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Table of Contents

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Short Article

Prevalence of Diabetes, Hypertension and Obesity among Doctors and Nurses in a Medical College Hospital in Tamil Nadu, India

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Abstract

Background: Cardiovascular disease (CVD) is the number one cause of death globally. Health of the doctors and nurses is critical because they must be healthy to perform their jobs optimally under challenging work environments. They are known to have a lifestyle that can make them highly vulnerable to Cardio-vascular diseases. This study aimed to assess the prevalence of diabetes mellitus, hypertension and obesity among doctors and nurses in a tertiary care medical college hospital in Tamil Nadu, India.

Methods: Study Design- Cross sectional study. Study Period -June and August 2013. Study Population & Area -Doctors and nurses between 18 and 65 years of age working at a tertiary care Medical College Hospital in Tamil Nadu. Visiting consultants and doctors and nurses who joined within one year of the start of data collection were excluded from the study. Sample Size and Sampling Technique- 250 doctors and nurses selected using a stratified random sampling technique. Methodology- Each study participant answered a specifically designed questionnaire. Blood Pressure, weight, height, waist circumference and hip circumference were measured using standard guidelines. Analysis-Simple measures of central tendency, dispersion and proportions were used to analyze the data.

Results: Prevalence of Diabetes mellitus was found to be 25.4% among doctors and 5.6% among nurses. Prevalence of Hypertension was found to be 29.4% among doctors and 13.7% among nurses. Prevalence of overweight was found to be 36.5% among doctors and 12.9% among nurses. Prevalence of obesity was found to be 15.1% among doctors and 3.2% among nurses.

Key Words: Cardiovascular Risk, Doctors, Diabetes, Hypertension, Nurses, Overweight, Obesity.

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Introduction

Cardiovascular disease (CVD) is the number one cause of death globally, killing almost 17.5 million people every year, representing 30% of all global deaths. Projections suggest that by 2013, over 23 million people would die of CVDs annually[1]. Diabetes mellitus, hypertension and obesity are very strongly

associated with cardiovascular diseases all over the world[1-4].

Doctors and nurses play a vital role in the health and welfare of the people of a nation. Health of the doctors and nurses is of paramount importance because they themselves must be healthy to perform their jobs optimally under challenging work environments. Additionally, evidence suggests that there is a strong and consistent relationship between physician's health choices and the recommendations he or she makes to his or her patients[5].

Knowledge and awareness regarding CVDs and the associated risk factors is expected to be good among doctors and nurses since they have access to information. However, they are also known to have a sedentary lifestyle with high levels of stress, lack of proper rest and irregular eating habits making them highly vulnerable to Cardio-vascular diseases[6-7].

Though there are multiple studies that have looked at the prevalence of cardio-vascular risk factors in the general population, there are only few studies looking at the cardio-vascular risk factors among doctors and nurses in India[8-10] or abroad[11-13]. The prevalence of risk factors for CVDs among the doctors and nurses in a tertiary care hospital will help in designing necessary interventions for the prevention of CVDs among them. Hence, we aimed to assess the prevalence of diabetes mellitus, hypertension and obesity among doctors and nurses in a tertiary care medical college hospital in Tamil Nadu, India.

Methods

A cross sectional study was conducted among doctors and nurses between 18 and 65 years of age working at a tertiary care Medical College Hospital in Tamil Nadu. Data were collected between June and August 2013. Visiting consultants and doctors and nurses who joined within one year of the start of data collection were excluded from the study.

Taking the prevalence of hypertension among doctors as 35.6%[14] and with an absolute precision of 6%, the sample size was estimated to be 245. A total of 250 doctors and nurses were selected using a stratified random sampling technique. A written informed consent was obtained from all the study subjects and confidentiality was maintained throughout the conduct of the study. The institutional ethical committee approved the conduct of the study.

An appropriate case record form was developed for the purpose of this study that was used to record relevant socio demographic data, blood pressure, anthropometric data and blood glucose values. Blood Pressure, weight, and height were measured using the guidelines recommended by WHO-STEPS[15]. Standard guidelines recommended by WHO[16] were used to measure waist and Hip circumferences. An individual was considered to have Diabetes Mellitus if his or her random blood sugar value was ≥180 mg/dl. An individual was considered to be hypertensive if the blood pressure was found to be more than 140/90 mm of Hg. The cut-off value of body mass index (BMI) to define overweight and obesity was ≥25.0 kg/m^2. The cut-off value of Waist-hip ratio (WHR) used to define central obesity was >0.85 among females and >0.9 for males. Data collected were entered on Microsoft Excel spread sheet. Simple measures of central tendency, dispersion and proportions were used to analyze the data.

