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Editorial

HOW TO WRITE A SCIENTIFIC PAPER

M. Logaraj

Date of Submission: 18.07.2016 **Date of Acceptance: 15.08.2016**

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Introduction

Writing a scientific paper is not a difficult process, once you learn how to approach the scientific writing in steps. It is the most common way of communicating the outcome of research to scientific community and to health professionals. Your research outcomes are as important to others as theirs are to you.

The final scientific paper for publication in biomedical journals is usually (but not necessarily) appear in the order of following headings: Title, Authors, Abstract/ summary, Key words, Introduction, materials & Methods, Results, Discussion, Acknowledgement and references. Journals generally provide in each issue, and on their web sites, detailed instructions to the authors on the required format for submitting papers. But this is not the order to prepare your manuscript. We all know nature does not create baby with skin and hair first. They are the last one to be formed. In the same way the order of preparing your manuscript is different for a specific reason, purpose and ease of break up. One should start preparing in the following order:

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2. Materials and methods
3. Discussion
4. Introduction
5. References
6. Acknowledgement
7. Title
8. Authors
9. Address for communication
10. Abstracts and key words

Even though it looks upside down, this is the way a scientific paper is born.

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Logaraj M, Ethirajan N. Iodized salt utilization pattern and availability status in the selected districts of Tamilnadu. Journal of Tropical Doctor Jan 2004; 34 (1): 38-39

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Short Communication

KAP STUDY ON IODIZED SALT USAGE AMONG HOUSEHOLD LEVEL IN TIRUNELVELI DISTRICT, TAMIL NADU

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Date of Submission: 19.06.2016 **Date of Acceptance: 15.08.2016**

Abstract

Background: In 1992 India made it mandatory that salt produced human consumption has to be adequately iodized. Inspite of the best efforts around 49% in India who still consume inadequate non iodized salt. Lack of knowledge on iodized salt and improper practice on its usage may cause Iodine deficiency disorders. **Objectives:** To assess the knowledge, attitude, practices regarding iodized salt usage among women at household level in Ulagankulam panchayat of Tirunelveli. **Materials and methods:** A community based cross sectional study on knowledge, attitude, practices among 306 women in households of Ulagankulam Panchayat, Tirunelveli District. Multi stage random sampling method was used to conduct the study. A standardized, semi-structured questionnaire was applied to the women household who is in charge of kitchen to assess the knowledge, attitude and practices regarding iodized salt usage. Cooking salt was tested with MBI testing kit for iodine content. Iodine content more than 15ppm was considered as adequately iodised salt. Appropriate statistical tests used and analysis done using SPSS 18 software. **Results:** Among the 306 salt samples surveyed, 156 (51%) households were aware of iodized salt and 150 (49%) were not aware of iodized salt. 201 (65.7%) households were never thought of using iodized salt. 123 (40.2%) households were using adequately iodized salt, 66 (21.6%) were using inadequate iodized salt and 117 (38.2%) using uniodized salt. **Conclusion and recommendation:** The present study shows that the knowledge, attitude and practice on usage of iodized salt at household level were poor. Hence, households should be educated about importance of iodized salt usage and its proper handling in the house. An information, education and communication should be conducted in the Panchayat about importance of consuming iodized salt.

Key words: Attitude, Iodized salt, Knowledge, Practices

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INTRODUCTION

Iodine is an essential element for normal thyroid function which is necessary for the normal growth, development and functioning of the brain and body.[1] Iodine deficiency disorders (IDD) refer to all the ill effects of iodine deficiency in a population that can be prevented by ensuring that the population has an adequate intake of iodine. The serious irreversible effects of IDD such as stillbirth, abortions, neonatal mortality, cretinism and mental handicap are reported from many part of the world including India. IDD affects people of all ages, both sex and different socio economic status.[2] Iodine deficiency

disorders are a world wide major public health problem. In 1999 WHO estimated that 130 of its 191 member states had significant iodine deficiency disorders.[3] More than 200 million people in the world are affected by the most visible symptom of iodine deficiency disorders.[4] In India, about 167 million people live at risk of IDD.[5] The problem of IDD exists in 25 states and five union territories of India. In Tamilnadu goiter is prevalent in all districts. Out of 29 districts, 18 have more than 10% prevalence.[2] Iodization of salt is widely regarded as the most effective and sustainable long term public health measure for the prevention and control of IDDs. Salt iodine testing is an important process indicator for monitoring progress towards universal salt iodization.[6] In the present study the iodine content of the salt was tested by MBI spot testing kit. This spot testing kit may also play a valuable educational role in that they provide a visible indication that the salt is actually iodized. The sensitivity of this test is 93.3% and specificity is 90.4%.[7] In Tamilnadu, although the problem of IDD exists and the state has accepted the universalisation of the iodized salt programme, no information is available regarding knowledge, attitudes and practices of the people towards the problem. Therefore, the present study was conducted to determine the baseline information on these aspects.

MATERIALS AND METHODS

This community based cross sectional study on knowledge, attitude and practice was done among women households of Ulagankulam panchayat , Tirunelveli district during August and September 2012. Sample size was calculated by conducting the pilot study and estimated sample of 306 were selected by Multi stage random sampling technique. Among the 29 districts of Tamil Nadu, Tirunelveli district was chosen randomly by lottery method. Tirunelveli district constitute of 19 blocks. From these 19 blocks, Cheranmehadevi block was chosen randomly by lottery method. Cheranmehadevi block consist of 12 panchayats. From these 12 panchayats, Ulagankulam panchayat was chosen randomly. The study conducted at Ulagankulam panchayat, located near Western Ghats of Tirunelveli district. This panchayat consist of totally 846 houses. The house detail was obtained from Ulagankulam panchayat office. Then the required number of 306 samples was chosen from random table. The ethical clearance was obtained from the institutional ethical committee. After getting the consent from each selected household, a standardized semi structured questionnaire was administrated to the women household who is in charge of kitchen to assess the knowledge, attitude and practices regarding iodized salt usage. Then sample of salt used for cooking purpose were collected & tested using MBI spot testing kit. The data was entered in Microsoft Excel and analyzed using SPSS 18th version. The results were expressed as percentages.

RESULTS

Socio demographic status

A total of 306 households included during the interview from Ulagankulam panchayat
with response rate of 100%.The mean average age of the women of the households interviewed was 40 years, with a minimum of 19 years and maximum of 75 years. Majority 213 (69.6%) religion of the community who participated in the study were Hindus followed by Christians 93 (30.4%). The average family size was 4.8. Educational status of the respondents are 35 (11.3%) were illiterate, 144 (47.1%) had attended elementary school (1 to 5 std), 96 (31.4%) had attained higher secondary education, and 31 (10.2%) were degree holders. 98% of the women interviewed were housewives.

Table 1: Knowledge about uses of iodized salt among those who are aware of iodized salt

S.No	Uses of iodized salt	Number of household who were aware of iodized salt (156)	Percentage
1	Prevents thyroid problems	24	15.4%
2	Good for physical and mental development	21	13.5%
3	Don't know	111	71.1%

Knowledge on iodized salt usage

Out of 306 households surveyed, 156 (51%) were aware of iodized salt and 150 (49%) households were not aware of iodized salt. Table 1 shows the awareness about uses of iodized salt among those who are aware of iodized salt (156)

Knowledge on type of salt used in their homes

Out of the 306 households surveyed, 45(14.7%) households said that they were using iodized salt, 9 (2.9%) were using non iodized salt, 9 (2.9%) were using both and 243 (79.4%) did not know what salt they were using.

Knowledge on type of salt used among households who are aware of iodized salt (156)

156 households were aware of iodized salt, of which 45 (28.8%) knew that they were using iodized salt, 6 (3.8%) were using non iodized salt, 6 (3.8%) were using both salts and 99 (63.5%) did not know the type of salt they were using.

Table 2: Attitude on iodized salt usage

S.No	Attitude	Number (306)	Percentage
1	Ever thought of using iodized salt	105	34.3%
2	Never thought of using iodized salt	201	65.7%

Attitude on iodized salt usage

Table 2 shows the responses given by the study participants to the Attitude on iodized usage

Table 3: Availability of iodized salt by storage of salt

Storage of salt	Adequately iodized	Inadequately and non iodized
1. Containers with lid closed (210)	99 (80.5%)	111 (60.6%)
2. Others (96)	24 (19.5%)	72 (39.4%)

Reasons for not thought of using iodized salt (201)

Among the 201 households who had never thought of using iodized salt, 105 (52.2%) said that it was not available, 63 (31.3%) had no idea regarding iodized salt, 18 (9%) said cost was high, 9 (4.5%) said the taste was not good and 6 (3%) gave other reasons like difficult to quantify the requirement.

Practice on Iodized salt usage

Test for presence of iodine in kitchen salt samples using MBI kit

Out of the 306 households surveyed, 123 (40.2%) were using adequately iodized salt (> 15 ppm), 66 (21.6%) were using inadequately salt (<15 ppm) and 117 (38.2%) were using un-iodized salt.

Practice of using iodized salt among households who are by aware of iodized salt (156) Out of the 156 households who were aware of iodized salt, 78 (50%) were using adequately iodized salt, 24 (15.4%) were using inadequately iodized salt and 54 (34.6%) were using un-iodized salt.

Storage of salt

Out of 306 households, 210 (68.6%) stored salt in container with lid, 69 (22.5%) stored in container without a lid and 27 (8.8%) stored in the same cover which they bought the salt.

The availability of iodized salt by storage of salt was shown in table 3

DISCUSSION

In this study among 306 households survey, only 156 (51%) households were aware of iodized salts. This result is almost similar to the study conducted by salt commissioner office in 2010 which was 57.8%.[8] But it is higher than the study conducted in general population of Kazakastan in 2004 which was 20%. [9] Among the households who were aware of iodized salts (156), only 45 (28.9%) houses were aware of iodine deficiency disorder. It is higher than the study conducted in urban slums of north east part of Delhi by Agarwal S etal in 2008 which was 6.5%. [10] Only 60 (19.6%) households replied that they identified the iodized salt by smiling sun logo and 66 (21.6%) identified it by written words and the remaining 30 households cant able to identify iodized salt.156 (51%) of households were aware of iodized salts. Of which, only 78 (50%) households had iodized salt in the regular usage. The reason could be due to iodized salts not available locally. In 2010 salt commissioner office study, 57.8% of people were aware of iodized salts. Of which 55.1% had iodized salts in the households. [8] Among the 306 households, Positive attitude towards usage of iodized salts were found in only 105 (34.3%) households. Lack of awareness are the main factors for non positive attitude of iodized salts. All the 306 households the edible salts samples tested with MBI kit ,123 (40.2%) households had adequately iodized salts, 66 (21.6%) households had inadequate iodized salts, 117 (38.2%) households had uniodized salts. This is very low as compared to a study conducted by Tapas Kumar etal reported 70% [11] had adequately iodized salts and Agarwal etal shows 75.6% use adequately iodized salts.[10] This could be attributed to lack of knowledge regarding iodized salt, health

effects of iodine deficiency, improper storage and high cost of iodized salt than non iodized salt.

CONCLUSION

Based on the finding of the present study, we can conclude that the knowledge, attitude and practice on usage of iodized salt at household level were poor. Hence, households should be educated about importance of iodized salt usage and its proper handling in the house. An information, education and communication should be conducted about importance of its identification and usage of iodized salt and thereby increasing the demand for it. In addition house-to-house visits by public health workers and health extension workers to sustain and improve on the utilization of iodized salt at the household level. Iodized salt should be made available in all petty shops in rural areas.

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INTEREST OF CONFLICT &SOURCE OF FUNDING- Nil

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Original Research Article

An assessment of quality of life among leprosy affected persons residing in leprosy settlements of Chengalpet Taluk, Kancheepuram, Tamil Nadu

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Abstract

Background: Among communicable diseases, leprosy remains a leading cause of peripheral neuropathy and disability in the world, in spite of the extensive efforts to reduce the disease burden. **Objectives:** To estimate the quality of life and the factors influencing quality of life among people affected by leprosy in leprosy settlements of Chengalpet taluk. **Methods:** Community based cross sectional study was conducted at leprosy settlements of Chengalpet taluk. A total of 247 leprosy affected persons participated in the study. House to house interview was conducted using a predesigned, pre tested questionnaire. Quality of life was assessed using the WHOQOL- BREF. **Results:** The Mean domain scores of the various domains were computed and it was , physical domain 20.55±3.9, psychological domain 16.16±2.9, social relationship domain 8.16±2.08 and environment domain was 24.34±3.9 The overall quality of life score was calculated and was found to be 69.21±9.9. Quality of life scores among males was more than that of the females in the various domains, although no statistical significance was observed. On assessing the overall quality of life it was found that age, educational status, income, occupation, marital status, disease duration and the disability had significance on the quality of life. **Conclusion:** The socio-demographic variables like young age, education, having an occupation and being married had positive influence on the overall quality of life domain. Care after cure should be an integral component in leprosy.

Keywords: Communicable disease, Leprosy, disability, WHOQOL BREF, quality of life domains

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1. INTRODUCTION

Leprosy is a chronic granulomatous infection, principally affecting the skin and peripheral nerves, caused by the bacteria, *Mycobacterium leprae*[1.] Among communicable diseases, leprosy remains a leading cause of peripheral neuropathy and disability in the world, in spite of the extensive efforts to reduce the disease burden. [2]. Even though India achieved the goal of elimination nationwide in Dec 2005 [3], the effect of leprosy still persists in our country. Impairments may give rise to disabilities, such as limitations of activities involving the use of hands, feet and eyes, and restrictions in social participation. In a country where poverty, illiteracy and unhygienic environmental conditions occur, the additional burden of disease is likely to affect the quality of life (QOL).[4] Modern amenities, improved education and raised expectations are bound to lead to changes in people's perceptions of their quality of life. Periodic assessments of the quality of life are therefore desirable in order to provide guidance for

policies and programmes intended to achieve well-being of patients.[5]There should be a clear focus on managing disability, especially after treatment completion, as it can have a huge influence on quality of life of the people. The road to life of the affected does not end with cure of the disease, but continues way forward till they attain the best of their abilities.

2. METHODS

The present study was undertaken with the objectives of determining the quality of life and the factors affecting the quality among people affected by leprosy (PAL) residing in leprosy settlement areas of Chengalpet Taluk, during the year 2013.

2.1 Design: Cross sectional study

2.2 Sample Size

The study included 247 treatment completed adult leprosy patients aged 18 and above. Sample size was estimated using the formula **$n = (1.96)^2$ Pq / d^2,** and on the basis of deformities prevalence as 20 % from a study in South India [6] .

2.3 Sampling Strategy

A list of Leprosy settlement areas in the taluk was first identified. There were a total of nine leprosy settlements. The leaders of the settlements were contacted and were explained about the nature and purpose of the study and a list of leprosy affected persons was prepared with their help. A total of 528 leprosy affected persons were identified. Those with cognitive deficit, doubtful diagnosis and not willing to participate in the study were excluded and thus ended up with 346 eligible participants. Sampling technique used was simple random sampling.

3. Data Collection

After obtaining clearance from the Institutional Ethical Committee, data was collected by a house to house interview using a predesigned, pretested questionnaire which elicited information like socio economic status, demographic profile, information on leprosy like the type of leprosy at the time of diagnosis, family history of leprosy, surgeries experienced due to leprosy and disability due to leprosy. These information was also verified with existing medical records. Quality of life (QOL) information was collected using the instrument WHOQOL-BREF. This questionnaire composes of 26 questions, two general questions and the remaining 24 encompass four domains: physical, psychological, social relations and environment. Domain scores were computed using the summation of the constituent items[7]. The sum of the responses provides a score for the overall QOL[8]. Higher score indicates a better quality of life. Informed consent was also obtained.

