including chills 67%, fever 58%, and headache 67%[8], which shows their participants have better knowledge in malaria symptoms and about the disease malaria as comparatively our study. Ndour.CT et al also reported that fever was the most common symptom suggesting malaria in 61% of the participants[9],it shows the equal of slightly less knowledge than our study.

In our study 39.5% know Malaria can be diagnosed by blood tests.Laura tagliaferri et al reported in their study 44.7% knew that malaria can be definitely diagnosed by means of blood test which shows better response than our study[10]. In our study 74.6% were attacked by malaria and treated in hospital. Hans Habtai et al reported in their study 93.6% had fever in their life time & 92.8% had sought medical advice in different health services, as per getting of fever attack it shows bad response, but for getting of medical advice it shows the better response[11] than our study. In our study 55% had taken treatment within 24 hrs of the attack of malaria. Hlongwana.KW et al reported in their study 90% would take treatment with in 24 hr on onset of malaria symptoms with health facilities which show a better finding than our study[12]. In our study only 33.4% know common medicines used in Malaria,Ndour.CT et al reported that 46.1% of febrile cases, people did not seek treatment from a physician & Home treatment of febrile episodes was based on paracetamol or aspirin (84%), chloroquine (13%) and cotrimoxazole (2.9%) which has a bad response than our study. Eve Worralli suprotik basu and karahanson rural residents were more likely to use medicinal plants rather than chloroquine, 40% in rural and 10% in urban were more likely to burn leaves rather than use of coils or sprays[13], their study participants going more of plant based treatment which is not a comparative finding to our study, our participants are going more of allopathy.

In our study 49% were using coils to protect from Mosquito bites, 23% were using liquid all outs followed by 18.5% sprays, 7.5% mosquito nets, 1.5% repellant creams, and remaining 0.5% were not using any preventive measure to protect them.Oreagba.AI et al reported in their study Malaria vector control were insecticide sprays, coils 46%, clearing of bushes 26.8% use of repellant creams 3.5%[14] which is equal to our study. Adedoten et al reported that Preventive measures used against malaria included herbs 44.3%, drugs 26.6%, insecticides 79.7%, repellants 4.7%, mosquito coils 14.1%, bed nets 18.2% & No preventive measures were used in 3.1%[15], which is less similar to our study.

In our study 11.5% had Bed nets in their houses. Johan paulander-henrik Olsson et al reported in their study 46.2% were using impregnated bed nets & 44% were using ITNs during rainy season and 18.2% all round the year[16], which shows better practices than our study. Oreagba.AI et al reported in their study that 59.8% were aware of the use of insecticide treated bed nets. In our study 97% didn't accept IRS to their houses. Andargie abate et al reported in their study 70.4% houses are sprayed with DDT which is a better finding than our study. In our study 90% of the participants do not have regular health workers visit to their house, it is mandatory to have a regular/fortnightly visits of health workers for

prior diagnosis, treatment control and prevention of malaria cases.

Conclusions: Good knowledge found in causation& transmission of malaria. Majority of them do not know the disease symptoms, diagnosis, commonly used medicines, insecticides for prevention and control of malaria. None of them have regular health workers visits to their houses.Poor utilization of IRS, bed nets& other protective preventive measures was noticed in this study. More than half of the participants have mosquito breeding places around their house, in that ill maintained drainages are the major source.

Recommendations-

There is a need to improve the availability of information on malaria through proper communication channels via health services. Community participation to encourage preventive practices in the control of malaria. Stressing the importance of early diagnosis and treatment through health workers. Behavioral change communication for acceptance of IRS & LLINs. Regular health workers field visits to diagnose fever cases. Implementation of environmental mosquito control measures.

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A CROSS SECTIONAL STUDY TO ASSESS THE EXISTING LABORATORY SERVICES INCOMMUNITY HEALTH CENTRES OF TAMILNADU

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Abstract

BACKGROUND : Community health centres(CHCs), the third tier of network of rural health care institution is required to act primarily as referral centre. The Indian Public Health Standards were framed to measure the effectiveness of the services provided in CHCs in 2007 and were revised in 2012. Laboratory services are crucial in making an appropriate diagnosis and thereby helps in proper management of diseases .**OBJECTIVE:** To assess the existing laboratory services in Community Health Centres in Tamil Nadu and thereby to assess the gaps in comparison with Indian Public Health Standard Guidelines. **METHODOLOGY:**A cross sectional study was conducted in all Community Health Centres of Madurai district and data were collected in terms of available laboratory services by onsite evaluation from October – November 2016, using a standard structured facility Indian Public Health Standard survey format for Community Health Centres. **RESULTS:** Of the recommended, Biochemistry investigations like blood Sugar, blood Urea and serum Cholesterol, Serology investigations were 100% available in all 13 CHCs. It was observed that Urine investigations and a package of basic Antenatal Investigations were 100% available in all the Community Health Centers. **CONCLUSION:** Although the availability of Laboratory Services for Maternal and Child Health care and Non communicable Diseases was 100% available, the availability of investigations for Communicable diseases like smear for Klebshiella and gram stain for throat swab were less compared to IPHS guidelines. Laboratory services are one of the basic determinants of utilisation of health services. So it is mandatory that the Government ensures the adequate readiness and accessibility of Laboratory services .

Key-words: Community Health Centres , Laboratory services , IPHS guidelines

Introduction

" GOOD HEALTH IS THE BEST WEALTH "

Government of India, keeping in view of the World Health Organisation goal, " HEALTH FOR ALL" by 2000 AD,[1] evolved a national health policy based on primary health care approach.Steps were taken to implement the policy objectives towards achieving the health for all goal. During the last decade further development of rural healthcare infrastructure took place in view to implement National Health policy 2002 and later , National Rural Health Mission with formulation of Indian Public Health Standard guidelines. The mission seeks to provide effective health care to rural population. Towards this end, Indian Public Health Standard guidelines(IPHS) for sub centres, Primary Health Centres,Community Health Centres, Subdistrict and District hospitals were published in January/ February 2007 and have been used as the reference point for public health infrastructure , and envisaged to improve the quality of health care delivery in the country.

Community Health Centre(CHC), the third tier of network of rural health care institution is required to act primarily as referral centre for patients requiring health services for every 4 PHCs covering 80,000 – 1.2 lakh population.[2] The National Health Policy 2017 aims at increasing the utilisation of Public Health facilities by 50% from current levels by 2025.[3]Facilities like laboratory services is one of the determinants influencing the utilisation of health care services. Laboratory services support the clinical management of diseases in Community Health Centres. A proper diagnosis plays 2 important roles –One, it improves the effectiveness of the treatment and two, itminimises the treatment expenditure by helping in early and prompt diagnosis of the diseases. There are only few documented studies on assessment of laboratory services at Community health centres as per Indian Public Health Standard Guidelines. The present study aims to assess the existing laboratory services in

Community Health Centres and to assess the existing gaps with regard to Indian Public Health Standards guidelines. This study may help in guiding the policy makers to improve the availability of health services offered to rural population and henceforth improve the utilisation of health care facilities.

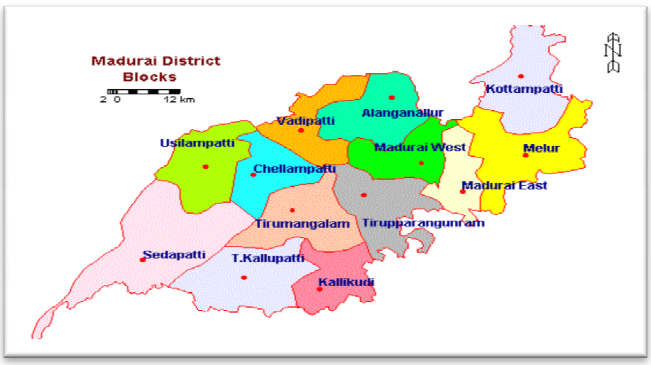
Material & Methods

A cross sectional study was conducted in Tamil Nadu from October 2016 – November 2016. All the 42 Health Unit Divisions in Tamil Nadu were enlisted and out of which one Health Unit Division(Madurai) was chosen by simple random sampling technique. All the Community Health Centres in the selected HUD were assessed for the availability of Laboratory services. On site evaluation of all the CHCs was done and supplemented by interview with the concerned lab technician using a standard structured Indian Public Health Standards Facility survey format. Ethical approval was obtained from Institutional Ethics Committee, Madras Medical College, Chennai. (ECReg.No.ECR/270/Inst./TN/2012) Official permission to conduct the study was obtained from Directorate of Public Health, Chennai and The Deputy Director of Health Services ,Madurai. The Block Medical Officers of the concerned Community Health Centres were explained about the study and permission obtained to conduct the study. The data obtained were entered in Microsoft Excel sheet and analysed using standard statistical techniques. Descriptive statistics was used to analyse the data.

Mapping of Community Health Centres :

The Community Health Centres were located on an average distance of 32kilometres from the nearest referral centre – Government Rajaji Hospital, Madurai Medical College. Tirupparankundram Community Health Centre being the nearest (10 km) and Elumalai Community Health Centre being the farthest,59 km away from the referral centre. **(FIGURE 1).** MANPOWER:A study conducted to assess the existing manpower in community health centres of Madurai HUD revealed that 76.9% (20 out of 26) Lab technicians were available4.In all 13 Community Health Centres 1 regular lab Technician was available and in few Community Health Centres 1 Lab Technician for Integrated Counselling and Testing Center were also available.

Figure 1 MADURAI HUD- Map showing all 13 Community Health Centres of Madurai Health Unit Division and GRH- Government Rajaji Hospital



Box 1: Investigations Recommended By IPHS

CATEGORY	INVESTIGATIONS DONE
Biochemistry Investigations	Blood sugar , Blood urea , serum cholesterol, Liver Function Test, Renal Function Tests.
Haematology Investigations	Haemoglobin estimation, Total Leucocyte Count, Differential Leucocyte Count, Absolute Eosinophil Count, Reticulocyte Count, Total RBC Count, Blood Grouping & Typing, Cross Matching, Peripheral Blood Smear, Peripheral Blood Smear for Malarial parasite& Microfilaria, Platelet Count, Packed Cell Volume.
Pathology & Microbiology Investigations	Sputum cytology, Smear for AFB, Smear for Klebsheilla,Gram stain for throat swab.
Serology Investigations	VDRL,Widal, Urine Gravindex
Cardiac Investigations	ECG
Opthalmic Investigations	Refraction by Snellen'schart ,Opthalmoscopy, Retinoscopy.
Radiological Investigations	Ultrasonogram, Dental X-Ray
Urine Analysis	Urine albumin, Sugar, Deposits, acetone, Bile salts , Bile pigments, pH, Specific Gravity.

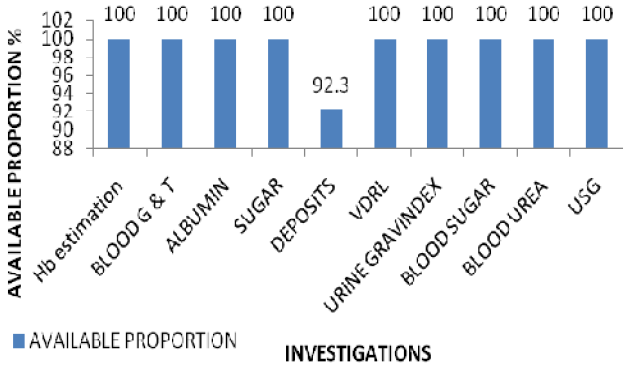
Indian Public Health Standards recommends a set of investigations to be done in Community Health Centres which are enlisted in BOX 1.

Results

Investigations like Hemoglobin estimation, blood smear for malarial parasite and microfilaria, blood grouping & typing Smear for AFB , serology(VDRL, Urine Gravindex, widal) USG , Urine for Albumin and Sugar were 100% available in all the Community Health Centres.