Results

Mean age of the study population was 35.132 (±11.589) years. Most of the study subjects were females (68.4%). Doctors formed 50.4% while nurses formed 49.6% of the study population. More than half of the study population had completed post-graduation (50.4%), followed by diploma (24.8%) and graduation (24.8%). The nursing staff in the study population comprised of staff nurses (44.4%) & nursing supervisors (5.2%). Doctors were Professors (17.2%), Consultants (16%), Associate Professors (6.4%), Assistant professors (10.4%) & Tutors (14.8%). Table 1 depicts the prevalence of diabetes mellitus, hypertension and obesity in the study population.

Table 1: Prevalence of Diabetes Mellitus, Hypertension & Obesity among doctors and nurses

Total	Doctors *(%)*	Nurses *(%)*	Total n *(%)*	P value
	126 *(50.4%)*	**124 *(49.6%)***	**n = 250 *(100.0%)***	
Diabetes Mellitus	32 *(25.4%)*	7 *(5.6%)*	39 *(15.6%)*	0.00016*
Hypertension	37 *(29.4%)*	17 *(13.7%)*	54 *(21.6%)*	0.002*
Pre-Hypertension	41 *(32.5%)*	53 *(42.7%)*	94 *(37.6%)*	0.09
Overweight	46 *(36.5%)*	16 *(12.9%)*	62 *(24.8%)*	0.001*
Obesity	19 *(15.1%)*	4 *(3.2%)*	23 *(9.2%)*	0.001*
Central Obesity	119 *(94.45%)*	117 *(94.35%)*	236 *(94.4%)*	0.56

Prevalence of Diabetes Mellitus was found to be 15.6%. Mean random blood glucose value was found to be 108.4 mg/dl (±33.01 mg/dl). Among doctors, the prevalence of Diabetes Mellitus was 25.4% while among nurses it was 5.6% and this difference was found to be statistically significant ($\chi 2 = 18.518$, 'p' = 0.00016) (Table 1).

Prevalence of hypertension was found to be 21.6% while that of pre-hypertension was found to be 37.6%. Of those with hypertension, 47 (18.8%) were known hypertensives on treatment. Mean systolic and diastolic blood pressures were found to be 120.226 (±12.96) mm of hg and 79.81 (±8.45) mm of hg respectively. Among doctors, the prevalence of Hypertension was 29.4% while among nurses it was 13.7% and this difference was found to be statistically significant ($\chi 2 = 9.045$, 'p' = 0.0026) (Table 1).

Mean height, mean weight and mean body mass index (BMI) values were found to be 163.7 (±8.58) cms, 64.16 (±12.8) kgs and 23.84 (±4.0) respectively.

The prevalence of overweight was found to be 24.8%, 36.5% and 12.9% in the overall study population, among doctors and among nurses respectively. The prevalence of obesity was found to be 9.2%, 15.1% and 3.2% in the overall population, among doctors and among nurses respectively. The difference in the prevalence of overweight and obesity between doctors and nurses was found to be statistically significant.

Mean WHR was found to be 0.944 (±0.04) in the overall study population while it was 0.968 (±0.03) among males and 0.93 (±0.03) among females. The prevalence of central obesity was found to be 94.4%, 94.45% and 94.35% in the study population, among doctors and among nurses respectively.

Discussion

Most of the study subjects were females (68.4%) since we included both doctors and nurses and nursing staff comprised entirely of female staff members.

The prevalence of Diabetes Mellitus was found to be 15.6%. Sharma D et al[8] in their study among tertiary hospital employees reported a prevalence of diabetes of only 5.8% which was much lesser than the present study. This difference could probably be because they included all health care providers while the present study only included doctors and nurses. Gupta A et al in their study among physicians reported that the prevalence of diabetes was 9.4% among males and 12.9% among females[10]. Also, Ramachandran A et al in their study among general population in an urban area found the prevalence of diabetes to be 12.1%[18]. The prevalence was much higher in the present study since the study population comprised of doctors and nurses who probably get themselves investigated more often.

Prevalence of hypertension was found to be 21.6%. Sharma D et al[8] reported that the prevalence of hypertension was 20.7%, which is similar to our study. Also, Fanghänel-Salmón G et al [13] reported that the prevalence of hypertension was 22.2% among health care workers.

In the present study, the prevalence of overweight and obesity was found to be 24.8% and 9.2% respectively. Also, the prevalence of central obesity among males was found to be 97.5% while that among females was found to be 93%.

Gupta A et al[10] in their study found the prevalence of obesity to be 48.6% among males and 51.4% among females. They also reported that in their study the prevalence of truncal obesity was 72.4% among males and 65.7% among females.

Sharma D et al[8] found the prevalence of overweight and obesity to be 77.3% and that of central obesity to be 80.1% among males and 80.7% among females. These differences could be attributed to the different age structures of the study populations and different methodologies used for taking the anthropometric measurements.

In the present study there was a significant difference in the age of doctors and nurses i.e. doctors were significantly older than the nurses. The statistically significant difference in the prevalences of diabetes, hypertension, overweight and obesity between the doctors and nurses can be attributed to this difference in the age structure. Hence, it is possible that with age being matched, nurses would have the same kind of prevalence as doctors. This was one of the limitations of the study.