3.1 Data analysis: Data was analyzed using the statistical package for social sciences version 18(SPSS Inc. Chicago). Descriptive statistics including proportions, measures of central tendency and measures of dispersion were used to describe the data. Univariate analysis of the variables was done followed by unpaired 't' test to compare means.
Linear regression analysis was done with overall Quality of life as the dependent variable and baseline variables as the independent variables. A 'p' value less than 0.05 was considered to be statistically significant.

4.RESULTS:

The present study was carried out among 247 leprosy affected persons residing in leprosy settlements of Chengalpet taluk shows the mean age of the study participants to be 60.19±12.8 with majority 95 (38.5%) belonging to the age group of 60-69. Majority of them were males 142 (57.5%) Illiteracy level in the study subjects was about 135(55%) with majority 213(86.2%) being unemployed currently. The mean income of the study population was found to be 1318 INR.

Information on leprosy revealed that 209 (84.6%) were of Paucibacillary type (<5 patches) at the time of diagnosis. Mean duration since the diagnosis of the disease of the study participants was 40 years and about 1/3rd of the study participants had a family history of leprosy. 222 (90%) persons had some sort of deformity **(Table 1)**.

With regards to utilization of medical care facilities, there was near equal distribution of Government and Private sectors.

QOL scores were assessed using the WHOQOL BREF. The mean domain scores of the various domains were computed and it was as follows: physical domain 20.55±3.9, psychological domain

16.16±2.9, social relationship domain 8.16±2.08 and environment domain 24.34±3.9. The overall QOL score was calculated using the sum of the responses and the mean overall quality of life was found to be 69.21± 9.9.

TABLE 1: SOCIO-DEMOGRAPHIC DETAILS OF STUDY PARTICIPANTS

Socio-Demographic variables		Number	%
Sex	Male	142	57.5
	Female	105	42.5
Education	Illiterate	135	55
	Primary	62	25
	Secondary	34	14
	HSC	16	6
Marital status	Married	110	44.5
	Unmarried	38	15.4
	Widow	78	31.6
	Divorced	1	0.4
	Separated	20	8.1
Type of Leprosy At Diagnosis	Paucibacillary	209	84.6
	Multibacillary	38	15.4
Duration since disease diagnosis	<15 yrs	30	12.1
	15 -29 yrs	45	18.2
	30-44 yrs	78	31.6
	45 yrs & above	94	38.1
Surgery undergone due to leprosy	No	171	69.2
	Yes	76	30.8
Deformities	Present	222	89.9
	Absent	25	10.1

Further univariate analysis of the various demographic variables was done .Using unpaired 't' test, the demographic variables were compared to the various domains of QOL including the overall domain. Age was a significant variable in physical and social domain with lower age groups (<60 yrs) having a better QOL scores across all the domains. Although males had a better QOL scores, the difference was not found to be statistically significant **(p >0.05).**

Higher scores were seen among the employed in all the domains. Occupation was thus observed to be an important factor in the outcome of QOL with statistical significance across all the domains, including the overall QOL. Subjects of paucibacillary type of leprosy enjoyed better scores, however the difference was not statistically significant **(p >0.05)**. Better scores were also seen among persons having a high income, less duration since the disease diagnosis and in also those not having a deformity. These differences were observed to be statistically significant **(p <0.05)** when compared with the overall domain of quality of life. **(Table 2)**

The linear regression analysis of variables on comparing with overall QOL was done and it showed that occupation, marital status and disability had a significant association with the overall quality of life. Among the leprosy affected persons, being employed had an improvement in the overall QOL. This was statistically significant (p<0.001). Being married also resulted in a better quality of life (p=0.006). The presence of a disability had an adverse effect on the overall quality of life. This was also found to be statistically significant (p<0.001) **(Table 3).**

5. DISCUSSION

Among the 247 subjects in our study, mean domain scores for the various domains were; Physical (20.55 ± 3.9), Psychological domain (16.16 ± 2.9), Social relationship domain (8.16 ± 2.08) and Environment domain (24.34 ± 3.9). On Comparison with other studies**,** our study had better scores in the all the domains except the social relationship domain.[9, 10]

In spite of the high prevalence of deformities, the physical domain score in our study was found to be high**,** whereas a study in Brazil reported the lowest score in the physical domain[11]. This might have been because majority of the participants in our study were treatment completed leprosy patients, who were diagnosed long time back. Living with the disease over the years, people might have learnt to overcome their obstacles in the physical component and more importantly in the mental aspects which was indicated by the psychological domain scores.

Our study revealed that males had a better score compared to females in all the domains of QOL. But there was no statistical significance seen in any of the domains. Better quality of life scores among males probably were because of their more active

TABLE 2: COMPARISON OF SOCIODEMOGRAPHIC VARIABLES WITH THE VARIOUS DOMAINS OF QUALITY OF LIFE

Socio demographic variables		N	Quality of life domains														
			Physical			Psychological			Social			Environment			Overall QOL		
			Mean	SD	p value	Mean	SD	p value	Mean	SD	p value	Mean	SD	p value	Mean	SD	p value
Age	Low	131	21.37	3.873	<0.001*	16.24	3.142	0.660	8.42	2.141	0.035*	24.56	4.232	0.374	70.58	10.575	0.021*
	High	116	19.62	3.794		16.07	2.794		7.86	1.978		24.10	3.715		67.66	9.069	
Sex	Male	142	20.61	3.730	0.759	16.39	2.900	0.147	8.21	8.00	0.640	24.51	3.982	0.457	69.73	9.636	0.343
	Female	105	20.46	4.190		15.84	3.067		8.09	2.001		24.12	4.023		68.50	10.443	
Education	Literate	112	21.12	3.900	0.035*	16.75	3.106	0.004*	8.24	2.094	0.568	25.37	3.534	<0.001*	71.48	9.702	0.001*
	Illiterate	135	20.07	3.895		15.67	2.786		8.09	2.075		23.50	4.168		67.32	9.855	
Occupation	Employed	32	24.69	3.187	<0.001*	18.37	2.871	<0.001*	9.19	2.007	0.003*	28.06	3.482	<0.001*	80.31	8.778	<0.001*
	Unemployed	215	19.93	3.645		15.83	2.859		8.00	2.052		23.79	3.771		67.55	9.069	
Marital Status	Married	110	20.89	4.051	0.217	16.38	3.124	0.291	9.20	2.049	<0.001*	24.73	4.128	0.177	71.20	10.380	0.005*
	Unmarried	137	20.27	3.813		15.98	2.856		7.32	1.697		24.04	3.874		67.61	9.390	
Income	Low	169	20.12	3.746	0.011*	16.02	2.859	0.277	7.92	2.056	0.009*	24.15	3.875	0.271	68.21	9.494	0.021*
	High	78	21.47	4.161		16.46	3.222		8.67	2.056		24.76	4.243		71.36	10.721	
Type of Family	Nuclear	206	20.77	3.947	0.043*	16.30	2.903	0.091	8.06	2.084	0.109	24.51	4.064	0.145	69.65	10.205	0.121
	Others	41	19.41	3.647		15.44	3.279		8.63	2.022		23.51	3.565		67.00	8.562	
Type of leprosy	Paucibacillary	209	20.64	3.994	0.375	16.27	2.921	0.174	8.19	2.082	0.612	24.47	4.160	0.251	69.56	10.266	0.187
	Multibacillary	38	20.03	3.522		15.55	3.252		8.00	2.092		23.66	2.878		67.24	8.099	
Disease duration	Less	142	21.16	3.911	0.004*	16.45	3.100	0.072	8.23	2.208	0.514	24.95	4.034	0.005*	70.80	10.308	0.003*
	More	105	19.71	3.805		15.76	2.772		8.06	1.901		23.52	3.811		67.06	9.145	
Deformities	Present	222	20.14	3.734	<0.001*	15.90	2.839	<0.001*	8.08	2.005	0.084	24.04	3.928	<0.001*	68.16	9.377	<0.001*
	Absent	25	24.12	3.833		18.48	3.242		8.84	2.609		27.04	3.623		78.48	10.599	
Family history	Yes	86	20.79	4.108	0.476	16.28	3.231	0.641	8.70	1.983	0.003*	24.78	4.086	0.212	70.55	10.360	0.123
	No	161	20.42	3.830		16.09	2.843		7.87	2.080		24.11	3.940		68.49	9.735	
Surgical History	Yes	76	20.11	3.679	0.240	15.55	3.061	0.033*	8.21	1.885	0.792	23.86	3.901	0.201	67.72	9.162	0.120
	No	171	20.74	4.024		16.43	2.910		8.13	2.166		24.56	4.029		69.87	10.286	
Place of treatment	Govt	123	20.38	3.878	0.513	16.15	2.764	0.986	7.60	1.966	<0.001*	24.15	4.042	0.440	68.28	9.911	0.149
	Private	124	20.71	3.979		16.16	3.189		8.71	2.051		24.54	3.956		70.12	10.013	

** Statistically significant (Unpaired t test)*

TABLE 3: LINEAR REGRESSION ANALYSIS OF FACTORS INFLUENCING QUALITY OF LIFE

Variable	Un-standardized Coefficients		Standardized Coefficients	t	p Value	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower	Upper
Age	.131	1.255	.007	.104	0.917	-2.34	2.60
Education	1.972	1.144	.099	1.724	0.086	-0.28	4.22
Income	-1.723	1.349	-.080	-1.277	0.203	-4.38	0.93
Occupation	-11.225	1.920	-.378	-5.847	**<0.001 ***	-15.0	-7.44
Marital status	-3.147	1.146	-.157	-2.746	**0.006***	-5.40	-0.89
Disease duration	-1.337	1.259	-.066	-1.062	0.289	-3.81	1.14
Deformities	6.848	1.891	.207	3.621	**<0.001 ***	3.12	10.57

**** Statistically significant***

participation within the society. On the contrary, a study done in Chittor district, Andhra Pradesh reported that women had a better QOL score when compared to men in all the domains and claimed the reason that women were more ready to accept their situation than men[4].

The present study showed statistical association between educational status, income and quality of life domains with higher QOL scores among the educated, earning higher income and not being disabled. Similar findings were also seen in other studies where not having education , having deformities, and a low income was found to be the cause of poor quality of life.[12,13,14] .

In the treatment completed persons, the educated are better aware of the role of self care in the prevention of disability. It was evident from the fact that literates enjoyed a better QOL. Higher income indicates the affordability of medical care as and when required and thus people had better life.

6. CONCLUSION

In the present study, it was found that age, education, income, occupation, marital status, disease duration and the presence of disability had an influence on the overall quality of life. Linear regression model after controlling the effects of other variables showed that occupation, marital status and disability had significant effect on the overall quality of life. Some factors like relapse of the disease , reactions during treatment have not been evaluated in this study. Further studies are needed in leprosy to evaluate after the disease is cured. We emphasize the importance of information, education and communication at all levels i.e., individual, community, patients and health personnel. Adopting proper preventive measures should be of prime essence and emphasizing care after cure should become an integral component of the programme.

CONFLICT OF INTEREST: NIL

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Original Research Article

Attitude of Medical Students in Davangere towards Older People and Willingness to Consider a Career in Geriatric Medicine

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Abstract

Background: In light of population ageing in India, the education of tomorrow's medical doctors must include geriatrics care. Training of future physicians in the care of elderly patients needs to evolve in accordance with the exponential increase of elderly patients. WHO strongly advocates awareness for training all future medical doctors in the care of older people **Objectives:** To measure the medical students attitude towards older people;To know their willingness to consider a career in Geriatric Medicine.(GRM). **Methods:** A cross sectional study was carried out in S S Institute of medical sciences and research centre for a period of 6 months. 552 medical students from first year to final year participated in the study. University of California, Los angeles UCLA Geriatrics Attitude scale was used to measure the attitude of medical students towards elderly and a question regarding their willingness to consider geriatric medicine as a carrier option was included. **Results:** The mean UCLA attitude score of the medical students is 3.43 ± 0.37, which suggests that the students have a relatively positive attitude towards elderly (mean UCLA score above 3 is considered as relatively positive attitude). There is a weak correlation between mean attitude scores & willingness to consider geriatric medicine as a career. [R = 0.13, P= 0.002].More than one third (41.7%) are willing to consider Geriatric Medicine as career. The mean attitude scores for males and females are 3.46 ± 0.41 and 3.60 ± 0.45 respectively, the difference is found to be statistically significant (P< 0.05). **Conclusion:** Though the students have positive attitude towards treating elderly, only few are willing to consider geriatric medicine as a career.

Key words: Medical students, Older people, Geriatric Medicine, Elderly

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Introduction

The percentage of elderly population is increasing in India due to an improvement in the child survival and increased life expectancy, which is a significant feature of demographic change in India. As on 2010 an estimated 8% population i.e 96 million people of the total population of India are senior citizens above age group of 60 years. Presently India has the second largest population of senior citizens in the globe. According to UN by 2050 the population of 60 plus in India would likely go upto 20%.[1] Coping with old age is becoming increasingly difficult. Sadly young people now see old people as a burden. The respect they once enjoyed in the joint family is slowing disappearing. The changed scenario has given rise to three major needs: Social, health and financial security in elderly.[1] So, it is important to prepare health providers and societies

to meet the specific needs of older populations. This includes training for health professionals on old-age care; preventing and managing age-associated chronic diseases; designing sustainable policies on long-term and palliative care; and developing age-friendly services and settings.[2]

WHO strongly advocates awareness for training all future medical doctors in the care of older persons. It also promotes the adoption of a life-course approach in the education and training of doctors. In light of population ageing, the education of tomorrow's medical doctors must include geriatrics care . In this regard WHO has developed a study on Teaching Geriatrics in Medical Education (TeGeMe) - a joint initiative of ALC (aging and life course) and the International Federation of Medical Students Associations (IFMSA) which focused on the integration of geriatric medicine within medical curriculums worldwide.[3]

Future physicians need to be trained in the care of elderly patients in accordance with the increase of elderly patients, it is also important that all doctors should ideally improve their knowledge, attitudes and skills with regard to the management of elderly patients, as they will increasingly encounter elderly patients and therefore should be addressed to help & generate more "elderly-friendly" physicians.[4]

In this regard the study aimed to find out the attitude of medical students towards elderly and also their willingness to consider a career in Geriatric medicine.

Materials and methods:

Study design: Cross sectional study

Study area: S.S Institute of Medical Sciences & Research Centre

Study duration: six months from September 2012 to February 2013

Study subjects: All the medical students from 1st year to final year, who were present in the class during the study were included after obtaining written informed consent

Questionnaire: The University of California, Los Angeles (UCLA) Geriatrics Attitudes Scale has been validated for measuring attitudes towards older patients amongst primary care residents in the United States and it has also been validated for use in medical students. The Geriatrics Attitude Scale consists of a mixture of 14 positively and negatively worded questions, answered on a 5-point Likert scale ranging from "Strongly disagree (1 point)" to "Strongly agree (5 points)" and a rating of 3 points indicating a neutral response. Mean UCLA score above 3 is regarded as positive attitude. A fifteenth question was included at the end of the questionnaire which enquired about students' willingness to consider Geriatric Medicine (GRM) as a potential career choice. Scores were tabulated in accordance with Chua et al's original article, in which scores on negatively worded statements were reversed before being added to scores on positively worded statements to produce a total score.

Statistical Analysis: The reliability of the attitudes scale was measured by calculating the statistic, Cronbach coefficient alpha. Univariate linear regression analysis was performed to identify factors associated with attitude scores and willingness to consider GRM as a career. Student's unpaired *t*-test, ANOVA, Games Howell's post Hoc test was used to compare the mean scores. Pearson's correlation coefficient was used to assess the relation between mean UCLA scores and willingness to consider a career in Geriatric Medicine.