It was observed that a set of basic antenatal investigations recommended in Indian Public Health Standards Facility survey format including Hemoglobin estimation , Blood Grouping & Typing , Urine for - Albumin , Sugar & Deposits , Blood Sugar, Blood Urea and Ultrasonogram were 100% available in all the Community Health Centres.(FIGURE 2)

Figure 2 Antenatal Package- the availability of basic antenatal investigations



Investigations like Sputum cytology, Smear for Klebshiella, Gram stain for throat swab,Renal Function Test ,Absolute Eosinophil Count, Reticulocyte count,Total RBC Count, PCV, Ophthalmoscopy ,Retinoscopy were not available in any of the CHCs. X-Ray for spine, chest, abdomen , dental X-Ray , Total

count, Differential count was being done in only 1 out of the 13 CHCs.Hematology investigations like ESR, Platelet count, Cross matching were available in 5 out of 13 CHCs.(TABLE 1)

Table 1 : Results Showing The Available Laboratory Services

INVESTIGATIONS RECOMMENDED BY IPHS	AVAILABILITY OUT OF 13 CHCs	AVAILABILITY (in %)
HEMATOLOGY		
Hemoglobin Estimation	13	100
Total Leucocyte Count	1	7.7
Differential Leucocyte count	1	7.7
Absolute Eosinophil Count	0	0
Reticulocyte count	0	0
Total RBC count	0	0
ESR	5	38.5
Peripheral Blood Smear	2	15.4
PBS for Mp/Mf	13	100
Platelet Count	5	38.5
PCV	0	0
Blood Grouping &Typing	13	100
Cross Matching	6	46.2
BIOCHEMISTRY		
Blood Sugar	13	100
Blood Urea	13	100
LFT	2	15.4
RFT	0	0
Serum Cholesterol	13	100
PATHOLOGY & MICROBIOLOGY		
Sputum cytology	0	0
Smear for AFB	100	100
Smear for KLB	0	0
Gram stain for throat swab	0	0
SEROLOGY		
VDRL	13	100
Urine Gravindex	13	100
Widal	13	100
CARDIAC INVESTIGATIONS		
ECG	13	100
OPTHALMIC INVESTIGATIONS		
Refraction by Snellen's chart	13	100
Retinoscopy	0	0
Ophthalmoscopy	0	0
RADIOLOGY INVESTIGATIONS		
Ultrasonogram	13	100
Dental X –Ray	1	7.7
Other X-Rays	1	7.7
URINE ANALYSIS		
Uine albumin	13	100
Urine sugar	13	100
Urine deposits	12	92.3
Bile salts, bile pigments	13	100
Acetone	1	7.7
Specific gravity	0	0
pH	0	0

Discussion

According to NFHS 4, the proportion of mothers who had at least 4 antenatal visits in rural Madurai was 71% and the proportion of Institutional births in public facility was 74.9%. The availability of the above mentioned basic antenatal investigations would facilitate the provision of free diagnostics as a part of Janani Shishu Suraksha Karyakram which would therefore reach the needy antenatal women and in turn facilitate more institutional deliveries in Government Health Care Facilities.Also the average out of pocket expenditure per delivery in public health facility in rural Madurai was INR 2752.[5] The availability of these essential investigations would therefore bring down the expenditure for delivery.

The Situation Analysis of National Health policy 2017 states that there is a growing burden of diseases on account of Non Communicable Diseases. India is experiencing a rapid health transition with a rising burden of Non Communicable Diseases and causing significant mortality & morbidity both in rural & urban population.[6]The National Program for Prevention and Control of Cancer, Diabetes, Cardio Vascular Diseases and Stroke (NPCDCS) has two components viz. (i) Cancer & (ii) Diabetes, Cardio Vascular Diseases& Stroke. The objectives of the program include Early Diagnosis and Treatment ,Surveillance, Monitoring & Evaluation of these diseases.[6] India has high load of Diabetic cases .Diabetes Mellitus and its complications are to be screened from the grass root level. The availability of investigations like Blood Sugar, Urea , Serum Cholesterol and ECG was 100% in all the Community Health Centres which makes the diagnosis and management of Non Communicable Diseases like Diabetes Mellitus and Cardio Vascular Diseases possible at the Community Health Centre.

HEMATOLOGICAL INVESTIGATIONS :

It was revealed that Haematological investigations like Haemoglobin estimation, Peripheral smear for Malarial parasite& Microfilaria, Blood Grouping & Typing were available in all CHCs (100% available). In India 20% of Maternal MortalityRatio is due to indirect causes like anaemia, malaria & heart diseases. This makes the management conditions like anaemia and malaria mandatory at the CHC. Peripheral Smear Examination was available in only 2 out of 13 CHCs and Packed cell volume was not available in any of

the CHCs. Mild and Moderate degrees of anaemia can be managed at the level of Community Health Centre itself which requires regular Haemoglobin estimation , Packed cell volume(to assess the efficacy of treatment) and Peripheral Smear Examination (to distinguish the type of anaemia).

Malaria continues to pose a major public health problem in India. In India 21.98% population live in malaria high transmission areas and 67% in low transmission areas.[7] Under National Vector Borne Disease Control Programme(NVBDCP)disease management including early case detection and complete treatment is one important strategy. Again early Diagnosis and radical treatment is a strategy in the more recent National Framework for Malaria elimination 2016.[8] The diagnosis of malaria is based on the Microscopic examination of thick and thin smears which is the most accepted method for diagnosis of Malaria with high sensitivity and it also measures the parasite load . It was observed that Peripheral smear for Malarial parasite & Microfilaria was 100% available in all the CHCs.

Total Leucocyte Count and Differential Leucocyte Count are carried out in the investigation of infections, fever, haematological disorders, malignancy, follow up of Chemotherapy and Radiotherapy. Total Leucocyte Count(TLC) & Differential Leucocyte Count (DLC) were available in only 1 CHC (7.7%, n=1). Peripheral Blood Smear can be useful in diagnosing the cause of anaemia, identifying & typing of Leukemia, monitor the effect of Chemotherapy and Radiotherapy. Peripheral Blood Smear(PBS) was available in 2 out of 13 Community Health Centres .The availability of these investigations can be helpful for monitoring patients on Chemotheraphy and radiotheraphy in CHCs itself eventhough they are taking treatment for Malignancies in tertiary care centres.

In India ,the risk of Dengue has shown an increase in recent years. Dengue is endemic in 35 states. During 2014, about 40425 cases were reported with 137 deaths.[2] Tamil Nadu is also one among the states with highest number of cases. Quick and precise dengue diagnosis is of a principal importance for clinical management; The management of the disease is essentially symptomatic with monitoring of platelet count and Packed Cell Volume (Haematocrit) . Platelet Count was done in only 5 out of 13 CHCs and Packed Cell Volume was not available in any of the facilities. (TABLE 1)This makes unnecessary and unwanted referral of cases of Dengue to next level of referral centre for the sake of these investigations.

SEROLOGICAL INVESTIGATIONS: Urine gravindex, Widal& VDRL tests were 100% available. Widal availability is useful mainly in typhoid endemic areas and makes the control of the disease possible.

RADIOLOGICAL INVESTIGATIONS:

Ultra sonogram, X-Ray for chest, skull, bone, spine, abdomen, Dental X-Ray is to be done in CHCs according to IPHS guidelines. Ultra sonogram was 100% available in all CHCs. X-rays were available in only 1 CHC out of 13.A simple X-Ray for Bone fracture when not available consumes the time, money of the patient and also puts the patient to mental stress.

MICROBIOLOGY & PATHOLOGY INVESTIGATIONS :

Of the Microbiology and Pathology investigations mentioned in the Indian Public Health Standards Facility survey format sputum cytology, Smear for Klebsheilla , Gram stain for Throat swab were not available at all. It was revealed that Sputum for AFB was 100% available in all 13 Community Health Centres. India has the highest burden of Tuberculosis in terms of number of incident cases each year. In 2014, 3,43,032 cases of pulmonary Tuberculosis were diagnosed in India.[2,9] This high burden warrants the diagnosis , management &followup of the disease crucial. RNTCP has percolated through the public health care facilities and sputum for AFB availability being 100% adding to the effectiveness of the program.

A study conducted in Primary Health Centres and Community Health Centres of Madhya Pradesh showed that the availability of laboratory based tests were negligible at PHCs, and low at CHCs[10] and compared to that study the Community Health Centres in Madurai are in a better position in respect to functioning of laboratories.Another study conducted in Northern Kashmir revealed that out of 16 PHCs, 15 had laboratory facilities, ECG services were available at five PHCs (31.25%) had availability of ECG facility, while only 3(13.7%) had ultrasonography facility.[11]Padalkar et al study reveals that out of total 123 Primary Health Centres only 9.7% (n=12) of the Laboratories were found to be functional.[12]

Also to avoid patient referral for the sake of investigations, Hub & Spoke MODEL can be used in which the samples collected from the patients can be transported to the nearby District hospitals/ Medical college Hospitals and the reports despatched back to the concerned CHCs thereby minimising patients time and money. A study conducted in UK demonstrated that hub & spoke model for laboratory diagnostic testing can improve the timeliness and predictability of delivery of results to clinicians.[13]

CONCLUSION: Community Health Centres are principally required to act as referral centre. The study identified that most of the basic investigations for antenatal women including Hemoglobin estimation , Blood Grouping & Typing , Urine for - Albumin , Sugar & Deposits , Blood Sugar, Blood Urea, ECG and Ultrasonogram were fully functional. Investigations like Blood Sugar, Blood urea, Urine Sugar, Serum Cholesterol, ECG for management of Non communicable Diseases were available .Most of the Hematological Investigations (except haemoglobin estimation and peripheral smear for malaria), sputum cytology, gram stain for throat swab, smear for Klebshiella were not functional in most CHCs which shows that Community Health Centres in Madurai are lagging behind in managing Communicable Diseases.Similarly Dental X-

Ray and X-Ray for Chest, skull, abdomen & spine were available only in 1 CHC which projects the gap in managing cases requiring X-Rays like tooth extraction, Fractures etc .So when attempts are to made to fulfil the gaps, CHC would definitely be transformed into a comprehensive universal health care provider.

LIMITATIONS: The study has assessed only the availability of Laboratories services by the investigations being done and not quality of services available. Hence just availability may not always translate into functionality.

RECOMMENDATIONS

One suggestion would be to tie up with nearby private laboratories for investigations like urine ketones, platelet count, X-Rays which are mandatory investigations.

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PROFILE OF HIV-SEROPOSITIVE CLIENTS ATTENDING ICTC IN A GOVT. MEDICAL COLLEGE HOSPITAL, NELLORE.A.P.

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Abstract

BACKGROUND: The HIV infection is a global pandemic and has grown into a public health problem of unprecedented magnitude. National adult (15–49 years) HIV prevalence is estimated at 0.26% in 2015 and in Andhra Pradesh & Telangana (0.66%). Integrated counselling and testing could be considered as a cost-effective way of reducing HIV transmission in resource poor countries like India. **OBJECTIVES:** To study the socio demographic characteristics, risk behaviour of HIV seropositive clients and to find out the seropositivity among attendees of ICTC attached to Govt. Medical College Hospital, Nellore. **MATERIAL AND METHODS:** It is a cross sectional, record based study conducted at Integrated Counselling and Testing Centre attached to Govt. Medical College Hospital, Nellore during the last quarter of 2016. All data pertaining to the above-mentioned period were collected from Patient Information Details (PID) register with the help of a structured proforma for ICTC by NACO maintaining strict anonymity of the clients.Statistical analysis was done using SPSS 19.0 Version.**RESULTS:**Data was collected among 213 HIV seropositive clients during period of three months – Majority (80.8%) of sero positives were in the age group of 15-49 yr, a significant association ($p< 0.001$) was found with daily wage labourers and male sex. In 97.2% there was heterosexual transmission.**CONCLUSION & RECOMMENDATIONS:** HIV sero positivity was very high among married sexually active men, primary school literates working as daily labourers with agricultural background. Enhancement of awareness on spouse/partner testing requires immediate emphasis to halt progress of the diseases among general population. This will be useful for policy makers to take appropriate interventions for prevention and control.

Key-words:ICTC, clients, seropositive, HIV, NACO.