Conclusions

The prevalence of Diabetes mellitus was found to be significantly higher among doctors (25.4%) as compared to nurses (5.6%). Also, the prevalence of Hypertension was found to be significantly higher among doctors (29.4%) as compared to nurses (13.7%). The prevalence of overweight was also found to be significantly higher among doctors (36.5%) as compared to nurses (12.9%) while the prevalence of obesity was found to be significantly higher among doctors (15.1%) as compared to the nurses (3.2%). Thus, we conclude that the prevalence of critical risk factors for Cardiovascular Diseases that include Diabetes Mellitus (15.6%), Pre-Hypertension (37.6%), Hypertension (21.6%), Overweight (24.8%), Obesity (9.2%) and Central Obesity (94.4%) is high among doctors and nurses and hence is a cause for concern.

Note: This study was carried out successfully under the Short Term Studentships Programme of the Indian Council of Medical Research, for the year 2013 (Research Reference ID = 2013-01720)

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Original Research Article

Preference of teaching methods among medical students: Comparative analysis between large group and Small group teaching

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Abstract

Background: The primary goal of medical education technology is to enhance learning and teaching by introducing various effective teaching methods into the medical curriculum. Lectures are an efficient means of transferring knowledge and concepts to large groups. They can be used to stimulate interest, explain concepts, provide core knowledge, and direct student learning. Small group teaching and learning methods are effective classroom methods by which learning takes place among a limited number of participants. It is an interactive sessions helping the students to develop their understanding of concepts, critical thinking to acquire or improve strategies and approaches to problem solving.

Objective: To assess the preference of undergraduate medical students among the two teaching- learning methods: large group versus small group teaching in the study setting.

Methods and Materials: A Descriptive study was undertaken among third year MBBS undergraduate students of KarpagaVinayaga Institute of Medical Sciences and Research Centre, Madurantagam during the month of July 2015.A topic was selected and taught both by lecture and small group teaching like case based learning. Data collection was done with a pretested and structured questionnaire containing questions pertaining to their attitude, perception as well as their preference for the teaching method, after taking an informed consent.

Results: In our study, majority of the undergraduate students preferred small group teaching (Case based learning) over large group teaching (Lecture) for being comfortable, as active way of learning, for arousing interest, for better understanding, to help improve clinical skills, for providing opportunity to clarify doubts, for providing motivation as well as for having been paid enough attention by the facilitators.

Conclusion: The introduction of small group teaching as active learning tool was appreciated by students and led to a significant improvement in students self-reported satisfaction, engagement and motivation.

Recommendation: Increased application of small group teaching methods like Case based learning into the present curriculum of medical education can help in retaining interest and knowledge, improve the learning process among the medical students.

Keywords: Cases based learning, Lecture, Medical Education Technology, Small group teaching

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Introduction

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

The primary goal of medical education technology is to enhance learning and teaching by introducing various effective teaching learning methods into the medical curriculum. The effectiveness of any teaching method depends upon how much has been received by the students. There are different methods of teaching–lectures, tutorials, CMEs, seminars, videotapes, case based learning, small group discussions, etc.[1] Every method has its own merits and demerits.

Recently a new model known as "SPICES" model recommended by Medical education technology is in vogue for undergraduate teaching in medical curriculum. "SPICES" means Students centred, Problem based, Integrated, Community based, Elective and Systematic.[2] Student centred means students have to take more responsibility for their own learning, more emphasis is on the students, what and how they learn under the guidance of a facilitator. Problem based learning means that teaching should equip students with the ability to tackle patient problems, health care delivery problems, medical science problems, research problems and any other problems arising in medical profession. Teaching should be integrated bringing all the relevant subjects together and presented to the students as meaningful whole. By Community based education we meant that the students should receive their training in a community setting so that they can learn about the social, cultural and economic aspect of illness, health services in the community etc. Learning should be elective by giving students an opportunity to select subjects or projects of their interest. They can select one or more subjects to study in depth. Teaching should be made systematic in many ways like essential components of the course will be spelled out clearly to the students and they may be given a list of skills which they have to master and a list of patients with conditions they are expected to have seen and examined.

Among so many teaching learning methods, lecturing or large group teaching is one of the oldest forms of teaching. Lectures are an efficient means of transferring knowledge and concepts to large groups. They can be used to stimulate interest, explain concepts, provide core knowledge, and direct student learning. Planning presentations for large groups may require use of a combination of strategies to build rapport and engage learners in the content of your lecture. Visual media, hand-outs, advance organisers, not only help to focus learner's attention but can be used to create a framework for thinking about important concepts. Posing questions and expecting responses can also help you to evaluate learner understanding. A good lecturer should know the target audience and their existing level of knowledge, he should show authority, knowledge and enthusiasm for the subject, presents the material in a clear, concise and logical sequence, makes the material accessible, intelligible and meaningful and illustrates the practical application of the theory presented and generate curiosity. A successful lecture should be relevant, well presented and holds the audience attention, should be logical, stimulating and inspiring, supports and builds on previous learning and facilitates learning of key principles. Although the lecture format may be effective for providing large body of information to a large number of students, it presents many challenges to both teachers and learners because it often promotes passive learning and fails to motivate students.[3]