Results

The internal consistency of the modified UCLA geriatric attitude scales measured using the Cronbach co efficient alpha was 0.65.

Table 1: Distribution of Medical Students according to Age, Gender and Religion

Characteristics	Category	Frequency	Percentage
Age (in years)	17 – 20	322	58
	21 – 24	223	41
	25 - 27	7	1
Total		552	100
Gender	Male	245	44
	Female	307	56
Total		552	100
Religion	Hindu	512	93
	Muslim	28	5
	Christian	8	1.4
	Jain	4	0.6
Total		552	100
Year of Study	1st year	140	25
	2nd year	199	36
	3rd year	100	18
	4th year	113	21
Total		552	100

Majority of the students were in the age group of 17 – 20 years (58%). Females outnumbered males and accounted for 56% and 93% of the students belonged to Hindu religion.

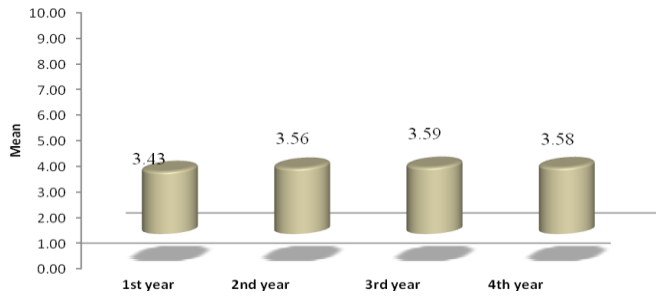
Strength of the students was more in 2nd year (36%) students followed by 1st year, final year and 3rd year accounting for 25%, 21% and 18% respectively.

Table 2: showing Mean UCLA Score of all the Medical Students

Mean		SD		95 % C.I
3.43		0.37		3.37-3.49
Males		**Females**		
Mean	**SD**	**Mean**	**SD**	**P* Value, Sig**
3.46	0.41	3.60	0.45	<0.001 HS

The mean UCLA attitude score of all the students was 3.43 ± 0.37 which suggests that the students had a relatively positive attitude. Overall mean UCLA attitude scores for males and females were 3.46 ± 0.41 & 3.60 ± 0.45 respectively, the difference was found to be statistically significant ($p < 0.001$)

Figure 1: Showing Mean UCLA Scores of students from First Year to Final Year

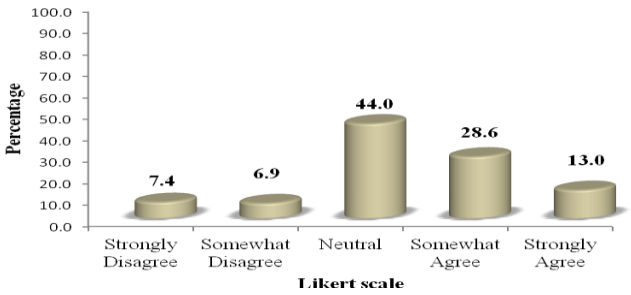


One way ANOVA test, P= 0.009

The difference in the mean attitude scores of students from 1st year to final year was found to statistically significant (P= 0.009)

According to Games Howell post hoc test, the significant pairs are I & II, I & III and I & IV which means there was a significant difference in the attitude towards elderly in 1 year students and second year students, 1st year students and 3rd year students and also 1st year students and 4th year students (Figure 1)

Figure 2: Distribution of Students according to their willingness to consider GRM as a Potential Career Choice



A large proportion of students (44%) were undecided in considering a career in geriatrics and 41.6 % students reported they would consider a career in Geriatrics, and 14.3% of the students had already decided at this point that they would not consider geriatrics as a potential career choice.

Table 3: Mean scores of males & females in willingness to consider GRM as a Potential Career Choice

Options	Males		Females	
	Frequency	Percentage	Frequency	Percentage
Strongly disagree	24	9.8	17	5.5
Somewhat disagree	16	6.5	22	7.2
Neutral	112	45.7	131	42.7
somewhat agree	61	24.9	97	31.6
Strongly agree	32	13.1	40	13.0
Total	245	100	307	100
Mean career scores	3.25		3.39	
SD	1.08		0.99	

(P value = 0.10) Student's unpaired t Test

Regarding willingness of male and female students in considering geriatrics as a career, majority were neutral in their decision. The difference in the mean career scores of males (3.25 ± 1.08) and females (

3.39 ±0.99) (P value = 0.10 NS) in considering geriatrics as a career was not statistically significant.

Table 4: Correlation of Mean attitude (UCLA) Score of 552 students & willingness to consider Geriatric Medicine as a career

I would like to consider a career in geriatric medicine	Number of students	Mean attitude (UCLA) Score	Standard deviation
Strongly disagree	72	3.38	0.43
Somewhat disagree	158	3.41	0.41
Neutral	243	3.56	0.41
Somewhat agree	38	3.55	0.49
Strongly agree	41	3.63	0.42

*Correlation between overall mean UCLA Score & career scores (r = 0.132; P = 0.002) *Pearson's correlation coefficient*

The student's willingness to consider GRM is correlated with the mean UCLA scores. There was a weak correlation between the mean attitude scores and taking geriatrics as a career scores (r = 0.132; P = 0.002) which means even though there was a positive attitude among students towards elderly they were not willing to consider geriatrics as a career.

Discussion

A study from Chua MPW et al. showed that the internal consistency of the modified UCLA geriatric attitudes scales measured using the Cronbach coefficient alpha was 0.73.[5] The internal consistency of the modified UCLA geriatric attitude scales measured using the Cronbach co efficient alpha of our study was less compared to their study (0.65). In our study the mean UCLA score (3.43 ± 0.37) of medical students towards elderly is lower than the mean UCLA score (3.58 ± 0.41) found in the study done by Melvin PW Chua et al in Singapore [5] and also lower than the study from Hughes NJ et al which reported First-year medical students had a mean attitude score ± standard deviation of 3.69±0.39.[6] In our study, the difference in the mean UCLA attitude scores for males (3.46 ± 0.41) and females (3.60 ± 0.45) was found to be statistically significant ($p < 0.001$) but in the study done by Melvin PW Chua et al in Singapore there was no significant difference (P = 0.332) in mean UCLA scores between male and female students.[5] Chua MPW et al. showed that the male and female students had significantly difference in mean career scores of 2.91 and 3.22 , respectively (P = 0.015).[5] but in our study there was no statistically significant difference in the mean career scores of males (3.25 ± 1.08) and females (3.39 ±0.99) (P value = 0.10) in considering geriatrics as a career

In our study there was a weak correlation between the mean attitude scores and taking geriatrics as a career scores (r = 0.132; P = 0.002) which means even though there was a positive attitude among students towards elderly they were not willing to consider geriatrics as a career but Hughes NJ et al reported that in their study a more-positive attitude increased the likelihood of considering a career in GM (*P*<.001).[6] In our study the difference in the mean attitude scores of students from 1st year to final year was found to statistically significant (P= 0.009) similarly a study by Hughes NJ et al showed Fourth-year students had better attitude scores than first-year students (3.86±0.36, *P*=.002) [6]

Conclusion

From our study we conclude that the medical students have positive attitude towards the older people. Female students have more positive attitude than males and the difference is found be statistically significant. First year students show significant difference in the attitude when compared to their senior medical students. There was no significant difference among males and females in considering a career in Geriatric Medicine. Majority of the medical students even though have positive attitude, are not seeking a career in Geriatric Medicine.

Recommendation

Medical students should be emphasized on the changing demography of the country & requirements of the older people regarding health as well as social issues in the curriculum, which will

have an impact on medical students attitude towards older people.

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Original Research Article

Correlation and clustering of blood pressure with risk factors of cardiovascular diseases (CVD) among male undergraduate students in Chennai

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Abstract

Background: Hypertension appears to cluster with other risk factors like obesity, glucose intolerance, dyslipaedimia etc. Demonstration of such relationship and clustering is important for formulating risk reduction strategies particularly in the young Indian population. **Objectives**: To correlate the blood pressure level and it's clustering with CVD risk factors among male undergraduate students in Chennai. **Methods:** A cross-sectional study was conducted among male students in a private university situated in the suburban area of Chennai. A total of 403 students was studied and the information on selected socio-demographic variables were collected with the help of pre tested structured questionnaire. Measurements of height, weight, blood pressure; and postprandial blood glucose were obtained as per standard procedure. **Results:** Positive and significant correlation was observed between systolic BP and blood sugar level ($r=0.239$, $p<0.001$), BMI ($r=0.290$, $p<0.001$), waist circumference ($r=0.298$, $p<0.001$) and waist hip ratio ($r=0.100$,$p=0.045$). In case of diastolic BP significant correlation was observed only with BMI ($r=0.115$, $p=0.021$). Among hypertensive 68.6% of them had two or more risk factors, whereas 58.5% of the pre hypertensive had two or more risk factors. **Conclusion:** In conclusion positive correlation was observed between majority of CVD risk factors and systolic blood pressure among the male student's population**.** Higher proportion of male students with hypertension and pre hypertension had two more risk factors compared to normotensives. A feasible strategy has to be developed to prevent the development of risk factors of CVD factors in the youth population at the college level.

Key words: Blood pressure, CVD risk factors, male students, correlation, clustering.

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INTRODUCTION

The risk factors for the growing burden of cardiovascular diseases especially hypertension, diabetes, overweight or obesity and waist hip ratio are increasing.[1,2] It was estimated that by 2020 AD, 2.6 million Indians are predicted to die due to coronary heart disease which constitutes 54.1 % of all CVD deaths. Nearly half of these deaths are likely to occur in young and middle aged individuals. Currently Indians experience CVD deaths at least a decade earlier than their counterparts in countries with established market economies (EME).[3] The relationship and clustering of CVD risk factors with BP has not been studied much in the young Indian population. Hypertension appears to cluster with other risk factors like obesity, glucose intolerance, dyslipaedimia, etc .[4,5] Demonstration of such relationship and clustering is

important for formulating risk reduction strategies particularly in individuals with stage I hypertension or pre-hypertension which are widely prevalent than severe stages of hypertension. Obesity often coexists with hypertension (HTN) and a linear relationship between blood pressure (BP) values and weight was observed.[6] Several studies in adults have reported a stronger positive association between cardiovascular risk factors such as hypertension, glucose concentrations and waist circumference or WHR .[7-10] Hence our objective is to correlate the blood pressure level and its clustering with CVD risk factors among male undergraduate students in Chennai

METHODS

A cross-sectional study was conducted among 403 male undergraduate students of a university situated in the suburban area of Chennai. The information on selected socio-demographic variables, tobacco and alcohol use, dietary intake, physical activity and treatment history for diabetes and hypertension were collected with the help of pre tested structured questionnaire. The physical examination such as measurements of height, weight, blood pressure; resting pulse rate and postprandial blood glucose were obtained from all the participants.

The height was measured using a portable stadiometer. The participants were asked to stand in erect posture without foot wear with their feet together and to look straight. The stadiometer's measuring tip was lowered to the head and height was measured.

The weights of the participants were measured by using a portable electronic weighing machine. The participants were asked to stand still on the platform of the weighing machine. They were allowed to wear their clothes but not the foot wears. The body mass index was measured using the formula weight (kg)/height $(m)^2$. overweight was defined as a BMI greater than or equal to 25 kg/m^2, while obesity is defined as BMI greater than or equal 30 kg/m^2.[8] Increased (high-risk) waist circumference is defined as recommended by Lean et al[6] as greater than 94 cm in men and as greater than 80 cm in women. Increased waist to hip ratio was defined as greater than or equal to 0.95 for males and greater than or equal to 0.80 for females.

Postprandial blood sugar was measured using glucometer (accutrend plus). A person is said to have diabetes if fasting plasma glucose concentration is above 200 mg/l or someone taking insulin or oral hypoglycemic drugs.

Blood pressure was recorded in the sitting position in the left arm to the nearest 1 mm Hg using an electronic Omron machine (Omron Corporation, Tokyo, Japan). Two readings were taken, one before the start of interview and other at the end of the interview and the mean of the 2 readings was used for analysis. Pre-hypertension was defined according to JNC 7 criteria as having either a systolic blood pressure of 120 to139mmhg and/or diastolic blood pressure of 80 to 89 mm Hg in persons who were not on treatment for hypertension. Hypertension was defined according to JNC 7 criteria as having an untreated systolic blood pressure (BP) of greater than or equal to 140 mm Hg or diastolic BP greater than or equal to 90 mm Hg or being on medication for hypertension. Normal blood pressure will be defined as having both a systolic BP of < 120 mm Hg and a diastolic BP of < 80 mm Hg in the absence of antihypertensive medication[7] or was already on treatment for hypertension. All current smokers and those who quit smoking less than 1 year before the assessment were considered smokers for assessing cardiovascular risk. Similarly all current alcoholics and those who quit alcohol less than 1 year before the assessment were considered alcoholics.

The study was carried out after obtaining institutional ethics committee approval. Data was analyzed using the standard statistical software packages. Descriptive data were presented as frequency & percentages for categorical variables and mean & 95% confidence intervals for continuous variables. Chi-square test and Pearson correlation analysis were used to lend statistical support to prove associations between categorical and continuous variables respectively.

RESULTS

Table 1 depicts the correlation of systolic and diastolic BP with mean levels of blood sugar, BMI, waist circumference and waist hip ratio of 403 undergraduate students. In case of systolic blood pressure the mean levels of blood sugar (107.44mg/dl), BMI (25.89 kg/m^2), waist circumference (87.60 cm) and WHR (0.89) were higher in hypertensive students compared to pre

Table 1. Correlation of systolic & diastolic blood pressure with blood sugar level, BMI, waist circumference and WHR

Blood Pressure	Mean value	95% CI	Pearson Correlation(r)	P value
Systolic Blood Pressure	**Mean blood sugar value (mg/dl)**			
Normal	91.910	89.487-94.337	0.239	< 0.001
Pre hypertensive	96.236	94.231- 98.241		
Hypertensive	107.44	100.257- 114.624		
	Mean BMI (kg/m^2)			
Normal	21.947	21.339- 22.556	0.290	< 0.001
Pre hypertensive	24.287	23.945- 25.030		
Hypertensive	25.886	23.480-28.132		
	Mean waist circumference(cm)			
Normal	78.865	77.256-80.474	0.298	< 0.001
Pre hypertensive	84.848	83.063-86.632		
Hypertensive	87.602	83.990-91.215		
	Mean WHR			
Normal	0.864	0.850-0.877	0.100	0.045
Pre hypertensive	0.882	0.869-0.894		
Hypertensive	0.889	0.876-0.901		
Diastolic Blood Pressure	**Mean blood sugar value (mg/dl)**	**95% CI**	**Pearson Correlation r**	**P value**
Normal	95.700	93.644- 97.757	0.052	0.294
Pre hypertensive	92.557	89.620-95.495		
Hypertensive	99.890	95.708-104.07		
	Mean BMI (kg/m^2)			
Normal	23.398	22.879-23.917	0.115	0.021
Pre hypertensive	23.521	22.438- 24.574		
Hypertensive	25.005	23.895- 26.116		
	Mean waist circumference(cm)			
Normal	81.946	80.572-83.321	0.097	0.052
Pre hypertensive	84.131	81.010-87.252		
Hypertensive	84.882	81.617- 88.148		
	Mean WHR			
Normal	0.874	0.865-0.883	0.013	0.790
Pre hypertensive	0.881	0.858-0.904		
Hypertensive	0.875	0.849-0.901		

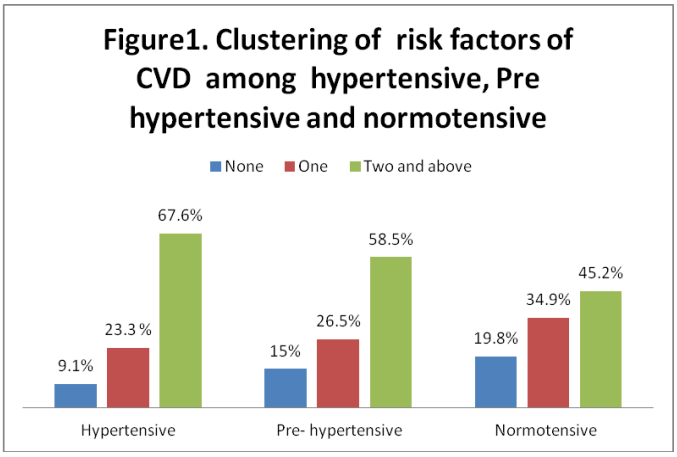
Table 2. Correlation of smoking, alcohol intake and regular exercise with systolic and diastolic blood pressure

Risk factor	Mean BP	95% CI	Pearson Correlation r	P value
	Mean systolic BP			
H/o Smoking			0.164	0.001
Yes	128.93	126.67-131.18		
No	124.73,	123.46-126.01		
H/o alcohol intake				
Yes	129.62	127.35-131.88	0.201	<0.001
No	124.39	123.15- 125.64		
H/o Regular exercise				
Yes	126.06	124.34-127.78	0.014	0.773
No	125.73	124.24-127.21		
	Mean diastolic BP			
H/o Smoking				
Yes	82.98	81.13-84.82	0.210	<0.001
No	77.45	76.05-78.84		
H/o alcohol intake				
Yes	82.169	79.793-84.545	0.176	<0.001
No	77.6113	76.326- 78.896		
H/o Regular exercise				

Yes	79.610	78.027-81.193	0.051	0.307
No				

hypertensive and normotensive. In case of diastolic BP the mean values for blood glucose(99,89mg/dl) and BMI (25.00 kg/m^2)and waist circumference (84.88 cm)was higher in hypertensive compared to pre hypertensive and normotensive.