Introduction

The HIV infection is a global pandemic and has grown into a public health problem of unprecedented magnitude.There are 36.7 million people in the world, living with HIV and 2.1 million are newly infected with HIV in 2015[1]. National adult (15–49 years) HIV prevalence is estimated at 0.26% in 2015[2] and in Andhra Pradesh & Telangana (0.66%). ICTCs, previously known as Voluntary Counselling and Testing Centres (VCTCs) provide key entry points for the continuum of care in HIV/AIDS for all sections of the population[3]. Pre- and post-test counselling is among the standard components of prevention, addressing to psychological needs. People can access accurate information about HIV prevention and care and undergo HIV test in a supportive and confidential environment. People who are found HIV negative are supported with information and counselling to reduce risks and remain HIV negative. As on 31st August 2016 in India, there are 20,756 Integrated Counselling and Testing Centres (ICTC). Integrated counselling and testing could be considered a cost-effective way of reducing HIV transmission in resource poor countries like India [4].

Objectives: To study the socio demographic characteristics, risk behaviour of HIV seropositive clients and to find out the seropositivity among attendees of ICTC attached to Govt. Medical College Hospital, Nellore.

Material and methods

The study was conducted among clients who visited ICTC either by self referral or referred by a health care provider during the last quarter of 2016 (October to December). It is a cross sectional, record based study conducted at Integrated Counselling and Testing Centre attached to Govt. Medical College Hospital, Nellore. Necessary clearance from the Institutional Ethics Committee of Government Medical College was obtained before conducting the study. All the clients received pre-test counselling. Following consent, the clients underwent HIV testing voluntarily. Samples were tested as per strategy and policy prescribed by National AIDS Control Organisation (NACO). All clients received post-test

counselling when they returned for their results. Those tested positives were referred to Highly active anti-retroviral therapy (HAART) centre attached to medical college hospital. Those found negative received information on change of risk behaviour. Information obtained from the counselling and the HIV test results were documented and linked by a number assigned to each client at time of first contact with the centre called Personal Identification Digit (PID). All data pertaining to the above-mentioned period were collected from Patient Information Details (PID) register and other relevant registers with the help of a structured proforma prepared from Operational Guidelines for ICTC by NACO [5] maintaining strict anonymity of the clients.Data was entered in MS Excel and Statistical analysis was done using SPSS 19.0 Version and were expressed in simple proportions. Chi-square tests were done at 5% level of significance

Results

A total of 2957 of clients attended ICTC of Government Medical College Hospital, Nellore during three months duration among whom 213 were found to be sero positive. Data was collected among those 213 HIV seropositive clients and results were as follows – Majority (80.8%) of sero positives were in the age group of 15-49 yrs, a significant association (p< 0.001) was found with daily wage labourers and male sex. 47.4% were daily wage labourers and 95.8% were married (Table 1).

Table 1: Sociodemographic Profile of HIVSeropositive Clients (N=213)

Variable	Male no. (%)	Female no. (%)	Total no. (%)
Age group(yrs)			
<15	**3(2.7)**	**3(3)**	**6(2.8)**
15 – 49	**85(75.9)**	**87(86.1)**	**172(80.8)**
>50	**24(10.9)**	**11(10.9)**	**35(16.4)**
(χ 2= 4.295, df=2, p>0.05)			
Educational status			
Illiterate	**23(20.5)**	**11(10.9)**	**34(16)**
Primary school	**55(49.1)**	**66(65.3)**	**121(56.8)**
Secondary	**30(26.8)**	**22(21.8)**	**52(24.4)**
College and above	**4(3.6)**	**2(2)**	**6(2.8)**
(χ 2= 6.582, df=3, p>0.05)			
Occupation			
Daily wage	**101(90.2)**	**0(0)**	**101(47.4)**
Salaried	**5(4.5)**	**0(0)**	**5(2.3)**
Housewife	**0(0)**	**99(98)**	**99(46.5)**
Student	**6(5.4)**	**2(2)**	**8(3.8)**
(χ 2= 206.98, df=3, p<0.001)			
Marital status			
Married	**105(93.8)**	**99(98)**	**204(95.8)**
Single	**7(6.3)**	**1(1)**	**8(2.8)**
Widowed	**0(0)**	**1(1)**	**1(0.4)**
(χ 2= 5.122, df=2, p>0.05)			

Fig.1: Showing Risk Groups of HIV Seropositive Clients (N=213)

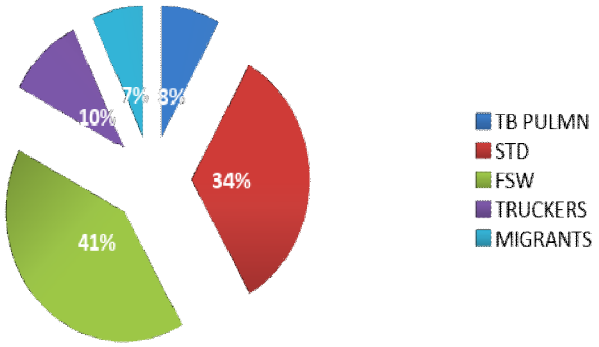

Fig2: Showing Risk Behaviour of HIV Seropositive Clients (N=213)

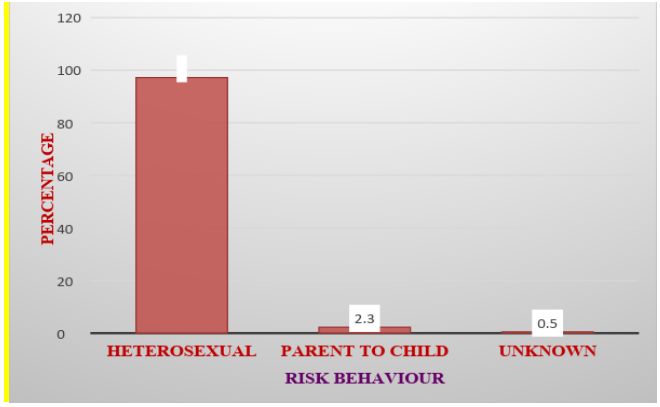

Table2: Distribution of HIV Seropositives According to Testing of Partners and their Results (N=213)

Spouse/partner tested	**Number (%)**
No	**157(73.7)**
Yes	**56(26.3)**
HIV positive	**35(16.4)**
HIV negative	**21(9.9)**

Table 3: Month Wise HIV Seropositivity of ICTC Attendees (N=2957)

Month	Male (%)	Female (%)	Total (%)
Oct	**49/571(8.58)**	**44/479(9.18)**	**93/1050(8.85)**
Nov	**37/624(5.92)**	**30/428(7.01)**	**67/1052(6.36)**
Dec	**26/618(4.2)**	**27/341(7.91)**	**53/855(6.2)**

In our study, female sex workers (41%), clients of STD (34%) followed by truck drivers (10%) formed the majority of risk groups (Figure 1). In 97.2% there was heterosexual transmission followed by parent to child (2.3%) (Figure 2). Among 26.3% of partners who were tested for seropositivity, 16.4% were found to be seropositive (Table 2). The HIV seropositivity was 7.2% in the present study. Month wise seropositivity ranged from 6.2% to 8.85%.

Discussion

Counselling and testing are important for prevention and control of HIV/AIDS. A total of 2957 of clients attended ICTC of Government Medical College Hospital, Nellore during the study period of whom 213 were found to be sero positive

The present study clearly indicates that 52.6% of seropositives were male. 60% in a study by Ghosh[6] et al. Gupta M[7] inKarnataka and Vyas N[8] reported 64.7%, 65.1% of seropositives were males respectively. This indicates the existence of some barriers preventing the access of females even now. Stigma and discrimination may also be a barrier for them.

In the present study, 80.8% of the clients belonged to the age group of 15-49 years which is sexually active age group and 88.7% at Udupi[7], Karnataka.

56.8% of study subjects had their primary school education. 29.7% had their secondary school education in a study by Sanjay et al[8], Wardha. 46.9% were illiterate in study by Ghosh et al.[6] This difference may be due to regional demographic variation.It seems that education does provide some protection. As such the people who are well educated are more receptive to information, education and communication and amenable to interventions.

About 95.8% of the seropositive clients were currently married in the present study. Similar observations were reported by Vyas N et al[9] this higher rate of married clients (93% men and 82.5% women) were probably due to local custom of early marriage.

About 47.4% of the seropositives were daily-wage earners, followed by housewives indicating poor attendance of high risk groups (HRGs) in ICTC. A significant association ($p< 0.001$) was found with occupation and sex. Joardar[4]GK reported that 30.3% male seropositive had unskilled work as occupation. Majority of seropositive males were drivers in the study by Vyas N[9]. However, among females, majority were housewives similar to the study by Gupta et al[7]indicating that HIV infection is no longer restricted to commercial sex workers. Rather the infection has spread into general population and rates of infection are reported to be increasing among monogamous women through unprotected sex with infected partners[10].

Heterosexual route was the most common route of transmission (97.2%) which is higher than the national average (88.2%) and similar to study by Sanjay et al [8](92.6%).

About 73.7% of client partners were not tested in the present study and a significant association was found between risk groups and HIV testing and HIV status of partner ($p<0.001$) similar to Ghosh et al[6], (less than one-third) especially when 16.4% of the tested spouses of seropositive clients came out to be HIV positive. This may be due to unawareness regarding the mode of transmission of the disease. The HIV seropositivity was 7.2% in the present study, which was more than in studies of Sanjiv[11]at Meerut (1.12%), Kiran[12] at Ranchi (6.90%) and less than in studies by Gupta[7] at South Kannada (9.6%) and Joardar[4] at West Bengal (17. 1%).The difference of HIV prevalence in different studies may be attributed to difference in health seeking behaviour in different parts of the country due to varied sociocultural differences of the community.

CONCLUSION & RECOMMENDATIONS:

HIV sero positivity was very high among sexually active, men, who studied till primary school and working as daily labourers in agricultural background and married. Since higher literacy helps in the improvement of the socio-economic status of the individual which will help to modify the other socio-demographic determinants. Also, improved literacy level will help in better understanding of the disease process, its mode of transmission, personal protective measures to be employed. This will give the empowerment of societal responsibilities at the individual level, which will help in preventing the spread of this pandemic. The commonest mode of acquiring infection was heterosexual contact, emphasizing the need to strengthen our Information education and communication (IEC) strategies to contain HIV/AIDS. Marital life itself becomes a risk factor for those women who get infected by their HIV positive spouse there by transmitting the disease vertically also. Enhancement of awareness on spouse/partner testing requires immediate emphasis to halt progress of the diseases among general population. This will be useful for policy makers to take appropriate interventions for prevention and control.

Limitation Of Study

This study was conducted from the ICTC of Tertiary Care Hospital that is situated in the District headquarters and clients from surrounding area can avail the services which could bias study results. This was a record-based study, a direct interview with the clients would have been better to get information on migration and condom use.

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A STUDY TO ASSESS THE STRESS LEVELS AND THE FACTORS INFLUENCING STRESS AMONG WORKING WOMEN PROFESSIONALS OF BANGALORE CITY.

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Abstract

Introduction: Work plays a central role in the lives of many people, and the impact of occupational stress is an important issue both for individual employees and the organizations in which they work. As women take on the role of working professionals in addition to their traditional role of being homemakers, they are under great pressure to balance their work and personal lives. Thus this study attempts to assess the level of stress among working women professionals- doctors, engineers and lawyers, and the factors influencing stress in them. **Methodology**: A cross sectional study was conducted among 378 women professionals (Doctors, Engineers and Lawyers) working in Medical Colleges and Hospitals, Information Technology (IT) companies and civil courts of Bangalore city using Simple Random sampling method. The stress components of the Depression, Anxiety and Stress scale (DASS) were used to assess the stress levels. Data regarding socio demographic profile and the factors influencing stress was collected using a pre-tested semi-open ended and self-prepared questionnaire. **Results**: The overall prevalence of stress was estimated to be 38.1% among the working women professionals. Out of them, 13.8% had mild stress, 20.9% had moderate stress and 3.4% were severely stressed. The mean stress score was 12.58 $\pm$ 7.33. **Conclusion:** More than two-third of the working women professionals were found to be under stress. This shows that many working women are stressed, trying to balance an ever-growing burden of professional responsibilities and personal commitments.