Over the past few decades, a lot of attention has been paid to promoting active learning by adopting interactive student- centred small group teaching and learning approaches in medical education like tutorials, seminars, case based discussions, small group discussions etc. These are interactive sessions helping the

students to develop their understanding of concepts, critical thinking to acquire or improve strategies, approaches to problem solving as well as assisting students to clarify their doubts about the subject matter. It provides opportunities for students to receive immediate feedback on their learning and also helps in establishing rapport between facilitator and student. Case based learning (CBL) is one such technique employed in small group teaching, where a group of students are given a clinical case to take, examine and discuss among themselves in order to reach conclusion, followed by a discussion with the facilitator.

Keeping the above facts in mind, the following comparative study was conducted in order to assess the preference of students among the two teaching – learning methods: large group teaching in the form of lecture and small group teaching in the form of case based learning.

Objective of the study

To assess the preference of undergraduate medical students among the two teaching-learning methods: large group versus small group teaching in the study setting

Materials and methods:

A Descriptive study was undertaken among third year undergraduate students of Medicine at Karpaga Vinayaga Institute of Medical Sciences and Research Centre, Madurantagam during the month of July 2015.Prior permission for the study was taken from the concerned authorities of the institution. The students were explained about the purpose of the study and its usefulness for academic improvement along with the scope of future intervention. Informed consent was taken from each participant. The topic "Acute Diarrhoeal Diseases" was selected, to be taught by lecture (large group) as well as by case based teaching (small group). The selected topic was first taught by a lecture method to the whole batch of 96 students in the third year. Then the same batch was divided into four small groups of 24 students each. For Case based learning (CBL) technique, each such small group was assigned one clinical case of "Acute diarrhoeal disease" and was given 40 minutes to discuss and reach to the conclusion. At the end of each such session, representative from each group presented the case assigned to them, which was discussed by a facilitator.

On the following day, the students were administered a pretested and structured questionnaire to assess their perception, attitude as well as their preference among the two teaching- learning methods. There were 89 students present at the time of administering questionnaire and all actively responded to it. The collected data were entered into excel spread sheet and analysed using appropriate statistical methods.

Results:

Table No.1 reveals that out of the 89 undergraduate students present on the day of data collection, majority preferred case based learning against lecture for being comfortable, as active way of learning, for arousing interest, for better understanding, to help improve clinical skills, for providing opportunity to clarify doubts, for providing motivation as well as for having been paid enough attention by the facilitators. With respect to relevance of the teaching method for the selected topic, majority preferred Lecture method over case based learning. When enquired regarding the organisation of the study material, there was almost equal preference for both the teaching learning methods among students.

Table: 1 Preference of undergraduate students among the two teaching learning methods: Lecture and Case based Learning

S No	Questions	Lecture		Case based Learning	
		N	%	N	%
1	Which of the above two methods do you think you are comfortable with?	33	37.0%	56	62.9%
2	Which of the above two methods do you feel as active way of learning?	12	13.4%	77	86.5%
3	Which of the above two methods do you think was relevant to the topic?	48	53.9%	41	46.0%
4	Which of the above two methods do you think aroused interest in you towards the subject?	15	16.8%	74	83.1%
5	Which of the above two methods helped in understanding the subject better?	24	26.9%	65	73.0%
6	Which of the above two methods do you think, will help you in improving your clinical skills?	9	10.1%	80	89.8%
7	Which of the above two methods do you think, will give an opportunity for you to clarify your doubts?	20	22.4%	69	77.5%
8	Which of the above two methods do you think will motivate you to study further?	13	14.6%	76	85.3%
9	Which of the above two methods do you think, the teachers paid enough attention towards you?	22	24.7%	67	75.2%
10	Which of the above two methods do you think, was well organised?	45	50.5%	44	49.4%

Discussion

Teaching methods which increase student motivation and enhance learning have evolved throughout history. However, the introduction of an interactive student – centered approach in medical education has dramatically changed the way students learn.[4] In our study, majority of the student's preferred small group (case based) learning method against large group (lecture) learning for a number of reasons already mentioned in the results. Most students believed that small group learning method is interactive approach boosted their learning and should be implemented more frequently as also similarly observed by Yasin in CBL.[5] More than 85% of the students in our study accepted that small group learning motivated them more for further studies which is consistent with the findings by Yoo et al among nursing students.[6] There is general consensus about better learning in small groups in terms of deeper understanding, critical thinking, problem solving skills .[6] and better student satisfaction. [4,7,8]

Our results are also comparable to the ones obtained from the study by Saleh AM et al .[1] In a study conducted by Hameed S et al [9] where the undergraduate medical students of one batch were taught by small group discussions (SGD), it was found that they

performed better than their previous batches who were taught by traditional lecture methods. Similar results were also found in studies conducted by Tiwari A et al [10]. And Costa ML et al [11]. On the contrary, a study conducted by Khan I et al [12] found that the performance of the students taught by problem based learning method which is a form of small group teaching was similar to those taught by lecture method.