Positive and significant correlation was observed for systolic BP with blood sugar level (r=0.239, p<0.001), BMI (r=0.290, p<0.001), waist circumference (r=0.298, p<0.001) and waist hip ratio (r=0.100,p=0.045). In case of diastolic BP significant correlation was observed only with BMI (r=0.115, p=0.021) and not for other parameters such as waist circumference (r=0.097, p=0.052), blood sugar(r=0.052,p=0.294) and waist hip ratio(r=0.013,p=0.790)[table1]



The mean systolic and diastolic blood pressure was higher among smokers [(128.93, 95% CI=126.67-131.18) and (82.98, 955 CI 81.13-84.82)] compared to non-smokers [(124.73, 95% CI 123.46-126.01) and (77.45, 95% CI 76.05-78.84)]. Statistically significant correlation was observed for smoking with systolic BP (r=0.164,p=0.001) and diastolic BP (r=0.210,p<0.001). The mean systolic and diastolic blood pressure was higher among alcoholics [(129.62, 95% CI 127.35-131.88) and (82.1695, 95% CI 79.7939-84.5451)] compared to non-alcoholics [(124.39, 95% CI 123.15- 125.64) and (77.61, 95% CI 76.33- 78.90)]. Statistically significant correlation was observed for alcoholics with systolic BP (r=0.201p<0.001) and diastolic BP (r=0.176, p<0.001). Though the means of systolic BP (126.06,95% CI124.34-127.78) and diastolic BP (79.61,95% CI=78.03-81.19) was slightly higher among those without history of regular physical exercise compared to those with history of regular physical exercise [systolic BP (125.73,95% CI 124.24-127.21) and diastolic B P(78.41, 95%CI=76.41-80.07)], significant correlation was not observed for both systolic BP (r=0.014,p=0.773) & diastolic BP (r=0.051,p=0.307) [table 3]. Similarly though the mean postprandial blood sugar among alcoholics was slightly higher (95.70, 95% CI 92.76- 98.65) compared to non-alcoholics (95.54, 95% CI 93.68-97.41), significant correlation between students who consume alcohol and postprandial blood sugar was not found (r=0.000,p=0.992).[table2]

Figure1. depicts the clustering of risk factors of CVD among students. About 62/403(15.4%) had no risk factors, about 115/403(28.5%) of the students had one risk factor and 226/403(56.1%) had two or more risk factors. It was observed that 68.6% (52/77) of the hypertensive had two or more risk factors & 58.5% (117/200) of the pre hypertensive had two or more risk factors, whereas only 45.3% (57/126) of the normal had two or more risk factors. The differences in the clustering risk factors among hypertensive, pre hypertensive and normal was statistically significant (X^2 = 11.1 df=4, p=0.026).

DISCUSSION

In our study all the mean values of BMI, waist circumferences and waist-to-hip ratio were increased in pre-hypertensive and hypertensive male students compared to normotensive. Similar findings were reported by Azza Mohamed et al where all anthropometric measurements were increased in prehypertension and hypertension groups compared to normal weight male Egyptian adults. [11]

In the present study on correlation among risk factors of cardiovascular disease among 403 male undergraduate students, Body mass index, waist circumference, WHR and postprandial blood sugars showed positive correlation with systolic blood pressure and it was statistically significant for all. Diastolic blood pressure had positive correlation with body mass index, WHR and waist circumference but not postprandial blood sugar level. Body mass index and waist circumference had positive correlation with postprandial blood sugar level. Olumide A Abiodun et al reported a significant correlation between BMI and Random Blood Sugar Systolic Blood Pressure and Diastolic Blood Pressure.[12] Positive correlations between BMI

and random glucose levels and blood pressure (BP) have been documented by Pucarin-cvetkovil J et al[13] and Turcato E et al.[14] In our study Bivariate correlation analysis showed that SBP, DBP, RBS and WHR had positive correlation with BMI. Similar findings had been reported by other authors Costa GB et al and Lindsay RS et al.[15,16]

Alfonso Siani et al reported blood pressure was positively associated with BMI.[17] Supratik Bhattacharyya et al reported the BMI of medical students had direct correlation with pre hypertension.[18] Students with higher BMI had significantly more Blood Pressure. Nanaware N L et al reported a significantly positive correlation of Body Mass Index with systolic as well as diastolic blood pressure among children and adolescents.[19] Gilles Paradis et al 2004 by multiple linear regression analysis found that body mass index was consistently associated with SBP and DBP in all age-gender groups.[20] Lone DK et al showed positive correlation between SBP and BMI among school children.[21] Dalton M et al reported positive correlation of systolic blood pressure with BMI, Waist circumference and Waist hip ratio. Fasting blood glucose had positive correlation with BMI, Waist circumference and Waist hip ratio among Australian adults.[22] P.R. Deshmukh et al reported positive correlation of obesity indicators BMI, Waist circumference and WHR with both systolic and diastolic blood pressure among rural Wardha population.[23] Shahbazpour N et al reported significant positive correlation of body mass index with systolic and diastolic blood pressure in adult male university students in Kerman.[24] Hsieh SD et al reported among Japanese men significant positive correlation of body mass index with systolic and diastolic blood pressure. [25]

In our study about one third of the students had one risk factor and about half of the students had two or more risk factors of cardiovascular diseases. Compared to normotensive, pre hypertensive and hypertensive had more number of risk factors and the differences in the clustering risk factors among hypertensive, pre hypertensive and normal was statistically significant. Sandhi Maria Barreto et al reported higher number (3 or more) of risk factors in individuals with hypertension compared to normotensive.[26] Huang Y et al reported higher number of risk factors in pre hypertension and hypertension individuals compared to normotensive.[27] Wei-Hong Zhang et al reported pre hypertensive and hypertensive men had higher number (3 or more) of risk factors compared to normotensive.[28] Our results were in consistent with other studies on clustering of risk factors among pre hypertensive and hypertensive (Matsuura H et al, Kshirsagar AV et al, Washio M et al).[29,30] Trevor S Ferguson et al reported among men with pre hypertensive were more likely to have 3 or more risk factors compared to normotensive men.[31] Presence of multiple risk factors among pre hypertensives was supported by other investigators such as Choi KM et al [32] among Korean population and Grotto I et al among Israel men.[33] Our findings of more clustering of risk factors among hypertensive and pre hypertensive men supported by other investigators suggest the need for health education measures and screening for risk factors of cardiovascular diseases to be started at adolescent age.

CONCLUSION

In conclusion positive correlation was observed between majority of CVD risk factors and systolic blood pressure among male student's population**.** Higher proportion of male students with hypertension and pre hypertension had two more risk factors compared to normotensives. A feasible strategy has to be developed for health education on lifestyle modification and introduction a physical education course in all discipline to prevent the development of risk factors of CVD factors in the youth population at a village level.

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Original Research Article

Health Behavior of Rural People Belonging to Different Categories of New Consumer Classification System

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Abstract

Background: New Consumer Classification System (NCCS) is the new tool for classifying consumers in India. Ideally all citizens of a prosperous nation should eat good food, have good water and sanitation, have health insurance, have a lifestyle that promotes health and have access to good health care system. So this study was done with an objective of to assess the difference in health behavior of different categories of people as per the NCCS classification of households. **Method:** A Cross sectional community based study was done with sample size of 517 households estimated by using 50% prevalence of good health behavior. The study was conducted between Jan 2016 to Feb 2016. A pretested semi structured questionnaire was used to collect data. Data was entered in excel sheet and analysed using Epi data info statistical package.**Result:** Among 517 households 61.3% were in NCCS class A and B. Daily consumption of nutrients, having been insured by private health insurance, health related activities such as use of bed nets and hygiene practices, household purification of water and health seeking behavior was significantly higher in upper class NCCS households. **Conclusion:** Because health consciousness was found to mediate the relationship between NCCS and healthy behavior, it would seem beneficial to provide programs that would encourage people to think more about their health behavior. These programs might include school interventions that would encourage healthy living for children, starting at an early age.

Key words: Health behavior, New Consumer Classification System, Rural

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Introduction

New Consumer Classification System (NCCS) is the new tool for classifying consumers in India. It was launched in 2009 by Market Research Society of India (MRSI) and Media Research Users Council (MRUC). NCCS classifies households on two variables - the number of consumer durables owned by the household from a predefined list and the education of the chief wage earner. NCCS tries to define the consumer behavior of the household. It tries to answer the question "what does the family aspire for?" It captures their affordability quotient. It is dynamic and changes over time. If a household has one item right now (eg. TV), next year they can have three items (eg. TV, mixie and fridge) and so on.[1] As India becomes more prosperous, the standard of living of its people also increases. NCCS correlates to buying behavior. It reflects a dynamic rise in a family's aspiration.

Socioeconomic status is one of many ways used to characterize social stratification, and it is often used synonymously with socioeconomic position and social class. The evidence to link socioeconomic status with health outcomes is large and invariably suggests that higher socioeconomic status levels are almost always positively associated with health-protective behaviors and negatively associated with health-impeding behaviours.[2] As opposed to Socio Economic Status scales, in NCCS the income earned is not of primary importance but what they do with the money is.

With more prosperity, the activities towards health promotion and prevention of various diseases is supposed to become more. Ideally all citizens of a prosperous nation should eat good food, have good water and sanitation, have health insurance, have a lifestyle that promotes health and have access to good health care system. This study tries to compare these various health related activities to the NCCS classification of households.

Objectives

- To classify households based on NCCS
- To assess the difference in health behavior of different categories of people as per the NCCS classification of households.

Methodology

Study design: Cross-sectional study

Study period: Two months

Study participants: the study participants consisted of 517 adults aged more than 18 years who gave informed consent. the adults were selected from the households of the rural field practice area of mandya institute of medical sciences, Mandya, Karnataka

Ethics approval: Approval of the institutional ethics committee was obtained prior to commencement of the study.

Consenting procedure: The study participants were explained the purpose of the study and informed consent was obtained.

Sample size

Since no studies have been done using NCCS class in this field, we took the prevalence of people with good health behavior as 50%.

The sample size was calculated by using the formula $4pq/d^2$, with an allowable error of 10%.

Sample size = 4pq/d

Where p (prevalence) = 50,

q =100-p=50

d (allowable error) = 10% of p

So calculated sample size was 400

To avoid errors we took 517 consenting households.

Sampling Method: Simple random sampling.

The study was conducted in the Keragodu Primary Health Centre (PHC) covering 18 villages. It is one of the rural field practice areas of Mandya Institute of Medical Sciences, Mandya. The total population of Keragodu PHC is 14,303 and the number of households is 3282 as per Health survey register of Keragodu PHC. It was expected that each village will have at least 180 households, so in order to reach our sample size we needed only three villages. Three villages were chosen by simple random sampling by lottery method after listing out villages in alphabetical order. The visit was started in the village from the first household which was on left side of the place of public interest. The process of collecting the information was continued till all the households were covered in that village. Similarly the remaining villages were covered till the sample size was attained.

Assessment tools: Semi structured questionnaire was translated into both the languages (Kannada and English) and back-translated by an independent coworker proficient in both languages to ensure validity of the translation. A Pilot study was than conducted among 40 randomly selected rural households of an area near the rural field practice area to check for the practicability of questionnaire.

Information was obtained from consenting responsible adult belonging to the household using a pre-tested semi structured questionnaire containing questions on number of consumer durables, nutritional aspects, health insurance, health related activities, water and sanitation and health seeking behavior of the family.

Statistical analysis: Collected Data was entered in Microsoft excel sheet and the results were analyzed using Epi data info statistical package. Descriptive statistics like frequencies, proportions and percentages were used to describe the data. Chi square test was used to find out the association between health related activities and the NCCS classification of households.

Results

A total of 517 persons living in rural households were interviewed. The average age of persons interviewed were 38.7 ± 5.2 years. Out of 517, 292 (56.5%) were males and 511 (98.8%) were Hindus. The average number of people in the households was 6.4 with a range of 2 to 11.

As per NCCS the presence of electricity, fan, gas stove, refrigerator, two wheeler, washing machine, TV, computer, four wheeler, air conditioner and agricultural land were assessed. Information regarding the educational status of chief wage earner was taken and the households were classified into 5 categories namely class A,B, C, D & E.

Among 517 rural households, 31.1% (156) belonged to Class A and 30.2% (156) to Class B. 24.6% (127) , 9.9% (51) & 4.6% (22) belonged to class C, D & E respectively.

The various health behavior aspects that was considered for this study were: (a) Nutrition (b) Health Insurance (c) Health promotion activities (d) Water & Sanitation (e) Health Care Seeking Behavior

According to table 1 the daily consumption of nutritious food items was significantly higher in the class A and B than in the class C, D and E. Only 54.5% of class E was consuming vegetables daily.

Table 2 shows that there was no significant difference across different NCCS class with respect to private health insurance, yeshasvini and RSBY. Yashashwini insuarance benefits were availed by all the categories of NCCS almost equally. Class D and E had not saved money for health but all were beneficiaries of Vajpayee aroghyashree yojana since they belong to BPL category.

In table 3 shows that the health related activities such as good hygiene practices and use of bed nets or repellants was significantly done more by the upper class households.

Table 4 also shows that piped water supply was present in all the households and use of household purification of water was significantly done more by the upper class of households.

Table 4 shows the health seeking behavior of the households, we can see in the table a general trend of households from higher NCCS class significantly preferred private clinic or private hospital for their ailments than households from lower NCCS class.

Discussion

In our study we have made an attempt to see the effect on various domains of nutrition, health insurance, healthy activities, water and sanitation condition and various ailments due to the class of NCCS in which the household belongs to.