Key-words: Working Women Professionals, Stress levels, Doctors, Engineers, Lawyers, Information Technology.

Introduction

Stress is a normal physical reaction to internal and external pressures placed on a person's system. A major source of stress, particularly in transitional societies, is the conflict generated by new opportunities and frustrations arising from social changes.[1] Stress have affected almost all professions of the society, posing a threat to mental and as well as to physical health. Work plays a predominant role in the lives of many people, and the impact of occupational stress is an important issue for the individual employees and also for the organizations in which they work.

A woman who earns a salary, wages or other income through regular employment usually outside the home is considered as working woman. A professional is a person who does a job that needs special training and a high level of education.[2] Out of the many professionals who are affected by emotional stress, doctors, engineers and lawyers comprise a major and important group.

One of the significant changes seen in last decade in our country is the emergence of large number of women professionals. As women take on the role of working professionals in addition to their traditional role of being homemakers, they are under great pressure to balance their work and personal lives.

As per Census 2011, the workforce participation rate for females at the national level stands at 25.51% compared with 53.26% for males. In the rural sector, females have a workforce participation rate of 30.02% compared with 53.03% for males. In the urban sector, it is 15.44% for females and 53.76% for males.[3]

As per National Sample Survey (68th Round), the worker population ratio for females in rural sector was 24.8 in 2011-12 while that for males was 54.3. In Urban sector, it was 14.7 for females and 54.6 for males.[3]

Interest in professional stress research among women is growing primarily because of the increasing evidence of adverse effects of profession on psychological and physical health of women employees. This study attempts to assess the level of stress among working women professionals- doctors, engineers and lawyers, and the factors influencing stress in them, as the Indian society has witnessed a surge in the participation of women in the workforce.

Methods

A cross-sectional descriptive study was carried out from April 2015 to March 2016 among randomly selected working women professionals – namely doctors from selected Medical College and Hospitals, engineers from selected IT companies and lawyers practicing in selected Civil courts located in Bangalore South zone. The sample size obtained was 378 based on a previous study by Saini NK, et. al.[4]

A sampling frame of all the medical college and Hospitals, IT companies and civil courts in Bengaluru south zone was prepared. From the sampling frame six Medical College and Hospitals, six IT companies and two civil courts were randomly selected using lottery method. In order to ensure equal representation of the sample, 126 working women were included from each profession. From each Medical college and IT company 21 women professionals and from each civil court 63 lawyers were selected randomly. The employees who belonged to 25-45 years age group, working for minimum of six hours per day at their workplace and who give consent for the study were included in the study. The women who are under treatment for stress related illness and who are in their training period of work were excluded.

Data collection was started after obtaining clearance from the Institution Ethical Committee. Permission was obtained from the respective Dean of Medical College and Hospitals and Managing Director of the IT companies to conduct the study. The professionals were approached at their work place and after taking Informed consent for the study, questionnaires were personally distributed. The purpose of the study was explained and then the participants were told to give appropriate and exact response without any hesitation and free of bias. The filled questionnaires were collected on the same day.

A pre-tested, semi-structured and self-designed questionnaire was used in the study. It consisted of **four** sections;

Section one: Socio-demographic details like Contact number, Age, Religion and Occupation

Section two: Information regarding their workplace

Section three: Information regarding their home or personal life

Section four: The stress components of Depression Anxiety Stress Scale to elicit the presence of stress in the study population.

Data entry and analysis was done using Microsoft excel sheet and SPSS version 23.0. Data was presented in the form of tables, figures, graphs, wherever necessary. Statistical methods used include descriptive statistics (Percentages and Mean). Pearson Chi Square test of significance was used to find the association between variables. Fisher Exact probability test was used whenever the cell frequency was very small (< 5).

Results

The overall prevalence of stress was estimated to be 38.1% among the working women professionals. Out of them, 13.8% had mild stress, 20.9% had moderate stress and 3.4% were severely stressed. The mean stress score according to the stress components of Depression, Anxiety and Stress scale was 12.58 ± 7.33. Engineers (42.8%) were found to be with considerable more stressed followed by doctors (38.1%) and lawyers (33.4%). The statistical test indicates that there is significant difference in the occupational stress scores among the group of women professionals. (Figure 1)

Figure 1: Distribution of study subjects according to stress level

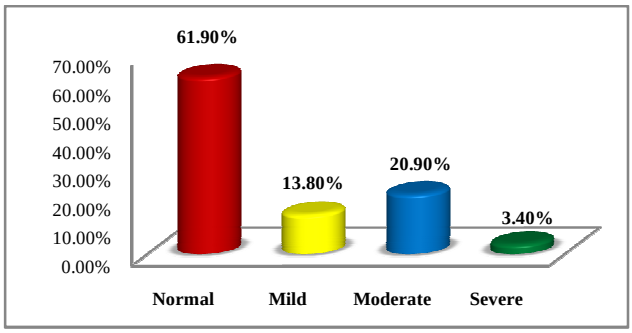

Table 1: Distribution of study participants according to age and religion.

Parameter	Frequency (%)	Significance
Age		
25 - 30 years	93 (24.6%)	$\chi^2 = 8.754$
31 - 35 years	121 (32.01%)	**p = < 0.05**
36 - 40 years	117 (30.95%)	
41 - 45 years	47 (12.43%)	
Religion		
Hindu	301 (79.6%)	$\chi^2 = 3.786$
Muslim	32 (8.46%)	p = > 0.05
Christian	45 (11.9%)	

** χ^2 = Chi-square value*

The mean age of the study subjects was 34.57 ± 5.0 years. Nearly two-third of the doctors (63%) were aged between 31-40 years and majority of them (79.7%) belonged to Hindu religion. A statistically significant association was found between age of the women professionals and stress. Subjects between 36 years and 40 years of age had the highest prevalence of stress. (Table 1)

About 50.5% of the respondents had work experience of less than 5 years while 36.8% of them had 6 to 10 years of experience. Nearly 43% of women were working for more than 8 hours per day. The relation between working hours and stress was statistically significant (p<0.05). This explains that there is a direct impact of working hours on the stress percentage undergone by the working women. A large majority of

women professionals (82.3%) surveyed were satisfied with their profession and statistically significant association was found between dissatisfaction with job and high stress levels. (Table 2)

Table 2: Distribution of study participants according to factors related to their workplace.

Parameter	Frequency (%)	Significance
Work experience		
< 5 years	191 (50.52%)	χ^2 = 6.091
6-10 years	139 (36.77%)	p = > 0.05
11-15 years	36 (9.52%)	
> 15 years	12 (3.17%)	
Working hours		
< 8 hours	217 (57.4%)	χ^2 = 4.287
> 8 hours	161 (42.6%)	**p = < 0.05**
Can you speak your mind to your colleagues?		
Very frequently	51 (13.5%)	
Frequently	186 (49.2%)	χ^2 = 2.918
Occasionally	119 (31.5%)	p = > 0.05
Rarely	18 (4.8%)	
Never	04 (1.1%)	
Do you feel most of the time that you have conflicts with colleagues?		
Very frequently	57 (15.1%)	
Frequently	162 (42.9%)	χ^2 = 55.627
Occasionally	147 (38.9%)	**p = < 0.05**
Rarely	09 (2.3%)	
Never	03 (0.8%)	
Do you feel adequately valued for your abilities & commitment at work?		
Very frequently	34 (9%)	
Frequently	123 (32.5%)	χ^2 = 11.351
Occasionally	154 (40.7%)	**p = < 0.05**
Rarely	65 (17.2%)	
Never	02 (0.5%)	
Do you feel your superiors actively hinder you in your work?		
Very frequently	04 (1.1%)	
Frequently	67 (17.7%)	χ^2 = 19.073
Occasionally	146 (38.6%)	**p = < 0.05**
Rarely	116 (30.7%)	
Never	45 (11.9%)	
Job satisfaction		
Yes	311 (82.27%)	χ^2 = 42.395
No	67 (17.72%)	**p = < 0.05**

** χ^2 = Chi-square value*

Overall, 78.6% of the women professionals were married and comparatively they experienced high stress than unmarried and it was statistically significant. Stress was present in more than half of the women professionals who were having children (68%) in comparison who were not having children. This difference was found to be statistically significant. About 44.2% of the women professionals occasionally felt that household work was tiring while 34% of them frequently felt it was tiring (p < 0.05). Household work is the main responsibility given to the women and not being able to manage it can be one of the stressors. Most of the study participants (i.e) 42.6% occasionally had conflicts with their family members and 12.7% of the women professionals were having sleep deprivation and was found to be statistically significant (p < 0.05). (Table 3)

Table 3: Distribution of study participants according to factors related to their home.

Parameter	Frequency (%)	Significance
Type of family		
Nuclear	261 (69.04%)	χ^2 = 5.786
Joint	96 (25.4%)	p = > 0.05
Three generation	21 (5.55%)	
Marital status		
Unmarried	69 (18.25%)	χ^2 = 23.730
Married	297 (78.57%)	**p = < 0.05**
Divorce / Widow	12 (3.17%)	
Having Children		
Yes	257 (68%)	χ^2 = 9.690
No	52 (13.75%)	**p = < 0.05**
Not applicable	69 (18.25%)	
Help in doing household work		
Husband	111 (29.36%)	χ^2 = 5.897
Children	12 (3.17%)	p = > 0.05
In-laws	32 (8.5%)	
Others	223 (59)	
Do you feel that household work is very tiring?		
Very frequently	13 (3.4%)	
Frequently	128 (33.9%)	χ^2 = 33.539
Occasionally	167 (44.2%)	**p = < 0.05**
Rarely	65 (17.2%)	
Never	05 (1.3%)	
How often do you have conflicts with your family members?		
Very frequently	04 (1.1%)	
Frequently	21 (5.6%)	χ^2 = 56.406
Occasionally	161 (42.6%)	**p = < 0.05**
Rarely	139 (36.8%)	
Never	53 (14%)	
Sleep deprivation		
Yes	48 (12.7%	χ^2 = 43.419
No	330 (87.3%)	**p = < 0.05**

** χ^2 = Chi-square value*

Discussion

In the present study, more than two-third (38%) of the working women professionals were found to be under stress. This result was comparable with findings of a study conducted by Saini NK, et. al., where the prevalence of stress was found to be 32.8% among the study participants.[4] This shows that many working women are found to be stressed, trying to balance an ever-growing burden of professional responsibilities and personal commitments.

Nearly two-third (63%) of the women professionals belonged to age group 31 - 40 years which is in contrast with the findings of another study by Gobbur SB, et. al., where only 13.4% were above 30 years of age.[5] Overall about half of the respondents (50.5%) had work experience of less than 5 years which is similar to a study by Bhat R, et. al.[6] In this study only 10% of them said that they frequently have conflicts with their colleagues leading to stress which is comparable with the findings of a study by Sathiya N, et. al.[7], where 28.5% of the study participants experienced conflicts among colleagues which was affecting their performance at work. A large majority of women professionals (82.3%) surveyed were satisfied with their profession which is high when compared with the findings of a study by Kriti PA, et. al.,[8] where the level of Job satisfaction was low (51.6%).

Majority (69%) of the women professionals had nuclear family; these findings were comparable with a study conducted by Patel KA, et. al.[9] where 92% of the respondents were staying in nuclear family. Overall, 78.6% of the women professionals were married. This observation is in contrast to the results of a previous study by Mishra SK,[10] where 66% of the women professionals surveyed were unmarried and another study by Darshan MS, et. al.,[11] where 70.5% of the study sample were single at the time of interview. Most of the study participants (42.6%) had conflicts with their family members occasionally. Overall only 12.7% of the women professionals were having sleep deprivation which is comparable with the findings of studies conducted by Kumari GK, et.al.[12] and Sathiya N et.al.[7] where it was found that 28% and 33% of the respondents complained of not having enough sleep.

CONCLUSION: In this study, more than two-third (38%) of the working women professionals were found to be under stress. The factors that were found to be significantly associated with increased levels of stress among the study participants are: age of the women professionals (36 – 40 years), working for more than 8 hours per day, conflicts with colleagues, not valued for their abilities and commitment at work, active hindrance from superiors at work, job dissatisfaction, marital status (married, divorced or widow), having children, feeling household work tiring, conflicts with family members and sleep deprivation.