Conclusion:

Small group teachings offers active participation of learners, increases the teamwork ability, help in retention of knowledge, enhances transfer of concepts to new problems, increase student interest and improve critical skills. It helps in Promotion of self-directed learning by instant resolution of confusion and helps them learn holistic problem solving approach. It provides positive impact on learning experience of the students and a tool for in depth teacher – student's interaction. It can also help the students in improving their interpersonal communication skills which will finally be helpful in their future as professionals. The introduction of small group teaching as active learning tool was appreciated by students and led to a significant improvement in students self-reported satisfaction, engagement and motivation.

Recommendation:

Small group teaching can be considered as a comprehensive tool for productive academic achievement, strategy for dynamic and collaborative learning both in basic and clinical medical sciences. Increased application of small group teaching methods like Case based learning into the present curriculum of medical education can help in retaining interest and further enhance knowledge among the medical students.

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Original Research Article

Prevalence of Cardiovascular Risk Factors among Urban Slum Dwellers in Tamilnadu

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Abstract

Objectives: To study the prevalence of risk factors for cardio vascular disease among 30-65 years and to identity moderate and high risk individual for developing Diabetes using Indian Diabetes Risk Score (IDRS).

Methods: 376 individuals were interviewed using a structured questionnaire and anthropometric measurements were taken .Using IDRS, risk for developing Diabetes Mellitus were assessed.

Results: Out of 376 study population, 36% were males and 64% were females. 45.9% men were current smokers and consuming alcohol .The prevalence of obesity among women was high. 14.4 % were detected to blood pressure ≥140/90mm Hg. There is a strong association between high Indian Diabetes Risk Score and Random Blood Sugar values.

Conclusion: Screening programme has to be initiated in the community to detect hidden cases and health education on lifestyle changes to be planned and implemented aggressively to bring down the disease burden in the community.

Key words: risk factor, cardiovascular disease, diabetes mellitus, IDRS

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Introduction

The health care needs of the world's population are likely to undergo dramatic changes due to the ongoing demographic transition. Non-communicable diseases (NCD's) such as diabetes, cancer, depression and heart disease are rapidly replacing infectious diseases and malnutrition as the leading causes of disability and premature death. 80% of total deaths due to NCD occur in the low income countries with men and women being equally affected[1].The cardiovascular disease (CVD) accounted for 30% of deaths from all causes globally and a substantial proportion of these deaths (46%) were of people in the more productive period of life[2].

Countries where the epidemic began early are showing a decline due to major public health interventions. On the other hand CVD are contributing towards an ever-increasing proportion of the non-communicable diseases in the developing countries[2]. CVD have assumed epidemic proportion in India where Coronary Artery Disease (CAD) is more prevalent in urban adults (7-10%) and 50% of CHD related deaths occur in people younger than 70 yrs.

compared with only 22% in the Western countries[3]. The Indian Council of Medical Research (ICMR)-World Health Organization (WHO) study on burden of disease, weighted that the average prevalence of Ischemic Heart Disease (IHD) to be 6.4% in urban and 2.5% in rural and hypertension prevalence as 164/1000 in urban and 157/1000 in rural areas[4]. World health report highlighted that unhealthy diet ,physical inactivity and tobacco use are the major determinants of NCD's which are more prevalent among the urban slum dwellers as seen in the ICMR study[5].

Examples from several countries shows that changing these determinants is possible and it can have a strong effect on the trends in NCD'S.

In considering that risk factors of today are disease of tomorrow, this study was taken up to estimate the prevalence of cardiovascular risk factors among the urban adults.

Objectives:

1. To estimate the prevalence of cardiovascular risk factors among the adults aged 30-65yrs residing in urban slum
2. To identify moderate and high risk individuals for diabetes mellitus using Indian Diabetes Risk Score

Methodology

This study is a Cross sectional-Descriptive study, to estimate the prevalence of cardio vascular risk factors among the urban adult population of Chennai from December to April 2013. The list of adult members residing in the urban slum was obtained from the corporation records and by simple random sampling method, 376 people aged between 30-65yrs were chosen. Pregnant women and subjects with pre-existing cardiovascular disease were excluded from the study. The institutional ethics committee approval was obtained for the study and informed consent was obtained from all study subjects. The data was obtained with the help of a pretested structured questionnaire by house-to-house visit through personal interview.