The study shows that the daily consumption of the nutrients such as pulses, vegetables, fruit and use of iodized salt was found to be significantly higher in the upper NCCS class than in lower class households this difference may be because of the better educational level of the upper NCCS class. Also when we saw the consumption of the junk food it was significantly more in upper NCCS class which again can be contributed to the higher purchasing power of this class. Similar results were found by Bhattacharyya et al in his study done in Assam where he has discussed the effect of socioeconomic status on the nutrition of adolescents[3].

Panda et al [4] in his study done in Bihar and Uttar Pradesh found that the rural people were insured in community based health schemes, similar to this in our study we found that the upper NCCS class were having one or the other private health insurance and were also saving significantly for health, whereas across the class households were insured with yeshashwini and RSBY which are community based health schemes. Households from lower NCCS class were significantly insured by Vajpayee arogyashree. However the difference of being insured in private and government or community based insurance scheme may be because of premium charged by the private insurance company is comparatively more, so only households from upper NCCS class got insured by them whereas premium for the government sponsored health insurance is low so all the households across the NCCS class got insured.

Cartwright et al[5] in his study found that positive health attitudes and behaviors were more prevalent in individuals from upper socio economic status individuals than in lower class, similar results were found in our study too. When we compared the health related activities across the NCCS class it was seen that use of bed nets or repellants and good hygiene practices was significantly better in upper

Table 1: Nutritional aspects of rural households to NCCS

Sl.	Nutritional Aspect (Daily consumption)	NCCS Class					Chi square value	Degree of freedom	p value
		A	B	C	D	E			
1	Pulse consumption	161(100%)	156(100%)	113(88.9%)	45(88.2%)	17(77.3%)	11.7	4	<0.05
2	Vegetable consumption	161(100%)	153(98.1%)	118(92.9%)	41(80.4%)	12(54.5%)	10.9	4	<0.05
3	Fruit consumption	117(72.7%)	91(58.3%)	45(35.4%)	10(19.6%)	04(18.2%)	12.6	4	<0.05
4	Junk food consumption	138(85.7%)	97(62.1%)	82(64.5%)	13(25.5%)	03(13.6%)	13.4	4	<0.05
5	Use of iodized salt	143(88.8%)	81(51.9%)	39(30.7%)	6(11.8%)	09(40.9%)	12.3	4	<0.05
	Total	161	156	127	51	22			

Table 2: Health Insurance of rural households to NCCS

Sl.	Health Insurance	NCCS Class					Chi square value	Degree of freedom	p value
		A	B	C	D	E			
1	Private Insurance	113(70.2%)	94(60.2%)	51(40.2%)	26(50.9%)	13(59.1%)	6.4	4	>0.05
2	Yeshasvini#	131(81.4%)	126(80.8%)	100(78.7%)	43(84.3%)	19(86.4%)	7.2	4	>0.05
3	RSBY *	149(92.5%)	145(92.9%)	125(98.4%)	51(100%)	22(100.0%)	5.3	4	>0.05
4	Vajpayee Arogyashree	Nil	Nil	49(38.6%)	49(96.1%)	22(100.0%)	10.4	4	<0.05
5	Savings for health	127(78.9%)	106(67.9%)	23(18.1%)	Nil	Nil	11.1	4	<0.05

#Yeshasvini is one of the largest Self Funded Healthcare Scheme in Karnataka offering a low priced product for a wide range of surgical cover, nearly 823 defined surgical procedures to the farmer cooperators and his family members.
**Rastriya Swastya Bhima Yojana*

Table 3: Health related, water and sanitation activities in rural households to NCCS

Sl.	Health Related Activities	NCCS Class					Chi square value	Degree of freedom	p value
		A	B	C	D	E			
1	Persons exercising for health	32(19.9%)	28(17.9%)	13(10.2%)	3(5.9%)	Nil	7.8	4	>0.05
2	Smoking	94(58.4%)	78(50.0%)	82(64.6%)	34(66.7%)	16(72.7%)	6.5	4	>0.05
3	Alcohol consumption	87(54.1%)	87(55.8%)	72(56.7%)	26(50.9%)	16(72.7%)	7.3	4	>0.05
4	Use of bednets / repellents	150(93.2%)	145(92.9%)	113(88.9%)	19(37.3%)	05(22.7%)	13.2	4	<0.05
5	Regular medical check-up	23(14.3%)	18(11.5%)	14(11.1%)	02(3.9%)	Nil	8.3	4	>0.05
6	Good hygiene practices	121(75.2%)	86(55.1%)	64(50.4%)	18(35.3%)	04(18.2%)	10.2	4	<0.05
7	Piped water	161(100%)	156(100%)	127(100%)	51(100%)	22(100%)	5.2	4	>0.05
8	Household purification of water	65(40.4%)	49(31.4%)	24(18.9%)	13(25.5%)	Nil	12.6	4	<0.05
9	Use of sanitary latrine	161(100%)	156(100%)	127(100%)	49(96.0%)	17(77.3%)	8.9	4	>0.05

Table 4: Health seeking behavior for ailments in rural households to NCCS

Sl.	Ailments	Health seeking behavior	NCCS Class					Chi square value	Degree of freedom	p value
			A	B	C	D	E			
1	Common Ailments	Home Remedy	117 (72.8%)	120 (77.2%)	125 (98.4%)	45 (88.2%)	20 (91.2%)	4.8	4	>0.05
		ASHA / AWW	07 (04.3%)	19 (12.2%)	32 (25.2%)	43 (84.3%)	09 (40.9%)	11.3	4	<0.05
		PHC	38 (23.6%)	41 (26.3%)	63(49.6%)	40 (78.4%)	17 (77.3%)	12.2	4	<0.05
		Private Clinic	150 (93.1%)	125 (80.1%)	68(53.5%)	37 (72.5%)	07 (31.8%)	14.7	4	<0.05
2	Other Diseases	Home Remedy	12(7.4%)	09(5.7%)	05(3.9%)	03(5.9%)	Nil	3.6	4	>0.05
		PHC	28(17.4%)	54 (34.6%)	61(48.1%)	36 (70.6%)	18 (81.8%)	13.2	4	<0.05
		Private Clinic	144 (89.4%)	132 (84.6%)	98(77.2%)	25 (49.1%)	06 (27.3%)	12.3	4	<0.05
		Govt Hospital	38(23.6%)	51 (32.7%)	63(49.6%)	32 (62.7%)	18 (81.8%)	9.9	4	<0.05
		Private Hospital	107 (66.5%)	88 (56.4%)	24(18.9%)	06 (11.8%)	02(9.1%)	10.2	4	<0.05
3	Pregnancy & delivery	ASHA / AWW	Nil	28(17.9%)	53(98.4%)	35 (68.6%)	08 (36.4%)	12.8	4	<0.05
		PHC	11(6.9%)	54(34.6%)	69(98.4%)	35 (68.6%)	19 (86.4%)	14.2	4	<0.05
		Private Clinic	147 (91.3%)	100 (64.1%)	86(67.7%)	22 (43.1%)	04 (18.2%)	16.3	4	<0.05
		Govt Hospital	26(16.1%)	63 (40.4%)	37(29.1%)	47 (92.2%)	22(100%)	22.7	4	<0.05
		Private Hospital	151 (93.8%)	118 (75.6%)	98(77.2%)	10 (19.6%)	01(4.5%)	28.2	4	<0.05
4	Diseases of children	Home Remedy	106 (65.8%)	95 (60.9%)	96(75.6%)	41 (80.4%)	20 (90.9%)	13.2	4	<0.05
		ASHA / AWW	22(13.7%)	26 (16.7%)	42(33.1%)	34 (66.7%)	07 (31.8%)	12.4	4	<0.05
		PHC	31(19.3%)	37 (23.7%)	48(37.8%)	27 (52.9%)	18 (81.8%)	11.9	4	<0.05
		Private Clinic	152 (94.4%)	140 (89.7%)	115 (90.5%)	19 (37.2%)	16 (72.7%)	22.9	4	<0.05
		Govt Hospital	48(29.8%)	52 (33.3%)	87(68.5%)	41 (80.4%)	13 (59.1%)	15.6	4	<0.05
		Private Hospital	125 (77.6%)	51(32.7%)	56(44.1%)	15 (29.4%)	04 (18.2%)	17.3	4	<0.05
5	Serious diseases	PHC	32(19.9%)	39(25.0%)	52(40.9%)	30 (58.8%)	15(68.2%)	9.8	4	<0.05
		Private Clinic	87(54.1%)	52(33.3%)	54(42.5%)	11 (21.6%)	3(13.6%)	14.1	4	<0.05
		Govt. Hospital	45(27.9%)	66(42.3%)	71(55.9%)	48 (94.1%)	17 (77.3%)	11.1	4	<0.05
		Private Hospital	126 (78.2%)	101 (64.7%)	49(38.6%)	12(23.5%)	5(22.7%)	25.8	4	<0.05
	Total		**161**	**156**	**127**	**51**	**22**			

NCCS class households this difference may be because of better educational level in these households, but when we compared exercise for health, smoking, alcohol intake and regular medical check-up it was found that there was not much difference across the class.

In our study household purification of water was significantly done by the upper NCCS class households this may be because the upper NCCS class households were better educated and were ready to spend for it. There was not much difference across the NCCS class with respect to the piped water supply and use of sanitary latrine, this may be because the piped water supply was from the panchayath and for the sanitary latrine construction government provides financial assistant. In contrast to our study Nath K.J[6] found that sanitary condition from low socioeconomic class was poor this difference may be because of geographic variation of the study.

With respect to the health seeking behavior of the households it was seen that the upper NCCS class households significantly utilized the private clinic and hospitals than the lower NCCS class, this difference may be because of paying capacity and the belief that the private setup take better care of patients. ASHA and anganwadi worker, primary health center and government hospital facilities were utilized significantly more by the lower NCCS class households than upper class this difference in the utilization of government health facilities may be due poor paying capacity or easy availability. Sunil et al [7] in his study also found the same results.

In his book, C A K Yesudian et al[7] has mentioned that the awareness of patients with communicable disease were better than the general awareness of the sample households. As in our study he also mentions that the high and middle classes tend to utilize private health services more than the low and very low classes.

In articles published by Catherine S[8], Milind Deogaonkar [9],Subramanian S.V[10] and Srinivas [11] have concluded in their respective studies that effects of social and economic inequality on health of a society are profound. In a large, overpopulated country like India with its complex social architecture and economic extremes, the effect on health system is multifold. Unequal distribution of resources is a reflection of this inequality and adversely affects the health of under-privileged population. The socially under-privileged are unable to access the healthcare due to geographical, social, economic or gender related distances.[12] In contrast to the above in our study we found that the utilization of government health services was better in the lower NCCS class this may be because of better coverage of government health services in our field practice area.

Limitation: The study was done in the rural setting only it would have been better to have done both in rural and urban setting.

Conclusion: Our study concluded that NCCS class was correlated with overall health behavior of the household. Our findings did indicate that health consciousness was a mediator for the relationship between NCCS class and health behavior. Therefore, it was not merely a household's NCCS class that was the cause of their good health behavior, it was the households with the higher NCCS class that were more able to think about things that would improve their health. This conscious health thought is what led upper NCCS class households to adopt better health behavior more frequently. This may be because upper NCCS class household individuals think about health due to the resources that surround them and encourage healthy activity. Also, they might have more leisure time that would allow them the time to think and act for their health.

Conflict of Interest: Nil

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Original Research Article

A THREE YEAR PROFILE OF SERO-POSITIVE BLOOD DONORS FOR TRANSFUSION TRANSMISSIBLE INFECTIONS AT A BLOOD BANK IN BAGALKOT, NORTH KARNATAKA, INDIA

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Abstract

Introduction-Blood transfusion constitutes an important part of various emergency treatment protocols. The objective of this study is to evaluate the profile of sero positive blood donors for transfusion transmissible infections at a blood bank in Bagalkot city, North Karnataka. Materials and methods-A retrospective record based study was conducted in Bagalkot Blood Bank attached to S.N. Medical College, Bagalkot. Ethical clearance was obtained from Institutional Review Board. Data was collected from January 2012 to December 2014. Information regarding age, place of residence, education and occupation was recorded. Confidentiality was maintained while collecting the record based data. The report of blood group and Rh typing and screening test for HIV I and II, hepatitis B, Hepatitis C, syphilis and malaria was documented. Data was analyzed using percentages and chi- square test. Results-During the three year study period, most of the blood donors (83.66%) were replacement donors. In the three year study period, maximum number (68%) of the sero positive donors were from rural areas. With regard to age distribution of sero positive donors, about half of them (51.0%) were between 20-29 years of age followed by 36.3% between 30-39 years of age (p=<0.0000001) Out of the total 571 sero positive donors, maximum (72.7%) were positive for Hepatitis B surface Antigen. (p=<0.0000001)Conclusion-Voluntary donation of blood is to be encouraged in the community. Screening of blood for transfusion transmissible infections is to be done with the utmost care. Immunization with Hepatitis B vaccine must be targeted to the high risk youth of the rural and urban areas.

Keywords: Transfusion transmissible infections, Blood bank, HIV, HbSAg, HCV

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INTRODUCTION

Blood transfusion constitutes an important part of various emergency treatment protocols. Blood must be transfused with certain precautions because blood and its components have the capability to cause various transfusion transmissible diseases among its recipients. (1)

According to National AIDS Control organization guidelines, all blood samples must be tested for HIV I and II, Hepatitis B Surface antigen, Hepatitis C antibody and syphilis and malaria before infusion. (2)

Karnataka state in India is considered a high HIV prevalence state, with an average of 0.69 % of adults aged 15–49 years estimated to be HIV positive. The district of Bagalkot, in northern Karnataka, is one of the highest prevalence districts in the country, with a HIV prevalence of 2.6 % among the general population in 2009, significantly higher in rural areas than urban areas. (3)

The objective of this study is to evaluate the profile of sero positive blood donors for transfusion transmissible infections at a blood bank in Bagalkot city. This study will help to indirectly know the burden of these diseases in the community so that an effective family health promotion program can be planned to address the high risk group.

MATERIALS AND METHODS

A retrospective record based study was conducted in Bagalkot Blood Bank attached to S.N. Medical College, Bagalkot. Ethical clearance was obtained from Institutional Review Board. This blood bank caters to the need of the medical college and private hospitals in Bagalkot and neighbouring talukas and districts. Data was collected from January 2012 to December 2014.

Blood was collected through blood donation camps in Bagalkot and adjoining talukas and also through replacement donation from relatives of patients in need of blood. A registration form had been completed by interviewing the donors by the medical officer. Information regarding age, place of residence, education and occupation was recorded. The donors were selected after meeting the requirement of being between 18 and 60 years of age, minimum weight of 45 kg, hemoglobin level of 12 g%, and no history of jaundice during the last one year. Confidentiality was maintained while collecting the record based data. The report of blood group and Rh typing and screening test for HIV I and II, hepatitis B, Hepatitis C, syphilis and malaria was documented. Data was analyzed using SPSS 20 Version and epi info for chi square.

RESULTS

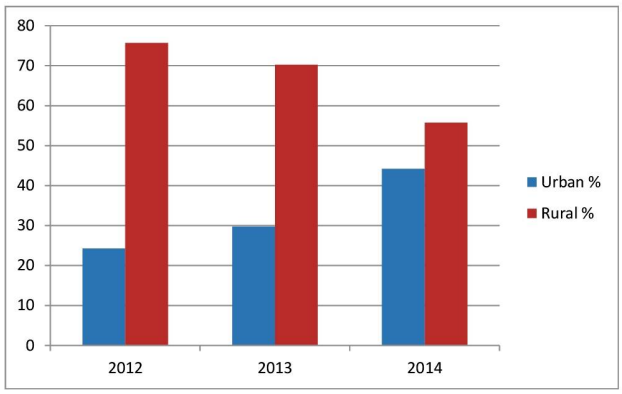
During the three year study period, most of the blood donors (83.66%) were replacement donors and the remaining 16.34% were voluntary donors. Maximum number of donors were male (96.87%).