This shows that many working women, especially those who are working mothers are found to be stressed, trying to balance an ever-growing burden of professional responsibilities and personal commitments. Time management is the primary stress management mechanism that can be adapted by the working women professionals to overcome stress. Work to be done in a planned and systematic manner, to avoid time pressure and work overloading. Support from family members and their positive encouragement may help to reduce the stress. The stress of working women can also be relieved through some stress relief techniques like spending time with family, entertainment, rest, yoga, meditation, proper diet, etc.

LIMITATIONS: The chosen professional women only consisted of Doctors, Engineers and Lawyers and not other professions. The study was conducted on women professionals in Bangalore city, thereby restricting the scope to understand the stress of women outside Bangalore city. The study was on only working women so the scope to understand the non-working women was restricted. The study was on women and gender differences in occupational stress could not be assessed.

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ADHERENCE TO ANTIHYPERTENSIVE MEDICATIONS: A COMMUNITY BASED SURVEY IN RURAL MANDYA.

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Abstract

Introduction:Hypertension is the third most important risk factor for attributable burden of disease in South Asia. Adherence to medication is an important determinant of optimal blood pressure levels in hypertensive patient along with physical exercise and low salt intake.**Objectives:**This study was done to determine adherence to antihypertensive medication among hypertensives aged 18 years and above in the rural field practice area of MIMS Mandya and assess the factors determining adherence to antihypertensive medication among study subjects.**Methods:Study design:** Cross sectional study.**Study period:** 3 months (July to September 2017).**Study area:** Rural field practice area of MIMS Mandya.**Study Population:**Known case of hypertension residing in the study area for at least 6 months duration.**Results**:Among study subjects (n=180) 127(71%) subjects had high adherence, 45 (25%) had medium adherence and 8(4%) had low adherence.Adherence to antihypertensive medications was statistically significant with respect to sex ($p < 0.05$).**Conclusion**:70.6% were adherent to antihypertensive medication. The important reasons which favour adherence to treatment were willingness to take medication and no side effects from medication. Factor which negatively influenced adherence to treatment were medication costsand using more than one pharmacy to get medication.

Key-words: Adherence, Medication, Hypertension and Rural.

Introduction

High blood pressure is third most important risk factor for attributable burden of disease in South Asia.[1] The World Health Organization (WHO) has estimated that about 62% of cerebrovascular disease and 49% of ischemic heart disease burden worldwide are attributable to suboptimal blood pressure levels. High blood pressure is estimated to cause 7.1 million deaths annually, accounting for 13% of all deaths globally.[2]

Hypertension exerts a substantial public health burden on cardiovascular health status and healthcare systems in India. Hypertension is directly responsible for 57% of all stroke deaths and 24% of all coronary heart disease (CHD) deaths in India.[3]

Adherence to hypertension (HT) medication is very important for improving the quality of life and preventing complications of hypertension. Factors such as age, gender, low socio economic status and severity of disease, number of pills per day, side effects of medication, patient's inadequate understanding of the disease and importance of treatment, forgetfulness and presence of psychological problems, especially depression have been shown to affect adherence in various populations. [3]

WHO describes poor adherence as one of the most important cause for uncontrolled blood pressure and estimates that 50 – 70% of the people do not take their anti-hypertensive medication as prescribed. [2]

WHO emphasized that "increasing the effectiveness of adherence interventions may have a far greater impact on the health of the population than any improvement in specific medical treatments". Poor treatment adherence is a roadblock to better quality of life. Most health promotion interventions seek in some way to change health behaviour by changing health-related knowledge, attitudes, barriers and facilitators. [2] So this study was carried out to find out the causes for non-adherence to HT medication.

ObjectivesTo determine adherence to antihypertensive medication among hypertensives aged 18 years and above in rural field practice area MIMS Mandya&To assess the factors determining adherence to antihypertensive medication among study subjects

Methodology

Study design: Cross sectional study

Study period: July 2017 to September 2017

Sample size: 180

Sample size was calculated using the formula

$N=4pq/d^2$,

Where p is (P=Prevalence of hypertension among ≥18 years, 36.1) [4]

q' is 100-p, and d is 20% error of p

Ethical approval: The study was approved by Institutional EthicsCommittee.

Method of data collection:

A community-based cross-sectional study was conducted. There are 11 villages under the Rural Health Training Centre (Keregodu) of Mandya Institute of Medical Sciences. The total population of the 11 Villages is 8318.[5]

The villages was enlisted in alphabetical order. Ankanadoddi, H.M.doddi, Kalmattidoddi, Kergodu, Keregodu R.P , Kodidoddi, K.Mole, Marilinganadoddi, Panchegoudanadoddi, Siddegoudanadoddi, Talemeledoddi. The first village to begin the study was selected from the list based on the random sampling method. All eligible participants were selected by house-to-house survey till sample size was met.

The data was collected over a period of 3 months (July-September) by interview method through house-to-house visit. In case of non-availability during the first visit, an additional visit was done. All the study participants were interviewed by a structured questionnaire in the local Kannada language after obtaining informed verbal consent.

The questionnaire was pretested and modified accordingly. The study domains included were patient's adherence; socio-demographic factors. The patient's adherence to medications was assessed using the Morisky 4-Item
Self-Report Measure of Medication-taking behaviour [MMAS-4], which included

(a) Do you ever forget to take your medicine?
(b) Are you careless about taking your medication at times?
(c) When you feel better sometimes do you stop taking your medication?
(d) Sometimes if you feel worse while taking medication do you stop taking it?

Inclusion criteria

(a) Duration of the diagnosed hypertension for more than 6 months.
(b) Known case of HT residing in the study area for at least 6 months duration.

Exclusion criteria:

Study subjects not suffering from myocardial infarction (MI), stroke, acute renal failure (ARF).

Adherence Definition: Any respondent with history of HT for more than 6 months, who failed to fulfil any one of the four criteria in Morisky scale is said to be non-adherent. [3]

According to Morisky scale, the scale is scored zero point for each "Yes" and 1 point for each "No". The adherence was scored as follows, if they Score 0: High adherence, 1-2: Medium adherence and 3-4: Low adherence

Analysis:

The data was entered in Microsoft excel software. Analysis was done using descriptive statistics like percentages and chi-square test for association done by enumeration of qualitative data. Actual frequencies as they are and not the percentage of the characteristics were used for chi-square test.

Results

A total of 180 study subjects were interviewed from rural field practice area MIMS, Mandya. Table 1 shows the socio demographic and clinical characteristics of study subjects.

Table 1: Distribution of study subjects according to socio-demographic profile and characteristics

Characteristics	No.	Adherence (%)	Non adherence (%)	p value
Age in years				
41-50	14	5 (35.0)	9 (65.0)	
51-60	47	34 (72.3)	13 (27.7)	
61-70	66	52 (78.8)	14 (21.2)	**P < 0.05**
71-80	38	30 (78.9)	8 (21.2)	
81-90	15	7 (46.7)	8 (53.3)	
Sex				
Male	77	63 (81.8)	14 (18.2)	**P < 0.05**
Female	103	64 (62.1)	39 (37.9)	
Education				
No formal school	89	66 (74.9)	23 (25.8)	
Primary school	36	22 (61.6)	14 (38.4)	
Middle school	49	25 (51.0)	24 (49.0)	**P > 0.05**
PUC	5	4 (80.0)	1 (20.0)	
Diploma/ Degree	11	10 (91.0)	1 (9.0)	
Occupation				
Government employee	6	4 (66.7)	2 (33.3)	
Non government employee	6	4 (66.7)	2 (33.3)	
Self employed	34	25 (73.5)	9 (26.5)	
Homemaker	82	50 (60.9)	32 (39.1)	**P <0.05**
Retired	29	26 (96.5)	1 (3.5)	
Not working	23	16 (69.5)	7 (30.5)	

Among the study subjects (n = 180), 127(70.6%) were found to be adherent while 53 (29.4%) were non adherent. There were a total of 77 (42.7%) males and 103 (57.2%) females. Statistically significant difference was seen regarding adherence between sexes (p<0.05). Maximum study subjects (n=52; 28.8%) were in the age group of 61-70 years. Adherence to antihypertensive medications was statistically significant between age groups (p<0.05). Adherence was more among self-employed and retired

personnel. Adherence to antihypertensive medications was not statistically significant between groups of different educational qualifications (p > 0.05).

Table 2: Factors contributing to adherence

Patient factors	Adherence (%)*
Capable of handling own medications	156 (84.7)
Willing to take medications	172 (95.6)
Knows about medications and disease	167 (92.8)
Medication related factors	
Do not use more than one pharmacy to get medication	48 (26.7)
No side effects from medications	165 (91.7)
No unpleasant taste or smell of drug	86 (47.8)
Health care system related factors	
Cost of medication is not more	25 (13.9)
Satisfied with healthcare provider	121 (67.2)

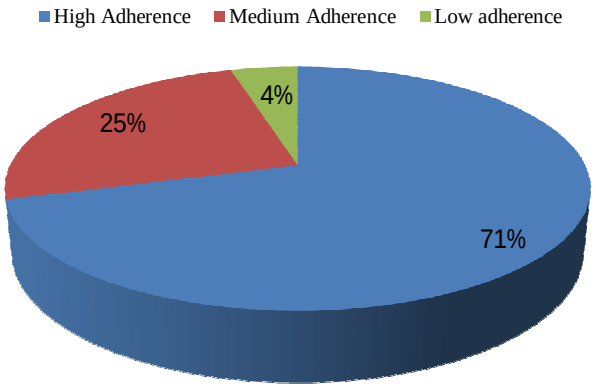
*Multiple adherences

Table 3: Factors contributing to non-adherence

Patient factors	Non adherence (%)*
Not capable of handling own medications	24 (13.3)
Not willing to take medications	8 (4.4)
Do not Know about medications and disease	13 (7.2)
Medication related factors	
Use more than one pharmacy to get medication	132 (73.3)
Side effects from medication	15 (8.3)
Unpleasant taste or smell of Drug	94 (52.2)
Health care system related factors	
Cost of medication is more	155(86.1)
Dissatisfied with healthcare provider	59 (32.8)

*Multiple adherences

Figure 1: Distribution of study subjects based on their adherence to treatment (n=180)



(According to MMAS-4 – Morisky Medication Adherence Scale- 4 item. Score 0: High adherence, Score 1-2:Medium adherence Score and 3-4: Low adherence)

Table 2 shows the prevalence of various personal, disease related, medication related and health care related characteristics that in the patient's views affected their drug adherence. While factors such as understanding the need of medication (95.6%), knowing about medications and disease (92.8%) and no side effect from medication 91.7% were associated with better adherence, the most common discouraging factors were cost of medication is more (86.1%), use of more than one pharmacy to get medication (73.3%).

Figure 1 shows that extent of adherence to antihypertensive medication based on Morisky Medication Adherence Scale 4 item scale ,among study population 71% shows high adherence (Score 0), 25% shows medium adherence (Score 1-2) and 4% shows low adherence (Score 3-4). Medium adherence and low adherence constitute non adherence. 29% were non adherent and 71% were adherent.

Discussion

Adherence to antihypertensive medication among the study population was 71.1%. This is similar to a studies conducted by Srivatsava A K et al., in rural area of Dehradun District (73%)[2] and study conducted by H S Mekonnen et al., in Northwest Ethopia (67.2%) and study conducted by Khanam M A in rural Bangladesh is (73.8%).The factors showing significant adherence were age, patients knowing about the disease and treatment and monotherapy .

Adherence was found to be high in the age group 61 to 70 years (78%) and it was more among female subjects than male subjects. This was similar to the study done by J Vekatachalam et al., in which the adherence was more in the elderly population (60 years and above) and more in females than in males. [3]The reason for better adherence in this age group could be care taken by the family members in rural area.

In our study among the different occupations, the adherence was high among self- employed and retired personnel than among other occupation. However there is no difference with respect to educational qualifications.