Table 1: Indian Diabetic Risk Score

Indicators	Score
Age	
< 35	0
35 - 49	0
≥ 50	30
Waist circumference	
Waist <80 cm (female) , <90 (male)	0
Waist ≥ 80 – 89 cm (female), ≥ 90 – 99cm (male)	10
Waist ≥ 90 cm (female), ≥ 100 cm (male)	20
Physical activity	
Exercise (regular) + strenuous work	0
Exercise (regular) or strenuous work	20
No exercise and sedentary work	30
Family history of diabetes	
No diabetes in parents	0
One parent diabetic	20
Both parents diabetic	30

Anthropometric measurements including weight, height, waist and hip measurements were obtained using standardized techniques according to the Anthropometric Standardization Reference Manual[6]. Blood pressure (BP) was recorded twice (5 minutes apart) in the sitting position to the nearest 2 mm Hg with a mercury sphygmomanometer and the mean was taken as the final reading. BMI was also calculated.

Indian Diabetes Risk Score (IDRS) developed by Madras Diabetes Research Foundation is a a very simple and cost effective way to screen for type 2 diabetes mellitus (T2DM) in our population. It was also proved to predict diabetic complications like CAD, Diabetic peripheral neuropathy and peripheral vascular diseases[7,8]. Hence we used the Indian

Diabetes Risk Score for predicting the cardiovascular risk among the study subjects.

The IDRS was based on four simple parameters namely age, abdominal obesity, family history of diabetes and physical activity. The information for these risk factors was obtained based on four simple questions and one anthropometric measurement namely waist circumference (Table 1). Subjects with an IDRS value of ≥60 was categorized as high risk, 30-50 moderate[8].Those with high risk (≥60) were subjected to Random Blood Sugar estimation.

Data analysis was done with SPSS 10 version and prevalence of risk factors was expressed in percentage.

Results

376 individuals aged between 30-65 years were studied for the prevalence of cardiovascular risk factors and the results are summarized in Table 2. Out of 376 , 56.65% and 43.35% were in the age group of 30 to ≤45 and 45-60 years respectively and 36% were males and 64% were females.25.5% had at least one parent hypertensive and 35.2% of known hypertensive had family history of hypertension. Only 34.3% and 31.9% of study individuals were checked for hypertension and Diabetes in the past 12 months and 23.6% and 23.4% were said to be hypertensive and diabetic respectively. 18.8% of individuals use tobacco either in the form of smoking or smokeless and 45.9% of men (n=135) were smokers and the mean age of smoking was 21.3 years and 2.4% of women (n=241) used tobacco in chewing form. Among men, 45.9 % consumes alcohol. None of the participants in this study consumed the recommended 'at least five servings' (1 serving = 80g) fruits and vegetables on an average. 32.8% consumes salt either by adding extra salt to food while eating or eating salted items like salted fish ,papad, prickle etc. 47.34% of individual used palm oil for cooking and 44.6% used sunflower oil.

Table 2: Prevalence of cardiovascular risk factors (n=376)

Risk factors	Percentage %(95% CI)
Age	
30 - <45	35.9(31.09-41.01)
45 – 60	43.35 (38.3 -48.5)
Sex	
Male	35.9 (31.09-41.01)
Female	64.1 (58.99-68.91)
Family H/o Hypertension	
NO	72.8 (68.03 -77.2)
One Parent	25.5 (21.2 -30.3)
Both Parent	1.6 (0.6 -3.6)
Economic status*	
High	2.3 (1.1 -4.6)
Upper middle	7.4 (5.0 -10.7)
Lower middle	35.1(30.3-40.2)
Poor	55.0 (49.8-60.1)
Literacy	
Illiterate	45.7 (40.6 -50.9)
Literate	54.2 (49.0 -59.3)
Known DM	3.73 (2.14 -6.33)
Known HT	6.4 (4.23 – 9.5)
Tobacco use	18.8
Alcohol	16.4
Use of extra salt in food	32.98(28.2 -38.02)
Salted items (papad, prickle etc)	32.98(28.2 -38.02)
Body Mass Index	
Normal(18.5-22.9)	15.6(12.2-19.8)
Overweight (≥23)	41.4 (36.4-46.6)
Obesity(≥25)	42.8 (37.7-48.0)
Blood pressure	
<140/90mm Hg	85.6 (81.5-88.9)
≥140/90mm Hg	14.4 (11.9-18.4)
IDRS(n=261)	
Low risk	41.38
Medium risk	43.68
High risk	14.94
Random blood Sugar (n=153)	
<140 mg%	74.51
≥140 mg%	25.49

**** BG Prasad's Socio Economic Status Scale (2008-2009)***

The overall prevalence of overweight and obesity was 41.8% and 42.8%. Using IDRS , 261 individuals were identified as at risk. Out of 261 low, moderate and high risks were 108, 114 and 39 respectively. Among moderate risk 16 individuals had random blood sugar ≥140 mg% and in high risk, 23 had random blood sugar ≥140 mg%.