In the present three year study, 4.63% of the total donors were positive for any of the transfusion transmissible infections. (Table 1) It was observed that majority who were sero positive were male (98.1%)

Table 1. Distribution of Transmissible infections in blood donors

Year	Total	TTI +ve	%
2012	4045	207	5.12
2013	4126	208	5.04
2014	4151	156	3.76
Total	12322	571	4.63

Figure 1. Trend of sero positive donors



The three year distribution of rural and urban sero positive donors is depicted in Figure 1.

Table 2. Age and sex distribution of sero-positive blood donors

Age	Male	%	Female	%	Total	%
<19 years	18	3.21	1	9.0	19	3.3
20-29 years	284	50.71	7	63.64	291	51.0
30.39 years	205	36.61	2	18.18	207	36.3
40-49 years	43	7.68	1	9.0	44	7.7
>50 years	10	1.79	0	0	10	1.8
Total	560	100.0	11	100.0	571	100.0

DF=1 x^2 =1056 p=<-.0000001

In the three year study period, maximum number (68%) of the sero positive donors were from rural areas of Bagalkot and neighbouring districts.

With regard to age distribution of sero positive donors, about half of them (51.0%) were between 20-29 years of age followed by 36.3% between 30-39 years of age.(p=<0.0000001) (Table 2)

It was observed that 90% of transfusion transmissible infections positive were replacement donors.

Out of the total 571 sero positive donors, maximum (72.7%) were positive for Hepatitis B surface antigen in both males and females followed by Hepatitis C virus antibody positive in 13%.(p=<0.0000001) (Table 3a) In all the age groups, maximum number were positive for hepatitis B Surface antigen.(p=<0.0000001) (Table 3b)

Table 3a. Sex distribution of transfusion transmissible infections

TTI	Male	%	Female	%	Total	%
HIV	69	12.32	3	27.27	72	12.6
HBsAg	410	73.21	5	45.45	415	72.7
HCV	71	12.68	3	27.27	74	13.0
VDRL	02	0.36	0	0	02	0.4
HIV+HBsAg	02	0.36	0	0	02	0.4
HIV+HCV	05	0.89	0	0	05	0.9
HBsAg+HCV	01	0.18	0	0	01	0.2
Total	560	100.0	11	100.0	571	100.0

DF=1 x^2 =1056 p = <0.0000001

Table 3b. Age distribution of transfusion transmissible infections

TTI	<19 yrs		20-29 yrs		30-39 yrs		40-49 yrs		>50 yrs		Total
HIV	02	10.5 %	33	11.3%	30	14.5%	6	13.6%	1	10.0%	72
HBsAg	16	84.2 %	213	73.2%	146	70.5%	31	70.5%	9	90.0%	415
HCV	1	5.3%	39	13.4%	28	13.5%	6	13.6%	0	0%	74
VDRL	0	0%	02	7.0%	0	0%	0	0%	0	0%	02
HIV+HbsAg	0	0%	0	0%	2	1.0%	0	0%	0	0%	02
HIV+HCV	0	0%	03	1.0%	1	5%	1	2.3%	0	0%	5
HbsAg+HCV	0	0%	1	3.0%	0	0%	0	0%	0	0%	1
Total	19	100%	291	100%	207	100%	44	100%	10	100%	571

DF=4 x^2=c708.4 p= <0.0000001

DISCUSSION

Blood transfusion is an emergency life-saving procedure in health care but it also has the risk of transmitting infections like HIV, Hepatitis B, Hepatitis C, Syphilis and malaria. Screening of blood for these infections is done routinely in blood banks .The prevalence of transfusion transmissible infections among the Indian blood donors is reported to be ranging as follows; HBV 0.66% to 12%, HCV 0.5% to 1.5%,HIV 0.084% to 3.87% and syphilis 0.85% to 3% respectively. [4]

Most of the blood donors (83.66%) were replacement donors who were relatives and friends of the patient in urgent need of blood. In a study done in Kolkata, 93.47% of the blood units had been collected in camps. [2] In another study from Ahmadabad, voluntary blood donors were 95.56% [5] whereas in studies done in Karnataka and Haryana, voluntary blood donation was 58% and 31.4% respectively[6,7].

Majority of the donors were males (96.87%) in this study and this finding is similar to other studies done in Kolkata, Haryana and Karnataka. [5, 6, 7]

In the present study, 4.63% of the total donors were positive for any of the transfusion transmissible infections. In the study done in Kolkata, 2.79% were positive for any of the TTI's. [2] In another study done in Darjeeling, the sero prevalence was 2.93 %. [8]

Compared to other reports throughout India, sero prevalence in this study is high. This indicates the need of more awareness among the community regarding blood donation.

Maximum number (98.1%) of the sero positive were male donors and this finding is very similar to other studies. [2, 5, 6, 7]

Majority (68.1%) of the sero positive donors were from rural areas. This finding indicates the gravity of the situation and the seriousness of the issue. Health education about transfusion transmissible infections should reach the population through the Gram Panchayat.

Majority of the sero positive donors (87.3%) were between 20-39 years of age which is the most productive age group. In the study done in Kolkata, 69.36% who were sero positive were between 21-40 years of age. Similar findings have been seen in other studies. [4, 9] Such gender difference could be directed to their high risk behavior .Behavior change communication is the need of the hour and the youth should be addressed in the schools and colleges of both urban and rural areas.

In this study, majority of the sero positive (89.8%) were replacement donors. Many studies have indicated increased prevalence of TTI's in replacement donors. [10]

This indicates the need for more voluntary donors to come forward. More number of blood donation camps should be arranged in the city and nearby areas.

In this study, majority (72.7%) were positive for Hepatitis B Surface Antigen. This finding is similar to other studies done throughout India. [2.8, 11]

By this observation, the high risk population should be addressed in ways of preventing the disease by immunization. The high risk occupations like emergency health care workers should be advised to protect themselves while treating the population.

CONCLUSION

Voluntary donation of blood is to be encouraged in the community. Screening of blood for transfusion transmissible infections is to be done with the utmost care. Immunization with Hepatitis B vaccine must be targeted to the high risk youth of the rural and urban areas.

RECCOMENDATION

Pre-marital counselling and testing for HIV, HBsAg and HCV is the need of the hour for all the youth.

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CONFLICT OF INTEREST-Nil

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Original Research Article

PREVALENCE OF ANAEMIA AMONG RURAL SCHOOL CHILDREN OF BELAGAVI

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Abstract

Background: Anaemia is a global health problem with a need of serious public health concern. Prevalence of anaemia in developing countries is three to four times higher than developed countries. Anaemia in the school age children is associated with the retardation of growth, decreased immunity and a poor cognitive development which results in a lower Intelligence Quotient (IQ) and behavioral abnormalities. A vast number of programmes have been implemented by government in recent years to tackle the same. This study throws light on the present scenario of anaemia in rural area, amidst all the programmes acting to overcome it. **Methodology:** All Government aided schools coming under area Vantamuri PHC were selected for the study. Students of class 8th, 9th and 10th standard were the study sample, total 400 students participated in this study. A predesigned and pretested questionnaire was used to collect data regarding socio-demographic profile, dietary intake and Environmental history. Hemoglobin estimation was done in all students of the study by using Sahli's Acid Hematin method. Detailed clinical examination was done and Anthropometry was measured. **Results**: The prevalence of anaemia among high school children in rural Belagavi was 52.75%. Prevalence was more among girls and was found to be 63.7% compared to boys i.e. 43.5%. Increased prevalence was seen among those who have attained menarche (81.2%). 68.6% prevalence of anaemia was seen in thin (undernourished) children i.e. BMI <5th percentile. Illiteracy of the mother, low SES, open air defecation, vegetarian diet, decreased consumption of green leafy vegetables were significantly associated with prevalence of anaemia with p<0.001. **Conclusion**: The present community based study, reported a higher prevalence of anaemia among rural high school children. Prevalence of anaemia was more among girls. The rural area in our study fall in to community of severe public health significance (prevalence >40%).

KEY WORDS: Anaemia, rural, Prevalence, high School children

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INTRODUCTION

Anaemia is a global health problem with a need of serious public health concern. Prevalence of anaemia in developing countries is three to four times higher than developed countries[1]. Around one third of world's population is anaemic.

Adolescent age is characterized by rapid physical, biological and hormonal changes resulting in psycho-social, behavioral and sexual maturity in an individual. It is the second growth spurt of life and both boys and girls undergo different experiences in this phase.[2] The nutritional anaemia in adolescent girls attributes to the high maternal mortality rate, the high incidence of low

birth weight babies, high prenatal mortality and the consequent high fertility rates. This phase of life is also important due to the ever-increasing evidence that the control of anaemia in pregnant women can be more easily achieved if a satisfactory iron status can be ensured during adolescence.

Anaemia in the school age children is associated with the retardation of growth, decreased immunity and a poor cognitive development which results in a lower Intelligence Quotient (IQ) and behavioral abnormalities. Prevalence rates for adolescent school children is close to that of adult females. Moderate and severe anaemia is seen even among educated families both in urban and rural areas. There are inter-state differences in prevalence of anaemia that are perhaps attributable partly to dietary intake and partly to access to health care[3]

According to the classification of anaemia as a problem of public health significance, the prevalence of anaemia which was >40% was considered to be a severe public health problem, that which was <4.9% to be not a public health problem, that which was between 5.0 to 19.9% to be a mild public health problem and that which was between 20.0 to 39.9% to be a moderate public health problem[4]. India is facing a grave public health problem, as the prevalence in India is > 40%. A vast number of programmes have been implemented by government in recent years to tackle the same. This study throws light on the present scenario of anaemia in rural area, amidst all the programmes acting to overcome it.

MATERIALS AND METHOD

Government aided schools from rural area Vantamuri of Belagavi were selected for this cross-sectional study from January –December 2014. Probability proportionate to the size sampling technique was used to select sample from each school. Students were selected from each class (8th -10th Std) by simple random sampling using the student register till desired sample size was met. Permission was obtained from respective Heads of the schools before initiation of the study. Written consent from the Head of the school was taken. Student's assent was also obtained. A predesigned and pretested questionnaire was used to collect data regarding socio-demographic profile, dietary intake and environmental history. Haemoglobin estimation was done in all students of the study by using Sahli's Acid Hematin method. Detailed clinical examination was done and Anthropometry was be measured.

Anemia was classified into three degrees according to WHO's criteria into mild, moderate and severe[1]. The Hb cut-off values of mild anemia were 10.0-11.9 g/dl, for moderate anemia were 7.0-9.9 g/dl and for severe anemia was <7.0g/dl.

The study was approved from Institutional Ethics Committee for Human Subject's Research, Jawaharlal Nehru Medical College, Belagavi.

RESULTS

Among the 400 children, boys were 218 (54.5 %) and girls were 182 (45.5 %). Majority of them were Hindus (68.2%) and 43.5% of the children belonged to class IV socioeconomic status (modified B G Prasad's classification). Almost 63% of them belonged to Joint family (TABLE 1). Prevalence of Anaemia in rural area was found to be 52.75% (211). It was more among girls (63.7%) compared to boys (43.5%). Mean hemoglobin level among girls was 10.78±1.85 and that among boys was 11.4±1.76.

Table 1. Socio demographic profile of Study participants

Variable	Description	Number (%)
Sex	Boys	218(54.5)
	Girls	182(45.5)
Religion	Hindu	309(77.25)
	Muslim	78(19.5)
	Others	13(3.25)
Socio economic status	Class i	0
	Class ii	34(8.5)
	Class iii	131(32.75)
	Class iv	174(43.5)
	Class v	64(15.25)
	Illiterate	122(30.5)
	Primary school	176(44)

Mothers education	High school/diploma	96(24)
	Graduate and above	6(1.5)
Type of family	Joint	252(63)
	Nuclear	148(37)

Table 2: Factors affecting anaemia

Determinants	**Number of children**	**Anaemic children**	**Prevalence (%)**	**P value**
Sex				
Male	218	95	43.58	-
Female	182	116	63.7	-
Total	400	211	**52.75**	-
Attainment of menarche				
Attained	117	95	81.2	P < 0.001
Not attained	65	21	32.3	
Socio-economic status				
Class i	0	0	0	p=0.101
Class ii	34	14	41.1	
Class iii	131	62	47.3	
Class iv	174	97	55.7	
Class v	64	38	62.9	
Educational status of mother				
Illiterate	122	88	72.1	P < 0.001
Primary school	176	101	57.3	
High school	96	21	21.8	
> High school	6	1	16.6	

Majority of girls who had attained menarche were anaemic. Most of the children belonging to Class V (62.9%) and Class IV (55.7%) socio-economic status were found to be anaemic and least was seen among those of Class I (9%) SES. A high prevalence of 72.1% was seen among children of illiterate mothers compared to those who had completed high schooling or above (16.6%).This trend was found to be statistically significant. (Table 2). A Significantly higher prevalence of 79.8% was seen among vegetarian children. 68.6% prevalence was seen in thin children (BMI<5th percentile), 44.4% was seen at risk overweight children (BMI >85th percentile) .This difference was found to be statistically significant, p=0.018. This difference was also found to be statistically significant.

Table 3: Factors Affecting Anaemia

Determinants	**Number of children**	**Anaemic children**	**Prevalence %**	**P value**
Diet				
Vegeterian	57	45	79.8	P<0.001
Mixed	343	166	48.4	
Bmi percentile				
< 5th	195	117	68.6	P=0.018
5th-85th	196	90	46.1	
>85th	9	4	44.4	
Frequency of green leafy vegetables				
Daily	195	75	38.5	P <0.001
Weekly	187	122	65.2	
Monthly	18	14	77.8	
Frequency of fruits				
Daily	88	45	51.1	P=0.66
Weekly	166	94	56.6	
Monthly	123	60	48.8	
Rarely	23	12	52.2	
Recent morbidity (3 months)				
Yes	52	33	63.5	P=0.097
No	348	178	51.1	
Sanitary facility				

Household latrines	116	56	48.3	P=0.006
Public latrines	93	40	43	
Open air defecation	191	15	60.2	

The prevalence of anaemia was less among those who consumed Green leafy vegetables (GLV) daily i.e. 38.5%, compared to those who took weekly or on monthly basis. This difference was found to be statistically significant p<0.001. (TABLE 3). Prevalence of anaemia was higher i.e. 60.2% among those followed open air defecation. It was seen that 63.5% of the children who had one or the other morbidity in past three months were anaemics. Majority of the anaemic children were asymptomatic (74.4%), 18% of them had tiredness, 4.7% complained of breathlessness and 2.3% had palpitations.

DISCUSSION

Prevalence of anaemia in rural area high school children was found to be 52.75%. As per WHO guidelines the prevalence of anaemia in this study is of severe public health significance.[5] Prevalence of anemia was more among adolescent girls compared to boys. These findings were on par with a study conducted in Dehradun.[6]The age old problem of anaemia in rural India appears to be the same with minimal improvement though many programmes by the government are acting to overcome the same. The reason behind this appears to be that secondary prevention is still ruling over the primary one. Less of successful implication of long term goals like improved sanitation and awareness of anaemia have led to the problem to be an iceberg till date.

Large number of girls who had attained menarche were found to be anaemic in our study. Similarly, a study conducted in rural area of Hassan district, showed higher (71.1%) prevalence of anaemia among girls who had attained menarche compared to those (28.8%) who had not attained[7]. This may be due decreased awareness of these girls regarding menstrual related problems and an indirect neglect for seeking treatment for it.