In our study, the positive factors influencing adherence were willingness to take medicines, fewer side effects and knowledge about medications and disease (Hypertension and its complication) , whereas non availability of the prescribed branded drugs in all the pharmacies and high cost of the medicines had negative influence on adherence and this was similar to study done by Srivatsava et al., in Uttarkhand.[4]

Conclusion:

In our study most of hypertensives were adherent to antihypertensive medication. The important reasons which favour adherence to treatment were willing to take medication and no side effects from medication and factor which negatively influenced adherence to treatment were cost of medication and use more than one pharmacy to get medication.

Recommendations:

To increase the adherence among those patients in whom cost of medications was found to be a negative factor for adherence were, suggested to buy generic drugs which

could bring down the costs.

Should increase the awareness regarding the disease and its treatment and motivate them to take the advised medication with the support of Primary Health care staff members by organising awareness programmes and during routine OPD visits and home visits by health assistants and ASHA workers.

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COSTING OF INJURIES: ANALYSING THE ECONOMIC BURDEN OF INJURIES IN AN URBAN COMMUNITY IN SOUTH-INDIA

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Abstract

Introduction: Injuries have become a costly affair in many nations and in India burden of injuries are rising. It can be assessed in terms of morbidity, mortality and currently through economic burden studies. Very few studies have been done to assess the economic effect of injury at household level. So the present study was done to assess the costing of injuries on the family at the community level in an urban area of Bangalore. **Methodology:** A cross section study was conducted in Bangalore on 3003 population through multi stage sampling technique. Details of moderate and severe injuries were collected and their expenditure details were also collected. SPSS 18 was used for analysis. Chi square test, Mann Whitney U Test and Kruskal Wallis test were used to assess the statistical significance. **Results:** Reported moderate to severe injuries were 148. Average cost per injury was Rs 25360 while direct cost was Rs 14825 and indirect cost was Rs27354. Total cost was high among males (P=0.035). The direct, indirect and total costs were high for elderly injured (≥60 years). All three costs were significantly high among 15-59 year age group, those who met with severe injuries and road traffic accidents. Among the lower socio economic status the indirect cost was high. **Conclusion:** Economic burden of injuries on the family was high in the urban community of Bangalore. Road traffic accidents and severe injuries accounted to higher expenditure. Injury among geriatrics resulted in higher economic burden on the family.

Key-words: injuries, costing, community, road traffic accidents, geriatrics

Introduction

Injuries have become a costly affair in many nations[1] and currently even in India the burden of injuries is rising due to epidemiological transition. In 1990s injuries accounted to 8.6% of DALYs and 8.5% of total deaths while in 2016 it accounted to 11.9% of DALYs and 10.7% of deaths. Among the various injury types road traffic accidents and suicide have contributed significantly to disease burden.[2] According to global burden of disease; road injury stands 13th rank among the leading cause of age standardized rates of DALYs in 2010 while falls account to 15th rank.[3]

Whether a developing country or a developed country the burden of communicable disease in terms of Disability Associated Life Years (DALY) declines with age; while that of non communicable disease increases with age. But with injuries it is an inverted U shaped curve indicating that injuries affect the prime age group of 5-44 years. In general the communicable disease and non communicable disease are high among females but injuries are high among males.[4]

Burden of injuries can be measured in terms of mortality and morbidity. Economic impact of injuries can be assessed at macroeconomic and microeconomic level. Microeconomic level includes the households (i.e impact on household income or consumption pattern and overall expenditure by the family on the injured including medical and other expenses), firms, (impact of injury on the company's operating cost, output, profit and sickness absenteeism) and government (social security payments applicable for injuries could be diverted to control or prevent other disease of public health importance). Macroeconomic level is at society level i.e impact of injuries on Gross Domestic Product.[5]

Current trend now followed is to assess the severity of injury through economic burden studies like costing of illness.[5] Cost of illness methodology includes direct cost and indirect cost. Direct costs include medical (hospital inpatient/outpatient, transport/ambulance, physician charges, drugs, rehabilitation charges, laboratory tests and counselling) and non-medical (policing and imprisonment, legal services, foster care and private security) while indirect costs include tangible (loss of productivity, lost investments in social capital,

life insurance and indirect protection, macroeconomic) and intangible costs (health-related quality of life i.e pain and suffering, psychological and other quality of life (reduced job opportunities, access to schools and public services, participation in community life).[6]

Following an injury in a family, the injured person reduces their productive activity (may be paid or unpaid) while there is increased consumption of health services and may reduce the consumption of non health goods and services like on clothes, social activities at household level. Some may try to balance the household expenditure by liquidating household assets like cash savings or through loans.[5] So the economic burden of injury on the family includes the direct expenditure for travelling to and fro to hospital, hospital charges (inpatient/outpatient/rehabilitation/physiotherapy charges) and indirect wages lost due to absence from work and additionally the loans borrowed or the properties sold.

Once the economic burden of injuries has been assessed, we need to focus on injury prevention. Field of injury prevention is heterogeneous and urgently requires economic evaluation studies based on the state of the art method. Applying economic evaluation studies in the injury prevention can be fruitful if the methods used are in harmony with the methods used for other public health issues. These studies assess the outcomes and costs of interventions designed to improve health. Also they do play an important role in setting priorities for injuries compared with other public health issues and compared within the domain of injuries. Thereby they guide policy-makers in making decisions to select cost effective injury prevention policy. Decision-makers commonly identify the usefulness and need for published economic evaluations. However, the actual use and knowledge of economic analysis are limited in injury prevention.[7]

These economic burden studies help to identify the possible solutions to reduce the cost of disease through appropriate prevention and treatment strategies. Very few studies have been done to assess the economic effect of injury at household level. So the present study was done to assess the costing of injuries on the family at the community level in an urban area of Bangalore.

Methodology

A cross section study was conducted in two BBMP ward number 17 and 36 during June 2012-March 2013 to assess the pattern of injuries and its socio-economic impact. The methodology has been explained elsewhere in detail.[8] The present study focussed on costing of injuries. Estimated sample size was 2857 while totally 3003 population was covered by applying multi stage sampling technique. Initially screening questions were asked at every household to assess the presence of injury in the past one year. Only moderate (defined as any injury resulting in partial or complete incapacitation of the injured person lasting from 3rd day to 13 days in the past 12 months) to severe injuries (defined as any injury resulting in partial or complete incapacitation of the injured person lasting ≥14 days (≥ 2 weeks) or resulting in permanent disability/coma/death in the past 12 months) were included in the present study. Among those moderately and severely injured people further detailed information was collected about the amount spent by the injured person or by the family for the healthcare costs (hospital, drugs etc), travel costs, legal cost, funeral cost and miscellaneous etc. Also information about number of days not able to attend the work by the injured or school in case of children; along with the wages lost was also collected including that of caregivers wages lost due to absence from work in order to take care of injured. The amount borrowed or taken for loan and any properties sold to compensate for the amount needed to run the family was also collected. These information were cross verified by checking the relevant receipts, bills, discharge summaries and relevant documents.

Statistical analysis: SPSS 18 versions was used for analysis. Quantitative data were summarised through descriptive measures like mean with standard deviation (SD); median with inter quartile range (IQR). Chi square test, Mann Whitney U Test and Kruskal Wallis test were used to assess the statistical significance. Ethical clearance was taken from the institutions ethical committee. Also consent from the families and the injured people to conduct the study were also collected.

Results

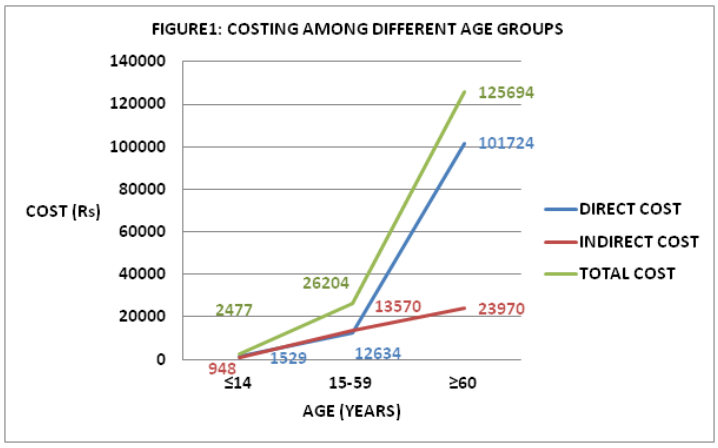
In our study out of 3003 population surveyed 148 moderate to severe injuries were reported. Average cost per injury was Rs 25360 while direct cost was Rs 14825 and indirect cost was Rs27354. The median (IQR) cost of injury was Rs 2250 (855-11304); minimum & maximum value being Rs50 & Rs500000 (Table 1)

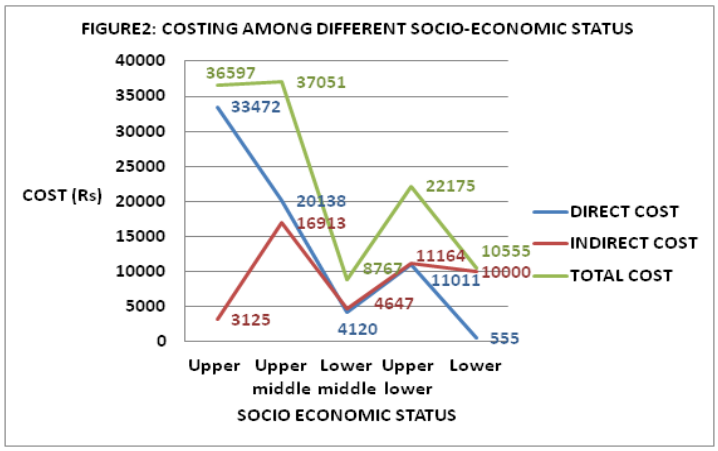
Table 1: Economic assessment of moderate to severe injuries

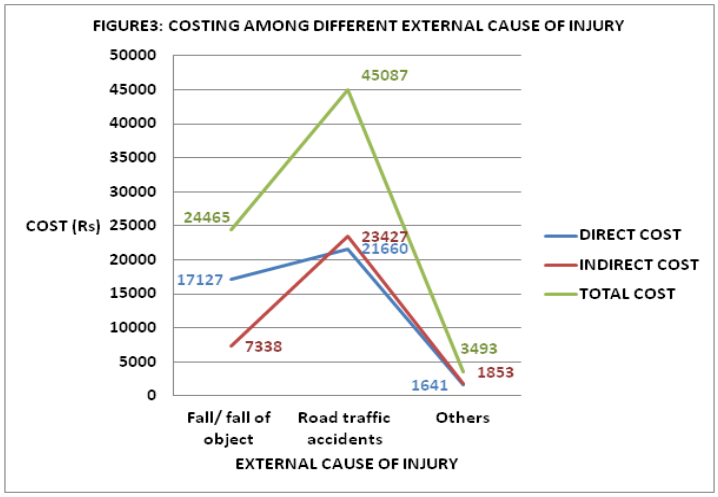
Details	Average cost per injury (Rs)	Median (IQR) (Rs)	Minimum & maximum value (Rs)
Direct cost			
Medical cost (148)	11431	1150 (400-3962)	(50-270000)
Non medical cost (100)	5024	400 (200-1875)	(30-230000)
Total direct cost (148)	14825	1500 (500-4913)	(50-500000)
Indirect cost			
Wages lost by injured/caregiver (49)	16737	5500 (750-10500)	(100-215000)
Property sold or loan amount borrowed (37)	19976	5000 (2000-10000)	(200-200000)
Total indirect cost(57)	27354	7500 (2000-17500)	(100-264000)
Grand total cost (148)	25360	2250 (855-11304)	(50-500000)

One US dollar = Rs 54.65 (2012-2013)

Figure 1 indicated that the direct, indirect and total costs for ≤14years was less and too high for ≥60 years. Socio economic status was assessed through Modified Kuppaswamy's classification.[9] From figure 2 we observed that upper the socio economic status higher the direct cost and total cost while the indirect cost was not much affected. Among the lower middle (48) group all three i.e direct, indirect ad total cost were low in-spite of many people belonging to this group. While in the lower socio economic status the direct cost was low but the indirect cost was high. From figure 3 we can interpret that among the various external causes of injury, road traffic accidents (RTA) accounted to increased direct, indirect and total cost. Figure 4 shows that severe injuries had high direct, indirect and total cost compared to moderate injuries.