Discussion

Cardiovascular diseases account for high morbidity and mortality all over the world but their increase in developing countries heavily burden the health-care system in disease management. These are largely preventable diseases by means of effective interventions that tackle shared modifiable risk factors, namely: tobacco use, unhealthy diet, physical inactivity and harmful use of alcohol. The increase in cardio vascular diseases can be attributed to ageing of the population and increased vulnerability of young people to life style changes. Study done in Aydin-Turkey found hypertension increased progressively with age from 9% in 18 to 29 years to 70.6% in 70-79 years[9]. Study done in Uttar Pradesh found males were more prone to develop hypertension as compared to females. The mean systolic blood pressure is lower for women in early adulthood and higher in later adulthood than for men[10]. As ageing and gender are non-modifiable risk factors, life style modifications only will reduce their risk from developing disease.

In countries that are in post–transitional stage of economic and epidemiological stage, consistently higher levels of blood pressure and higher prevalence of hypertension have also been noted in lower socio economic group which was confirmed in our study where 14.9% of high blood pressure belongs to poor class. Studies in India from different sites show higher risk of coronary heart disease among people with lower socio economic level indicating that the disease pattern is shifting from the affluent to the poor[11] These poor class are at risk of developing cardiovascular disease mainly due to lack of education and low income. In epidemiological study of hypertension carried out on a random urban sample of young persons (15-24years) of Delhi found 43.1% of hypertensive had family history of hypertension.[12].The individuals with family history of hypertension and Diabetes should be targeted for regular screening.

Tobacco is the fourth most common risk factor for disease and the second major cause of death worldwide but 45.9 % men smokes and consumes alcohol in our study. Gupta et al. found smoking and alcohol intake both individually and collectively were related to high prevalence of hypertension as well as coronary artery disease (CAD)[13]. Acute surge of nicotine causes a rise in both SBP and DBP that may last for 15 to 30 minutes[14]. Reducing alcohol intake by 80-85% resulted in a systolic blood pressure (SBP)/ diastolic blood pressure (DBP) reduction of 5.0/3.0mmHg in hypertensives and 3.8/ 1.4 mmHg in normotensives[15]. Because of the long delay between these risk factors and their adverse effects, people misjudge the hazards of tobacco and alcohol. So health education and legal measures has to be intensified.

Fruits and vegetables are important components of a healthy diet. 26.7 million (1.8%) DALYs worldwide are attributable to low fruits and vegetables intake and 85% of this burden was from cardiovascular diseases only. Study done in urban south Indian showed that Systolic blood pressure, diastolic blood pressure, BMI, serum cholesterol, serum LDL-cholesterol and waist circumference were significantly lower in those in the higher quartiles of fruit and vegetable intake and CVD risk score was inversely related to higher fruit and vegetable intake (gm/day)[16]. Lack of

consumption of adequate intake of fruits and vegetables in our study may be due to lack of their knowledge and low income. Consumption of salt by Indians was higher than the recommended amount by the World Health Organization (<5g/d) because in the Indian cuisine, salt intake depends on several sources: salt used in the cooking, salt added at the table directly and in the form of pickles, pappads etc. Several studies has shown that Blood Pressure response to sodium reduction is direct and progressive[17]. So reduced salt intake can control this risk factor progressing to cardiovascular diseases. Most of the study families used palm and sunflower oil as a cooking medium. Intervention study done by replacing palm oil with soybean oil had led to reduction in saturated fat level[18]. Thus people's dependence on just one oil does not ensure the recommended intake of fatty acids for optimal health so correct combination of vegetable oil should be used for cooking.

Physical inactivity is defined as doing very little or no physical activity in any of these domains (at work, transport, leisure time). More than 50% of women and men are physically inactive either at work place or transport or leisure time in our study. Study done in Northern India found coronary artery disease and coronary risk factors were 2 to 3 times higher among the urban people compared to the rural subjects, which may be due to sedentary behaviour and alcohol intake among urban[19]. Obesity is a condition of abnormal or excessive fat accumulation in adipose tissue to the extent that health may be impaired and it is the major propeller of life style related disease. Overweight and obesity rates were generally higher among females in urban and lower in rural areas[20] which coincides with our finding too. Changes in waist circumference reflect changes in risk factors for cardiovascular disease and other forms of chronic diseases[21]. Weight reduction in obese patients produces significant fall in both systolic and diastolic blood pressure of around 1mmHg for each kilogram lost[22]. The high prevalence of obesity seen in this study may be due to their consumption of energy dense foods and less energy expenditure.

Using IDRS (Sensitivity 72.5% and specificity 60%) 16 individuals had random blood sugar ≥140 mg% and 23 had random blood sugar ≥140 mg% in moderate risk and high risk respectively. In our study, there was a strong association between IDRS and random blood sugar values (OR=8.8, 95% CI of OR 3.8 -20.1) which was similar to study findings where the Indian Diabetes Risk Score (IDRS) showed the strongest (5-fold risk) association with incident diabetes– higher than obesity or hypertension[7,24]. IDRS uses two modifiable risk factors (waist circumference and physical inactivity) and two non-modifiable risk factors (age and family history of Diabetes) providing a clear message that if modifiable risk factors are altered, the risk score can be reduced. Those who have high score are at risk for developing Diabetes and Cardiovascular disease so they should be targeted for Life style modification. IDRS can be used as a simple cost effective screening tool for identifying undiagnosed Diabetes in the community.