In this study prevalence of anaemia increased as the SES decreased, this trend was found to be statistically significant. Purchasing power and standard of living plays a vital role in the causal of anaemia. Similar findings were found in studies conducted else were[6, 8]. It was seen that prevalence of anaemia was more among those who did not have breakfast before going to school. Skipping of breakfast can be a strong factor for undernutrition, which in turn is a causal route for anaemia. Majority of the schools opens as early as 8 to 9 am, where majority of the children tend to miss the breakfast for sake of being on time. School opening timings of around 10am may provide a considerable time for the children to have the breakfast before coming to school. Studies in Meerut[8] and International Centre For Research on Women (ICRW)[9] have also documented that anaemia to be significantly more in those who eat two or fewer meals per day.

Decreased frequency of consumption of GLV tend to raise the prevalence of anaemia. GLV are rich source of iron, hence Iron deficiency anaemia is less seen among those who consume it more frequently. A study done in Chennai[10] also has pointed the same. Age old problems mentioned in other studies[10, 11] like open air defecation, Illiterate mothers and lack of awareness were also significantly witnessed in our study. With Total sanitation campaign and Swatch Bharat Abhiyan in frame, we still remain in this situation. Most of the toilets built are used mostly as godowns to store grains and some not used due to lack of awareness on the method of using them. Many female educational programmes by the government are running successfully and we may see a large number of educated mothers in future.

RECOMMENDATIONS

Weekly Iron and Folic acid Supplementation Programme should be strictly evaluated on regular basis with refreshment training of teachers for the same. Health programs for housewives on utilization of easily available and affordable iron rich diet and use of kitchen garden need to be promoted. Iron fortification has been done on regular basis, it should be in commonly reachable vehicles like salt, sugar and available for all. Ensuring adequate food consumption and regular intake of iron rich foods during early childhood period, deworming the child periodically, supplementary feeding and nutrition education of parents are some of the strategies that can prevent nutritional anaemia in children.

Long term measures aimed at preventing transmission– for example, providing safe water and sanitation facilities, and promoting hand-washing, use of latrines and wearing footwear should also be included in the deworming Programme. Processes for involving teachers, parents and local communities in planning and maintaining order are important for the sustainability of activities.

CONFLICT OF INTEREST: Nil

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Original Research Article

Use of case scenarios to teach spotters in Community Medicine: A Randomized Controlled trial

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Abstract

Background and Introduction: The Community Medicine teaching is to contribute to the development of an all-round*(holistic*) Medical professional. It has a major role in achieving the main goal of graduate medical education in India. Case scenarios are one of the methods of problem based learning. With this, teachers aim to develop reasoning, problem solving and decision making skills in students. Many students are more inductive than deductive reasoners, and the use of case scenarios can therefore be a very effective classroom technique.

Objective: To assess the effectiveness of using case scenarios to teach spotters in Community Medicine against traditional method of teaching.

Materials and Methods: It was a Randomized controlled trial, conducted during November 2015 to March 2016 among the students of third term MBBS in the Department of Community Medicine, Karpaga Vinayaga Institute of Medical sciences and Research Centre, Maduranthakam, Kancheepuram district. After obtaining informed consent, 31 students were included in study group and 31 of them in control group respectively. Same structured modules were used for teaching both the groups but the approach was different i.e. control group by traditional method and study group by using case scenarios. At the end of each such session, both the groups were assessed by an assessment format. Data thus obtained was analyzed using Epi-info software.

Results: The mean scores of the students who were taught spotters by case scenarios was higher (11.2) than those taught by traditional method (10.3). However, it was not found to be statistically significant (P=0.08).

Conclusion: There was no significant difference in effectiveness of teaching spotters in Community medicine by case scenarios against traditional method. Further research is recommended in this area.

KEY WORDS: Case scenarios, Randomized controlled trial, traditional method of teaching, SPICES

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Introduction

Learning is an active ongoing process in which the student and teacher have to work mutually to make the knowledge-sharing process enjoyable and easier for understanding. For effective learning, teaching method should facilitate development of analytical approaches to a problem and should address areas which pose difficulties for understanding by the learners. Thus, it becomes imperative to utilize an approach to teaching and learning, that is best suited to the needs of the learners.[1]

The undergraduate medical education program is designed with a goal to create an "Indian Medical Graduate" (IMG) possessing requisite knowledge, skills, attitudes, values and responsiveness, so that he or she may function appropriately and effectively as a physician of first contact of the community while being globally relevant.[2] Recently there has been an explosion in the volume of information available on health care and medical colleges are finding it increasingly difficult to teach the same to undergraduate students within the existing time frame. It has become increasingly vital for the students to acquire skills and attitudes necessary for lifelong learning.[3]Community Medicine is one such branch of medicine which is concerned mainly with the health of populations and aims to protect and promote the health and well-being of the community as a whole. The mission of Community Medicine teaching in medical education is to contribute to the development of an all-rounded (holistic) medical professional, who will demonstrate knowledge and competence with compassion in dealing with primary health care, desire for lifelong learning, evidence-based practice, interdisciplinary team work, and professional and ethical behavior in practice in order to improve and sustain the health of the population. Community Medicine teaching has a major role in achieving the main goal of graduate medical education in India.[4]

Our country is in need of community health professionals. Despite such a huge demand, Community Medicine is considered to be at the bottom of the medical educational system. There are many reasons for the same viz. predominance of traditional teaching methods, lack of community orientation, unsatisfactory training of interns, confusion regarding postgraduate curriculum in community medicine, working in isolation from local health services etc. One of the main reasons among all is poor, inappropriate and age old traditional teaching and learning methods.[5]The standard of teaching in Community Medicine and the need to acknowledge its significance among the medical fraternity need intense and conscious efforts. Recently a new model known as "SPICES" model recommended by Medical education technology is in vogue for teaching students in medical curriculum. "SPICES" means Students centered, Problem based, Integrated, Community based, Elective and Systematic.[6] Likewise, community medicine teaching should be an active process, student centered, enquiry driven, evidence based, problem solving as well as addressing the needs of the community.[7]

Case scenarios are one of the methods of problem based learning and with these, teachers aim to develop student reasoning, problem solving and decision making skills.[8] Many students are more inductive than deductive reasoners, which means that they learn better from examples than from logical development starting with basic principles. The use of case scenarios can therefore be a very effective classroom teaching technique.[9]With this background; we conducted a randomized controlled trial to assess the effectiveness of using case scenarios to teach spotters in Community medicine against traditional method of teaching to the undergraduate students.

Materials and Methods

A Randomized controlled trial was conducted during November 2015 to March 2016 among the students of third term MBBS in the Department of Community Medicine, Karpaga Vinayaga Institute of Medical sciences and Research Centre, Maduranthakam, Kancheepuram district.

Prior permission and ethical clearance for the study was obtained from the concerned authorities. As per curriculum,3rd term undergraduate students were divided equally into 3 batches and each such batch was posted for a period of one month in the department of community medicine on rotation basis as part of their clinical postings. Out of these three batches, 2 batches were included in our study (Flowchart). Informed consent was taken from students to participate in the study.

Each batch was further subdivided into two more groups namely control group and study group (Intervention group) by simple randomization technique without replacement. Students were asked to pick a lot containing numbers from 1 to 31. Students who picked even numbers were sent to control group and those with odd numbers were included in the study/intervention group in one batch and vice versa in another batch. So finally, we had 31 students each in both control and study groups from both the batches together. As there were no similar studies done in the past, assuming the mean difference of knowledge score and standard deviation to be 2, 80% power and 5% error,

minimum sample size was found to be 14 in each arm. However, complete enumeration of students from two batches was in done in our study to have a sample size of at least 30 in each group. Since the period of posting for both the batches were different, the final assessment was also done with two different formats.

Mode of teaching:

Control group was taught spotters by the traditional method where a specimen/model/slide of a spotter was given to students for discussion among themselves, followed by discussion with the teacher/facilitator.[7] Study group (Intervention group) was taught with a different approach in which students were given a case scenario pertaining to any particular spotter, to be solved by discussion within the group and later with the facilitator/teacher.

Structured modules with the same content were used for teaching both the groups but the approach was different as mentioned above viz. control group by traditional method and study group by using case scenarios.**For example:** For a family planning spotter Copper T,

Traditional method: A specimen of Copper T was given to the students for circulation among them followed by discussion regarding its type, mechanism of action, effectiveness, duration of use, advantages, contra indications and side effects with the facilitator.

Use of case scenario: Following case scenario was given first to the students to provoke their problem solving skills which followed by circulation of specimen and discussion as mentioned below.

Case scenario: A 30 years old woman has 18 months old male child. She has no history of pelvic disease and has normal menstrual periods. She is educated and her health seeking behavior is good. She wants to have child spacing for about 3 years. What is the ideal contraceptive method for this woman?

Note: Content of teaching was same in both the methods but the approach was different.

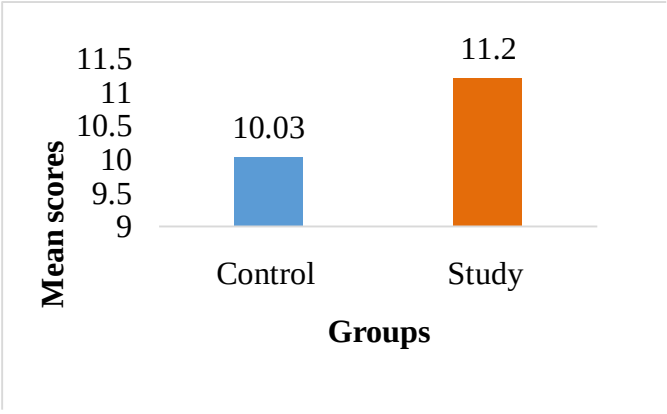
In our study, both the groups of the two batches were taught spotters as mentioned above for 8 consecutive days of 3 hours duration each. The spotters taught were on Nutrition, Entomology, Vaccines and Contraceptives as per MCI curriculum. At the end of each such session, both the groups were assessed by an assessment format having 20 multiple choice questions (MCQ). In order to avoid observer bias, assessment format was prepared by an independent faculty not involved in teaching sessions and also the format was not revealed to any of the faculty involved in teaching either of the groups as mentioned above. Students found to be absent on the day of data collection were excluded from the study. Data thus obtained was entered and analyzed using Epiinfo software. The mean scores of the control and study groups were compared and tested for significance in difference for both the batches separately as well as together using independent t test.

Results

In our study, we included 59 students from both the batches together, out of which 29 were assigned to control group and the remaining 30 students to study/intervention group(we did not include three students for analysis as they were absent during assessment) **Figure No. 1** reveals the comparison of mean scores of study and control group. It is evident from the figure that the mean score of MCQ assessment was higher in study group compared to control group but it was not found to be statistically significant (p = 0.08).

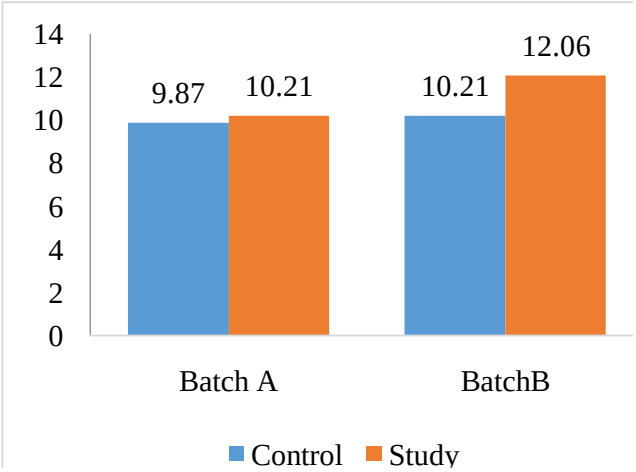
The data was further analyzed and the mean scores were compared between study and control group for both the batches separately and is presented in **Figure No. 2.** It is clear from the figure that the mean scores of study group were found to be consistently higher than control group in both the batches. However, the difference was not statistically significant (p = 0.08) in either of the batches.

Figure No.1: Comparison of overall mean scores of the control (n= 29) and study group (n= 30)



Overall: t = -1.75, P = 0.08

Figure No.2: Batch wise comparison of mean scores of the control and study group



Batch A: t = -0.44, P = 0.66
Batch B: t = -1.78, P = 0.08

Discussion:

In our study, we studied the effectiveness of using case scenarios to teach spotters in Community medicine against traditional method. It was found that the mean scores of students taught by case scenarios was higher in our study in comparison to students taught by traditional method. But this difference was not found to be statistically significant. On the contrary to findings from our study, a study done among nursing students it was found that the performance of the students was significantly poorer after case based teaching than after didactic lectures. However in the same study student's feedback was more in favor of case based teaching.[10]Similarly, a study done among veterinary students, the scenario based teaching approach appeared more favorable for the students to understand the concept and follow, made the subject interesting as well as helped in understanding the subject matter better.[11]

Case scenarios are particularly useful where situations are complex and solutions are uncertain. This method of teaching helps students to develop their skills in problem solving, decision making as well as in coping with ambiguities

A major advantage of teaching with case scenarios in our study was that the students were actively involved and it was a student centered learning with small group discussions. This sort of problem based teaching and learning motivated the students to learn more about the given case scenario. On the whole it encouraged the students to develop interest and also to focus on self directed learning.

Our study had few limitations. There could have been some confounding factors that could have introduced performance bias like prior knowledge, motivation, access to study materials etc., which could have altered our results. As students were divided into groups and taught in different method, they could have discussed the same among themselves and there would have been diffusion of knowledge. Also, students knew that they were participating in the study. So, there was a possibility of Hawthorne effect. However, we have tried to minimize the selection bias by randomization and observer bias to certain extent by involving a separate faculty not involving in teaching to assess the students by multiple choice questions.

Conclusion:

There was no significant difference in the mean assessment scores of the students who were taught spotters by case scenarios and those taught by traditional method in our study. Further research is recommended in this area to test the hypothesis.

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Original Research Article

A cross-sectional study on knowledge, attitude and practice of biomedical waste management by health care personnel in a tertiary care hospital of Agartala, Tripura

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Abstract

Introduction: Biomedical waste (BMW) management has recently emerged an issue of major concern not only to hospitals but also to others. Inadequate and inappropriate knowledge of handling of healthcare waste may have serious health consequences and significant impact on the environment as well. **Objective:** To assess knowledge, attitude and practices of health personnel regarding BMW management. **Methodology:** Present study was conducted among 310 health personnel (doctors, nursing staff, lab technicians and sanitary staffs vis. ward boys, ward girls, sweepers/ handlers and OT technicians) in Tripura medical college & Dr. BRAM teaching hospital, Agartala for a period of two months (March-April 2016). The questionnaire used as study tool had 2 parts - Part 1: socio-demographic characteristics. Part 2: questions on knowledge, attitude and practices about BMW management**. Results:** Most of the study participants were nurses 150 (48.4%), followed by doctors 86 (27.7%). 75.6% doctors, 87.3% nurses have good knowledge and almost all staffs have good attitude regarding BMW management. 80.2% doctors, 88.7% nurses had good practices, followed by lab technician 70% and ward boy/girls (68.2%). Knowledge and attitude of health personnel has statistically significant relation with practice of BMW management. The findings were reiterated during focus group discussion where it was learnt that health care personnel has good knowledge and attitude about BMW management. **Conclusion:** Health care personnel have good knowledge and attitude about BMW management. This can be utilized to improve the practices regarding BMW management at tertiary care hospitals to avoid hazards rising due to healthcare waste. However, periodic training of sanitary staff on BMW management needs to be emphasised to have a significant impact on BMW disposal and practices.