The total cost was high among the males Rs3000 (950-17100) and this was significant (P=0.035). All three i.e direct cost (P=0.001), indirect cost (P=0.022) and total cost (P<0.01) were high among 15-59 year age group. While high direct cost was observed among upper socio economic status. Among the various types of injuries, all three i.e direct cost (P=0.017), indirect cost (P=0.04) and total cost (P=0.004) were high among Road traffic accidents and the final cost being Rs 10000 (935-50625). Direct cost (P<0.01), indirect cost (P=0.003) and total cost (P<0.01) were high among the severely injured and were found to be statistically significant (Table 2).

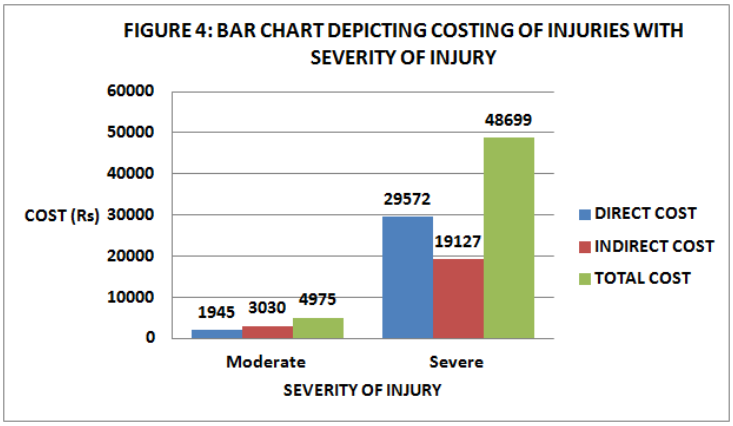


Table 2: Costing of injuries among various variables

Variables	Total direct cost Median (IQR) (Rs)	Total indirect cost Median (IQR) (Rs)	Final cost Median (IQR) (Rs)
Gender			
Males (99)	1735 (600-7200)	0 (0-7500)	3000 (950-17100)
Females (49)	1250 (380-2650)	0 (0-1117)	1550 (600-5775)
Mann Whitney U Test	P=0.113	P=0.115	**P=0.035**
Age (years)			
≤14 (43)	850 (250-2500)	0 (0-500)	1000 (350-2800)
15-59 (96)	2000 (638-7925)	0 (0-8850)	3625 (1500-17325)
≥60 (9)	1500 (450-204550)	0 (0-367)	1500 (610-312050)
Kruskal Wallis test	**P=0.001**	**P=0.022**	**P<0.01**
Socio-economic status			
Upper (16)	2900 (1050-7525)	0 (0)	2900 (1050-7525)
Upper middle (61)	2000 (600-7850)	0 (0-4750)	2550 (835-15900)
Lower middle (48)	1000 (405-3700)	300 (0-4450)	1868 (738-9243)
Upper lower (21)	1000 (335-2425)	500 (0-7650)	1750 (450-9215)
Lower (2)	555 (310-800)	10000 (0-20000)	10555 (310-20800)
Kruskal Wallis test	**P=0.021**	P=0.053	P=0.668
External cause of injury			
Fall/ fall of object (73)	1500 (600-4050)	0 (0-2500)	2250 (1000-7750)
Road traffic accidents (41)	1800 (575-19500)	0 (0-13050)	10000 (935-50625)
Others (34)	1000 (340-2200)	0 (0-750)	1450 (378-3900)
Kruskal Wallis test	**P=0.017**	**P=0.040**	**P=0.004**
Severity of injuries			
Moderate (79)	800 (310-1600)	0 (0-600)	1200 (400-2500)
Severe (69)	4000 (1450-12150)	0 (0-11750)	9100 (2400-24300)
Mann Whitney U Test	**P<0.01**	**P=0.003**	**P<0.01**

Discussion

In our study the number of people injured in the age group of ≥60 years was 9 while ≤14years were 43. Though the number of injured were high among the lesser age group the overall expenditure was less when compared to injury expenditure among the elderly. So injury among the elderly resulted in higher expenditure. Probable reasons may be severity of injuries, longer duration for healing of injuries and associated co-

morbidities and complications followed by long term rehabilitation services.

We observed that those belonging to upper socio economic status their medical expenditures were high (i.e direct cost=Rs33472) while the wages lost or property sold (i.e indirect cost = Rs3125) were minimal. But those belonging to lower socio economic status the direct cost (Rs 555) were low probably due to availability of free service or subsidised services at government hospitals or may be these people were not affordable for high medical expenditure; while their indirect cost was high (Rs10000). The total monthly income of those injured belonging to lower socio-economic-status was median (IQR) Rs12500 (4000-21000) while that of upper socio-economic-status was Rs 65000(37500-115000). It implies that rich were affordable to pay for the injury without much affecting on their income. But those belonging to lower status had to lose their daily wages due to injury and were comparatively spending much less for treatment.

Figure 3 indicates that among various types of injuries, road traffic accidents accounted to higher economic expenditure which included both direct and indirect costs. So the government needs to address this issue and take necessary actions to prevent or reduce the burden of RTA and also provide financial assistance

The final cost was high for males compared to females since males were more injured in number, their work being outside the house the number of falls and RTA were high among them and also being an earning member of the family the indirect cost was also high. All three i.e direct cost, indirect and final cost were high among the 15-59 year age group since they are the working group being prone for injuries at workplace or on roads while travelling. Being the only earning member of the family (in certain families) the indirect cost was also high and their by the final cost. Among the various external cause of injuries road traffic accidents (41) had high direct cost since the medical expenditures of fracture/strain/sprain following RTA are high. The indirect cost for RTA was also high since such injuries needed atleast 6-8 weeks of rest thereby preventing from going to work thereby resulting in loss of wages. Hence the final cost was significantly high for RTA (P=0.004). It was observed that more severe the injuries greater was the direct, indirect and total cost. Probable reasons being severe injuries need prolonged inpatient service or constant medical services for a longer duration their by increasing the direct cost. Severe injuries require more time to recover back to normal thereby affecting the work and thereby the income, as a result the indirect cost gets elevated. Also in our study 9 people lost their jobs due to injury, among which 8 of them had sustained severe injuries which was found to be statistically significant ($\chi 2$ =6.9, P=0.03). So over a period of time severe injuries do have long term economic consequences.

No studies were available on costing of injuries at the community level. However hospital based studies and individual injuries like road traffic accidents costing were available. The same has been discussed below.

A survey conducted in five states of India during 1986-87 showed 1100 injuries of hospital based treatment and 615 injuries of non hospital based treatment. The public provider's share was high for hospital based treatment of injuries both in rural and urban areas. They found that the cost difference between public and private providers narrowed down with the severity of injury. Also found that the burden on households was higher for treatment of injury when compared to any other illness.[4]

A study was conducted in Hyderabad, India to know the out of pocket expenditure for road traffic accidents (RTA) during 2005-06. RTA reported alive or dead at emergency department of selected public and private hospitals were included in the study. Injury details were collected and follow up for 6 months was done. Information regarding medical and non-medical expenditure was collected in detail. The out of pocket expenditure (median values) medical and non medical were USD 170 and 162 respectively. The medical expenditure was 4 times high in private hospital and non medical expenditure was high in public hospitals. Prevalence of distress financing was 69% (95% CI 65.5-72.3) and was found to be high among those reporting to public hospitals and also among those belonging to the lowest per capita annual household income quartile.[11]

A prospective cohort study was conducted in Chandigarh during the year 2013, where 220 patients admitted in the trauma centre were included in the study and followed up subsequently at 1, 2 and 12 months to assess the economic burden of hospitalisation following injuries. The average out of pocket expenditure per hospitalisation and up to 12 months post discharge was USD 388 (95% CI: 332–441) and USD 1046 (95% CI: 871–1221) respectively. Road traffic accidents accounted to 60%. They found that catastrophic expenditure was significantly higher among those belonging to the lowest income quartile (P<0.01). They found that injury treatment incurred high out of pocket expenditure and thereby resulted in significant economic burden to the family.[12]

A study conducted in Ghana to assess the economic consequence of injuries using cluster sampling technique, 21105 persons were interviewed both from urban and rural areas. It was found that the treatment costs and disability days following injury were high in urban than in rural areas. Most common coping strategy was intra-family labour reallocation. Borrowing money was more common among rural than in urban areas. There was decline in food consumption among rural households by 28% and 19% in urban areas. Money spent (mean (SD)) on injury treatment in urban and rural area respectively was US$ 31(105) and 11(58) while the amount borrowed was US$ 66(98) and 22(43). The primary effects of injury were more severe in urban area while the overall effect of injury (in terms of family food production and consumption and family income decline)

on the household was more severe in rural areas. They also found that the amount spent for severe injury was US$ 55(150) and for minor was US$ 6(13) and P value<0.001.[13]

During data collection respondents would have either over-estimated or under-estimated the expenditure occurred following injury. This response bias was reduced by cross checking the bills, receipts and other relevant legal documents.

Conclusion: Economic burden of injuries was high in the urban community of Bangalore. Road traffic accidents and severe injuries resulted in greater expenditure by the individual and by families. Injury among geriatrics resulted in higher economic burden on the family.

Recommendation: Based on our study, we would like to recommend taking necessary actions and steps to first prevent injuries, followed by efforts to reduce their severity. Make provision for health insurance or some kind of financial support specially those belonging to lower socio economic status till they recover from injury. If necessary vocational rehabilitation may also have to be provided (for those who have lost the job or physically not capable of doing the job which they were able to perform previously) to ensure that they will have a continuous source of income to maintain the family. Among various injuries economic burden of road traffic accidents were high, so there is a need to reduce the burden of RTIs and also their severity. Financial assistance immediately post-crash and till the time they get back to normal is also necessary to reduce the financial burden on the family.

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TB NOTIFICATION THROUGH PHARMACY OUTLETS. A STUDY TO EXPLORE CURRENT STATUS AND OPPORTUNITIES AT CHENNAI.

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Abstract

Background: Notification of Tuberculosis (TB) is important to estimate the TB burden. It is an opportunity to support Standard TB care and undertake public health action. There by it is mandatory for all health establishments, medical laboratories and pharmacies to notify TB. **Objectives:** To understand current status and barriers in notifying TB. **Methods:** It was a Cross sectional studies of 50 conveniently selected pharmacies in Chennai. The information collected through Google forms by MBBS students and converted in data form and analyzed. **Results:** Out of 50 pharmacies, 16%(n=8) were not dispensing the TB drugs , 54%(n=27) regularly dispensing and remaining service on need basis and 61% sold Fixed dose combination (FDC) TB drugs. Only 54 % have notified TB cases. The reasons for non-reporting includes 1. Not aware that this should be reported (34.78%),2. They thought that it was not necessary(26%).10% of pharmacies did not maintain H1 drug registers, and 93.3% of pharmacies follow H1 criteria for TB drugs. 46.8% was only aware of the gazette Notification No 82/2018 during the study. 6% of pharmacies did not possess adequate knowledge on TB. **Conclusion**: The TB notification in pharmacy sector lags behind. Wide dissemination, proper follow-up and feedback will help in proper TB Surveillance.

Key-words: TB notification, H1 Drugs, Fixed dose combination (FDC), Nikshay, Pharmacy TB Notification.

Introduction

TB is ninth leading cause of death worldwide and leading cause from a single infectious agent. India is one of the top "high TB burden countries" in the world. To directly measure TB incidence from TB notification is important which requires a combination of strengthened surveillance, better quantification of underreporting and universal health coverage.[1] Notification ensures the patients to get right diagnosis, treatment, follow up, contact tracing chemoprophylaxis & facilitates social support systems.[2]

A good TB surveillance system will require timely notification of all TB cases in the population and will be able to capture necessary variables of demographic, clinical, socio-economic, spatial characteristics to enable better understanding of the local epidemiology and trend of Tuberculosis and monitor case by case. Robust Surveillance system is one of the strategy of National Strategic Plan (NSP) 2017–2025 for TB Elimination in India.[3] To facilitate TB notification, the programme has developed a case-based, web-based TB surveillance system-NIKSHAY in 2012.[4] This provides a platform for notification of TB patients from both public and private sector providers. Since a mandatory TB notification order was issued in 2012[5] more than 0.7 million TB patients had been notified from the private sector.