Key words: Biomedical waste, Health care personnel

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INTRODUCTION

Health care services produce biomedical waste (BMW), which is defined as waste generated during diagnosis, treatment or immunization of human beings or animals or in research activities pertaining thereto or in the production and testing of biological and is contaminated with body fluids. (1)

There is a need for the health care workers to understand what actually BMW is, and the waste connected with the hospital. Hospital waste refers to all waste, biological or non-biological that is

discarded, and is not intended for further use in a hospital. Majority of this waste (75-80%) is noninfectious, but 20-25% of it is hazardous, which is a potential health hazard to health workers, public, flora and fauna. [2] Among all health problems, there is a particular concern with HIV/AIDS, hepatitis B and C, for which there is a strong evidence of transmission through healthcare waste. It is estimated that about 0.33 million tons of hospital waste is generated in India and the waste generation rate ranges from 0.5 to 2kg/bed/day. [3] BMW collection and proper disposal has become a significant concern for both the medical and general community. [4]

As per legal provisions (BMW management and Handling rules 1998)[5], proper healthcare waste management include five steps, namely segregation of biomedical waste at the point of generation, treatment, storage, transportation and final disposals. Health personnel who are involved in handling BMW at different point of generation in hospital include doctors, nurses, lab technicians, ward boy etc. Though, there is an increased global awareness among health professionals about hazards and appropriate management techniques, but evidence from various parts of India suggests that, gaps in knowledge and lacunae in attitudes and practices are still prevalent to a worrying extent among various categories of healthcare professionals. [6-9]

Objectives:

1. To assess knowledge, attitude and practice (KAP) regarding biomedical waste management among healthcare personnel at a tertiary care hospital of Tripura.
2. To find out possible association between KAP regarding BMW management with socio-demographic variables.

Methodology:

The present study was a hospital based cross-sectional study conducted during March-April 2016 at Tripura medical college and Dr. BRAM teaching hospital, Hapania, Agartala. Information was collected from available 310 healthcare staff including doctors, nurses, lab technicians, sanitary staffs (ward boys, ward girls, sweepers/ handlers) and OT technicians.

Information was collected using a pre-tested questionnaire regarding knowledge, attitude and their practices of healthcare personnel which had 2 parts: Part 1: Socio-demographic variables, Part 2: Questions on knowledge, attitude and practices about BMW management.

The dependent variable was ‘good and poor knowledge, positive and negative attitude’ and ‘correct and wrong practice’. The independent variables were age, gender, religion, education, occupation, type of family, and socio-economic status.

Knowledge score: Total seven questions were asked to assess respondents’ knowledge about BMW management. One mark was awarded for every correct answer and zero for every wrong answer. Later, score below and above or equal to mean value respectively were categorized as having ‘poor’ or ‘good’ knowledge (mean score 6).

Attitude score: Total seven questions were asked to assess respondents’ attitude about BMW management. Two marks were awarded for every correct answer; one for ‘no idea’, and zero mark for every negative answer. Later, score below and above or equal to half mean value respectively were categorized as ‘negative’ or ‘positive’ attitude (mean score 14).

Practice score: Total four questions were used to assess respondents’ practice about BMW management. One mark was given for every correct answer and zero for every wrong answer. Later, score below and above or equal to mean value respectively were categorized as having ‘wrong’ or ‘correct’ practice (mean value 2).

Inclusion and exclusion criteria: Health care personnel, who were available during the quantitative data collection and gave consent to participate in the study were included, and healthcare staff who were absent and not willing were excluded.

Data management and analysis: Collected data was checked for quality after each day's data collection and entered in Statistical Package for Social Science software for computer (SPSS version 20.0). Statistical test of significance according to nature and distribution of data was applied (Chi square test and Fisher’s exact test wherever

applicable) and p <0.05 was considered as significant.

Qualitative information collection: Qualitative information to explore healthcare personnel' attitude and practices regarding BMW management and various issues pertaining to BMW management was collected by 2 FGDs (focus group discussion) till point of exhaustion, where 8 and 10 participants respective participated and opined regarding issues pertaining to the theme.

Ethical consideration: Permission to conduct the study was approved by hospital superintendent and informed consent was taken from all study subjects before conducting the interviews. Subject confidentiality was assured and maintained before and after conduct of the study.

Result:

Present study was conducted among 310 health personnel where 230 (74.2%) respondents belonged to age group of 18-30 years, followed by 57 (18.4%) in 30-40 years, and 4 (1.3%) elderly staff; majority were females (64.8%), and Hindu (93.9%). 214 (77.7%) subjects were graduate, followed by 22 (7.1%) having literacy level upto middle school. Most of them were nurses 150 (48.4%), followed by doctors 86 (27.7%). More than half 211 (68.1%) of the study subjects belonged to nuclear family. 141 (45.5%) subjects were from upper class.

Table 1 shows that all the study participants were aware about bio-medical waste, mostly from books (40.6%), followed by hospital (23.2%). Most of the respondents (89%) answered correctly about the sources of BMW. More than half (68.1%) of the study population knew about types of BMW. Majority (83.5%) said that disease is transmitted by BMW, 92.3% knew about colour coding system in BMW. 80.6% knew about segregation, and 74.8% knew about methods of BMW disposal.

Regarding attitude towards BMW, most of the participants (96.8%) felt the necessity of BMW management, and majority (88.1%) thought that it should be segregated at source, in colour coded bins (91.9%). 89.4% felt need for training on BMW management. Majority (88.7%) of the health personnel felt the necessity of BMW management at hospital level, and 86.1% thought that setting up of a BMW treatment plant would be useful. 94.8% viewed waste management at hospital as a team work.

Table 1: KAP of respondents about biomedical waste management [N=310]

Knowledge	Yes N (%)	No N (%)
Heard about BMW management	310 (100)	-
Idea about sources of BMW	276 (89)	34 (11)
Types of BMW	211 (68.1)	99 (31.9)
Diseases transmitted by BMW	259 (83.5)	51 (16.5)
Colour coding for BMW	286 (92.3)	24 (7.7)
Segregation of BMW	250 (80.6)	60 (19.4)
Methods of BMW disposal	232 (74.8)	78 (25.2)

Attitude	Yes N (%)	No Idea N (%)	No N (%)
Need for management of BMW	300 (96.8)	9 (2.9)	1 (0.3)
Opinion about segregation at source	273 (88.1)	33(10.6)	4 (1.3)
Opinion about colour coded bins	285 (91.9)	19 (6.2)	6 (1.9)
Training on BMW management	277 (89.4)	12 (3.8)	21(6.8)
Setting up treatment plant for BMW	267 (86.1)	28 (9.1)	15(4.8)
Opinion about BMW disinfection	275 (88.7)	28 (9)	7 (2.3)
Waste management is a team work	294 (94.8)	9 (2.9)	7 (2.3)

Practice	Yes N (%)	No N (%)
Usage of colour coded bins	278 (89.7)	32 (10.3)
Treatment of BMW	214 (69)	96 (31)
Reporting injuries by waste sharps	190 (61.3)	120 (38.7)
Attending training session on BMW	111 (35.8)	199 (64.2)

Regarding practice of the study participants, majority (89.7%) were using colour coded bins. More than half (69%) of the health personnel were regularly disinfecting BMWs at hospital level, however, 61.3% reported some kind of injuries during that process. About one-third (35.8%) had attended training session on BMW management.

Table 2: Distribution of the KAP scores according to occupation of respondents [N=310]

Occupation	Knowledge			Attitude			Practice			Total
	Poor	Good	P value	Negative	Positive	P value	Wrong	Correct	P value	N (%)
	N (%)	N (%)		N (%)	N (%)		N (%)	N (%)		
Doctor	21 (24.4)	65 (75.6)	< 0.05	-	86 (100)	< 0.05	17 (19.8)	69 (80.2)	< 0.05	86 (27.7)
Nurse	19 (12.7)	131 (87.3)		-	150(100)		17 (11.3)	133 (88.7)		150 (48.4)
Lab. Tech	13 (65)	7 (35)		-	20 (100)		6 (30)	14 (70)		20 (6.5)
Sanitary Staff	32 (72.7)	12 (27.3)		2 (4.5)	42 (95.5)		14 (31.8)	30 (68.2)		44 (14.2)
OT Assistant	10 (100)	-		-	10 (100)		4 (40)	6 (60)		10 (3.2)
Total (%)	95 (30.6)	215 (69.4)		2 (0.6)	308 (99.4)		58 (18.7)	252 (81.3)		310 (100)

Table 3: Association of KAP of respondents and their socio-demographic characteristics [N=310]

Characteristics	Knowledge			Attitude			Practice		
	Poor	Good	P value	Negative	Positive	P value	Wrong	Correct	P value
	N (%)	N (%)		N (%)	N (%)		N (%)	N (%)	
Age (in years)									
≤ 27	42 (21.4)	168 (85.6)	**<0.001**	-	96 (100)	0.063	28 (14.3)	168 (85.7)	**0.009**
> 27	53 (46.5)	61 (53.5)		2 (1.8)	112 (98.2)		30 (26.3)	84 (73.7)	
Gender									
Male	36 (33)	73 (67)	0.503	-	109 (100)	0.296	24 (22)	85 (78)	0.271
Female	59 (29.4)	142 (70.6)		2 (1)	199 (99)		34 (16.9)	167 (83.1)	
Religion									
Hindu	91(31.3)	200 (68.7)	0.349	2 (0.7)	289 (99.3)	0.717	56 (19.2)	235 (80.8)	0.345
Others	4 (21.1)	15 (78.9)		-	19 (100)		2 (10.5)	17 (89.5)	
Education									
Below graduate	43 (76.8)	13 (23.2)	**<0.001**	2 (3.6)	54 (96.4)	**0.003**	19 (33.9)	37 (66.1)	**0.001**
Graduate and above	52 (20.5)	202 (79.5)		-	254 (100)		39 (15.4)	215 (84.6)	
Occupation									
Doctor/ Nurses	40 (16.9)	196 (83.1)	**0.001**	-	236 (100)	**0.011**	34 (14.4)	202 (85.6)	**0.001**
Others	55 (74.3)	19 (25.7)		2 (2.7)	72 (97.3)		24 (32.4)	50 (67.6)	
Family type									
Nuclear	62 (29.1)	151 (70.9)	0.384	1 (0.5)	212 (99.5)	0.567	38 (17.8)	175 (82.2)	0.561
Joint	33 (34)	64 (66)		1 (1)	96 (99)		20 (20.6)	77 (79.4)	
PCI category									
≤ 8465	72 (34.6)	136 (65.4)	**0.004**	2 (1)	206 (99)	0.32	40 (19.2)	168 (80.8)	0.737
> 8465	23 (22.5)	79 (77.5)		-	102 (100)		18 (17.6)	84 (82.4)	
Total (%)	95 (30.6)	215 (69.4)		2 (0.6)	308 (99.4)		58 (18.7)	252 (81.3)	

Table 5: Findings of focus group discussion with health care personnel regarding BMW

Codes	Response
Source of information	From seminars (conducted occasionally at hospital level), newspapers, informal discussion with fellow co-workers and Community Medicine classes attended during college days (for doctors and nurses)
Sources and collection	Health care personnel had adequate knowledge about sources of BMWs. They usually collect BMWs generated in the hospital in bucket and then segregate them.
Types of BMW and colour coding system	Health care personnel were well aware about various types of BMW generated in the hospital on day-to-day basis. They were also aware about colour coded buckets being used in the hospital, but often get confused (especially about yellow bins). However, occasionally colour coded bins are not maintained at various corners of the hospital, especially in the OPDs, and wastes are often being thrown in a single bucket, which are also not cleaned daily.
Disposal of BMWs	Most of the BMWs are managed and disposed as per guidelines. However, various glass items and other sharps are often thrown in open grounds, especially by lab technicians, due to lack of proper disposal facilities.
Training	Most of the health care personnel are trained, but they feel that such training was inadequate, especially for nurses and ward boys/girls. They also felt that lack of sincerity by fellow health care staff and poor management related to BMW management at hospital level is another matter of concern.

Table 4: Association of knowledge & attitude with practice regarding BMW management [N=310]

Characteristics		Total	Practice		p value
			Wrong N (%)	Correct N (%)	
Knowledge	**Poor**	95	27 (28.4)	68 (71.6)	**0.004**
	Good	215	31 (14.4)	184 (85.6)	
Attitude	**Negative**	2	2 (100)	-	**0.003**
	Positive	308	56 (18.2)	252 (81.8)	

Table 2 shows that 75.6% doctors, 87.3% nurses and 35% lab technician had good knowledge about BMW management. Almost all staff had good attitude regarding BMW management. It was observed that, 80.2% doctors, 88.7% nurses, 70% lab technicians, 68.2% ward boys/girls and 60% OT assistants carry out correct BMW management practices.

Table 3 shows that knowledge regarding BMW management was significantly associated with age groups, level of education, type of health care personnel and per capita income ($p < 0.05$). Similarly, attitude about BMW management in the present study was significantly associated with level of education and type of health care personnel ($p < 0.05$). Practice of BMW management was significantly associated with age, education, and type of health personnel ($p < 0.05$). It was further observed that, knowledge and attitude was directly associated with practice of BMW management (Table 4).

Discussion:

Present cross-sectional study was conducted using a pre-tested questionnaire similar to other studies conducted elsewhere in India. [10-14] Knowledge about BMW management was consistent with other

studies done in Bemina, Maharashtra and Mangalore. [10,11,15] Knowledge about BMW management methods was high among doctors, nurses but was low among ward boys/girls and OT assistants; similar to studies conducted in Allahabad, Lucknow and Gaza [12,17,16]. In present study, Knowledge score was lower among doctors (75.6%) and nursing staff (87.3%) respectively in comparison to study in Haryana [14].

In current study, it was observed that majority of health personnel (92.3%) had knowledge regarding colour coding system for disposal of BMW, 89% had knowledge about sources of BMW which is higher, 74.8% knew steps involved in its management, and 83.5% knew diseases transmitted through it. But poor knowledge was observed regarding correct categories of bio-medical waste (68.1%). These findings were similar with findings of a study conducted in Karnataka. [18,19] Low level of knowledge may be attributed to poor training facilities, and relatively low educational level of the ward boy/ girl and OT assistants (sanitary staff). Training of both technical and the non-technical staff is thus critical for the appropriate BMW management as was acknowledged in study conducted at Lucknow and Karnataka. [12,20]

The attitude of the nurses towards segregation of infectious and non-infectious wastes was positive which is consistent with other studies conducted in Bemina and Maharashtra.[10, 15] Almost all health care staff showed a positive attitude towards the need for measures for safe collection and disposal of BMW and supported the on-going efforts. All the doctors and nurses had a positive attitude towards bio-medical waste management similar to studies conducted in Lucknow and Udupi, Karnataka. [12,19] Attitude score was highest among doctors, nursing staff and lab technicians, followed by the ward boys, which was more than study conducted in Haryana. [14]

80.2% doctors and 88.7% nurses were having correct practices regarding BMW management which was higher than study by Sachan R. [12] Practice of disposing BMW in colour coding containers and reporting injuries were higher than study conducted by Mir MR, Ostwal K [10,15], but lower in comparison to study conducted in Allahabad and Gaza. [16,17] Low reporting of injuries during segregation of BMWs may be attributed to the fact that most of the doctors and other technical as well as non-technical staff were unaware about a formal system of injury reporting which should be established within all the health facilities. The practice score of BMW management was lower as compared to study conducted by Gupta V [14], but higher compared to study conducted by Sanjay KB. [20]

Conclusion:

There is a need for intensive training program on BMW management at regular interval for all the healthcare personnel to update their knowledge. BMW management system (collection, segregation and disposal) should be an integral part of hospital management system to change the scenario.

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