In spite of mandatory notification, many patients are still not notified to the RNTCP. The existing TB surveillance system lacks the capacity to count the large pool of private sector except some innovative projects.[6]Private Providers will be provided incentives to promote TB case notification, ensure treatment adherence and treatment completion. The incentives will be provided upon notification in the TB reporting software .The incentives to the Private Sector TB Care Provider are Rs 250/- on notification of a TB case diagnosed as per Standards for TB Care (STCI)[7] in India, Rs. 250/- on completion of every month of treatment, and Rs. 500/- on completion of entire course of TB treatment. [8]

A similar opportunity is currently available if Gazette notification of Schedule H1 drugs is effectively executed and information of prescription details is utilized. To monitor quality of prescription, TB patients will be monitored from Schedule H1 surveillance. In addition, prescription audit will be carried out with support of Drug Controller of the State.[9]

In addition to the health and lab establishments, pharmacies are also included in TB notification to district

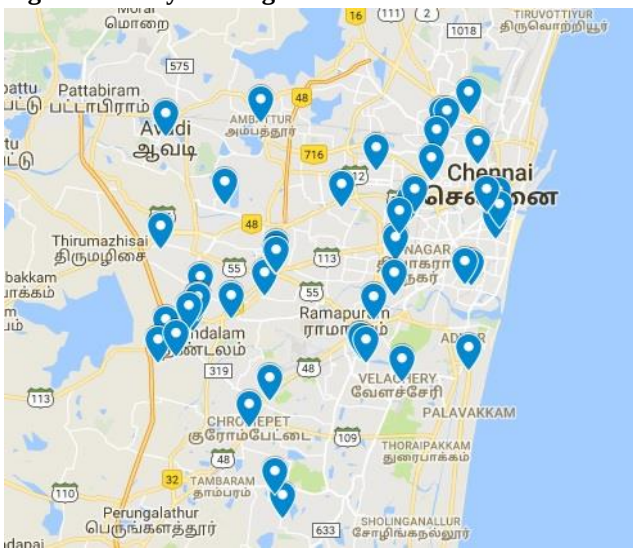
authorities ie. Patient details and details of medicine dispensed for public action. Failing may attract the provisions of sections 269(Negligent act likely to spread infection of disease dangerous to life) and 270 (Malignant act likely to spread infection of disease dangerous to life) of the Indian Penal Code -45 of 1860 with six to two years imprisonment or with fine or both.[10]

India has a large private sector that provides treatment to approximately 50% of all TB patients. Mandatory tuberculosis (TB) notification is an important policy under the End TB Strategy. Policies, systems and monitoring or feedback are important.[11]Disease surveillance in TB is particularly challenging as there is no single reliable method. To be most effective, a multi-pronged approach, combining a number of measures adapted contextually, is required. [12] All the pharmacist in the country should be updated the latest development in TB notification and latest amendments for complete and consistent reporting. Hence the study attempts to understand the knowledge and current TB notification pattern at the pharmacies in Chennai.

Methodology

As a part of World TB day observation 2018, we have conducted a cross sectional studies from randomly selected in pharmacies in Chennai during March 2018. We have chosen 50 pharmacy shops from various parts of Chennai conveniently. The main areas of Chennai were included in the study (Figure 1). An ethical committee approval was obtained from our institutional Ethics committee.

Figure 1. Study coverage areas in Chennai.



Operational Definition:

Pharmacy: All Pharmacies, Chemists and Druggists were used under this banner pharmacy in this study.

Tuberculosis patient: A patient diagnosed with at least one clinical specimen positive for acid fast bacilli, or culture-positive for Mycobacterium tuberculosis or rapid diagnostic molecular test positive for tuberculosis, or any other tests recommended by Ministry of Health and Family Welfare, Government of India or a patient diagnosed clinically as a case of tuberculosis, without microbiologic confirmation, and initiated on anti-tubercular drugs.

Schedule H: The drug label must display the texts "Rx and it cannot be sold without a prescription and only the amount specified in the prescription should be sold. The time and date of prescription must be noted in the allotted register (Not to be sold without prescription, maintain copy of prescription or list).

TB Notification: Reporting about information on diagnosis &/or treatment of Tuberculosis cases to the nodal Public Health Authority (for this purpose) or officials designated by them for this purpose.

Combipack drug: Multiple TB drugs packed individually in one pack.

Fixed Dose Combination: Different TB drugs in varying strengths prepared in a single pill and sold.

Other TB definition were used as per Revised national Tuberculosis Programme (RNTCP).

Method of data collection:

A set of pre-designed questionnaire were developed and pretested in a controlled setting. The corrected questionnaire were transformed in to Google forms. Our college 2nd year MBBS students were given training on TB and its notification. Selected 20 students were involved in the data collection. The form was sent to all the selected students and were asked to enter the data in their mobile during data collection. The data collection was happened on World TB Day of 2018. The data was collected using the designed forms. After getting informed consent from the pharmacist the information were collected. Real time data entry was saved in Google Forms. After the data collection, our students envisaged the pharmacists on TB notification using available information tool.

Data analysis: Once the data collection was completed, the responses were converted in to Microsoft Excel and analyzed using Epi-info. Data were presented in Table, figures and graphs. The percentage, mean, SD was calculated.

Results

The mean duration of functioning of select 50 pharmacies was 9.7 years (Min: 2 years to 30 Years; SD: 6). Among the pharmacist 6% (n=3) were not able to name any type of TB, 62% (n=31) told pulmonary TB in their answers. The remaining named it as active TB, Military TB, Latent TB and other extra pulmonary TB.

Out of them, 16% (n=8) were not dispensing the TB drug, 54 % (n=27) regularly dispensing and remaining service on need basis (Figure 2). The most common TB drug delivery type was fixed dose combination (FDC) (61%; n: 26). Individual TB drug was still sold in 28.57 %(n=12) of pharmacies. Most of the pharmacies sold all types of drugs ie. Single drug, combipack and FDC(Table 1).

Figure 2. TB Drug dispensing pattern among pharmacies (n=50).

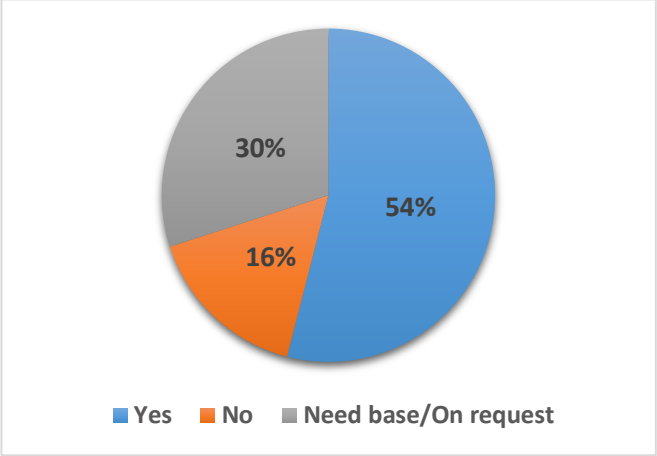
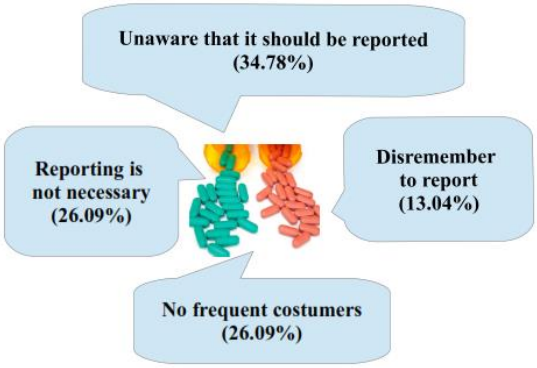


Table 1. TB Drug combination type sold in pharmacies (n=42).

S.No	Drug Combination Type	No	%
1	Combipack	3	7.14
2	Combipack, Fixed dose combination	2	4.76
3	Fixed dose combination	17	40.48
4	Individual drug	12	28.57
5	Individual drug, Combipack	1	2.38
6	Individual drug, Combipack, Fixed dose combination	3	7.14
7	Individual drug, Fixed dose combination	4	9.52
	Total	42	100.00

Only 54 % (n=27) have notified TB cases. Other non-reporters had varying reasons for non-reporting. Most of them 34.78% were not aware that this should be reported, 26% felt it was not necessary (Figure 3). A sum of 446 TB cases have been reported by 13 pharmacies till now. In regards to H1 drug registers, 10% of pharmacies did not maintain H1 drug registers, 93.3% knew TB drugs comes under H1 criteria, and 93.3% of pharmacies follow H1 criteria for TB drugs.

Figure 3. Reason for not notifying the TB cases (n=23)



Only 46.8% were aware of the gazette no 82/2018 but 80.9% felt that non-reporting was a punishable offence. Among the responders, 87% were willing to become treatment supporters for TB.

Discussion

This was the first study conducted in Chennai immediately after gazette notification for pharmacies to find out TB notification pattern. Majority of pharmacies not understood the importance of notification. TB notification regulation will be strengthened with sufficient legal backing on violation of not notifying a TB patient. Few studies conducted in India to understand the gaps in TB notification among health care providers. No TB notification at pharmacy level has been done anywhere to the best of our knowledge. The reasons includes lack of awareness on registration, incomplete patient details (as Nikhay needs lots of information), non-availability of staff, sub-optimal knowledge on computers and apprehension on RNTCP mechanisms.[1314151617]. This may very well fit in to pharmacy area too.

In some of the countries with the largest estimated gaps between notifications and TB incidence, there is already good evidence about the reasons for such gaps, and actions to address them are being taken or are planned. In India, multiple sources of evidence from surveys and surveillance show large underreporting of detected TB cases, especially in the private sector. Public-private mix (PPM)[18] intervention implemented in Patna, Mehsana, Mumbai and Nagpur demonstrated what is required to reach TB patients seeking care in private sector at large . The UNION led AXSHYA project supported by GFATM, has sensitized 25,000 rural health care practitioners and expanded to facilitate TB notification from private providers. Countries like Brazil and Republic of Korea have linked the supply of first-line drugs to notification of cases.[1] Indonesia made mandatory policy on TB notification from January 2017 and intensified engagement with public and private hospitals where many people with TB were being treated.[19]

To establish TB surveillance system at district, state and national level and to monitor the epidemiological characteristics of TB in the population over time and geography is important.[20] There are 20-30 exclusive TB workers available in each district. They should actively contribute towards reporting TB cases.

Some challenges like underfunding of Nikshay and Manpower shortage, Procurement of tablets and establishment of call center under e-Nikshay, use of case based surveillance system for programme planning, monitoring and evaluation are evident. Also the notification of TB is unequal throughout India. States like Maharashtra and Gujarat have implemented 80% of signed 'partnership schemes' nationwide, and contributed more than 25% of all private notifications.[3]

There are many ways to report Tb cases such as submission of hard copy to district authorities, and web based or application based online submission. First of all, all pharmacies should be registered in Nikshay website

then they should be reminded to notify on monthly basis even incase no TB cases. Also they should provide regular feedback by the district authorities and also available incentives on time.

Limitations: The study has less sample size hence not applicable throughout the entire country, but it does provide valuable insights regarding TB notification in pharmacy sector. A study with large sample size can be planned in the future.

Conclusion and Recommendations: Though the knowledge on TB is fair enough, the information on TB notification at individual level, consistent notification and maintenance for H1 TB drugs needs improvement. Wide dissemination through Drug Controller and health department and monitoring/feedback on TB notification will definitely help better surveillance in the pharmacy sector. A special training on TB for all practicing pharmacists shall be arranged at the district level. Proper micro plan for data collection, better feedback system and to acquire support from civil societies, NGOs and other private sectors will be helpful.

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