Conclusion

The high prevalence of risk factors – smoking, alcohol, obesity, inadequate diet and low physical activity gives a definite possibility of increasing the burden of non-communicable diseases in the community. An individual with several mildly raised risk factors may be at a higher total risk of cardiovascular disease than those with just one elevated factor. Screening programme has to be initiated in the community to detect hidden cases and health education strategies on lifestyle modifications to be planned and implemented aggressively to bring

down the cardiovascular diseases burden in the community.

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Original Research Article

A Randomized Trial Comparing 600mg With 200mg Of Mifepristone Followed By Oral Misoprostol For Termination Of Early Pregnancy

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Abstract

Background: Mifepristone followed by prostaglandin analogue is a common method used for medical abortion. **Objective**: To compare the abortifacient efficacy of 600mg mifepristone followed by 400ug of misoprostol With 200mg mifepristone followed by 400ug of misoprostol.
Methodology: It was a randomized interventional study done at the Department of Obstetrics and Gynecology, SV medical college, Tirupathi. Participants were 200 women seeking termination of pregnancy of 49 days gestational age or less. Among them 100 women were randomly assigned to receive 600mg of mifepristone followed by 400ug oral misoprostol after 48hours and another 100 women were given 200mg mifepristone followed by 400ug oral misoprostol after 48hours. The outcomes measured were complete abortion rate, induction-abortion interval and complications.
Results: Complete abortion rate was not statistically different in both the groups. Complications also were not significantly different. Induction abortion interval was more in the 200mg group.
Conclusion: For the termination of early pregnancy(≤49days gestational age), 200mg mifepristone followed by 4ooug misoprostol has equal efficacy as 600mg mifepristone followed by 4ooug misoprostol.

Key words:Medical abortion, Mifepristone, Misoprostol, Gestational age, Complete abortion.

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Introduction

Termination of pregnancy is one of the most common procedures in gynecological practice. Globally an estimated 22 million unsafe abortions took place in 2008, with 99% of them in developing countries1. The overall rate of unsafe abortions is 14/1000 women aged between 15to 45 years2. Deaths due to unsafe abortion remain close to 13% of all maternal deaths3. In India, termination of pregnancy was legalized in 1971 to prevent the complications of illegal abortions4. Access to abortion can be restricted not only by the law, but also by other barriers like Social and cultural beliefs.

Standard method of termination of first trimester pregnancy is by suction evacuation. Though it is an effective method with a success rate of about 95%, it needs admission of the woman and may lead to complications like perforation, infection and cervical

incompetence. Medical methods of termination avoid the complications of anesthesia and surgery and provide a non invasive approach. In India, for the women living in rural areas who cannot access safe surgical abortion providers, medical methods can be a boon.

Currently available methods of medical abortion include 1)Mifipristone with misoprostol 2).Methotrexate with misoprostol 3) Misoprostol alone. The best studied regimens include mifepristone orally followed 36 to 48 hours later by a prostaglandin analogue administered either orally or vaginally. The antiprogestin mifepristone (RU 486) causes abortion by competitively blocking progesterone receptors5. For maximal effectiveness, a prostaglandin should be given 48 hours after mifepristone. Since its first registration in France in 1988, mifepristone has been registered in around 50 countries and is on the World Health Organization list of essential medicines6. More than 3 million women worldwide have had medical abortions in the past decade alone7. In Europe and the USA, the approved regimen consists of 600 mg of mifepristone, followed 36–48 hours later by a prostaglandin analogue, most often misoprostol8. The data from several multicentre trials conducted over the past 15 years has shown that a dose of 200 mg of mifepristone is equally effective as the 600 mg dose in achieving complete abortion9. A lower dose may reduce the incidence of side effects and also the cost of treatment.

In this context, the present study aims to compare the two regimens - 600mg of mifepristone followed after 48 hours by 400ug of misoprostol with 200mg of mifepristone followed after 48 hours by 400ug of misoprostol. The study aims to compare two doses of mifepristone in combination with oral misoprostol for early abortion.

Objectives

To compare the abortifacient efficacy of 200mg mifepristone followed by oral misoprostol 400ug with 600mg mifepristone followed by oral misoprostol 400ug.

To compare the induction- abortion interval between the two groups.

To compare the complication rate between the two groups.

Material and methods

The study was conducted at the Government Maternity hospital attached to Sri Venkateswara medical college, Tirupati, chittoor district, Andhra Pradesh, after taking the permission of the institutional ethical committee. Ours is a teaching hospital with an annual MTP rate of about 400.The study was conducted over a period of 18 months from January 2007 to June 2008.The study was a randomized interventional study. Study population consisted of women attending the hospital with a request for termination of early pregnancy.

Inclusion criteria:

1. Gestational age as calculated from last menstrual period less than or equal to seven weeks.
2. Intrauterine pregnancy of seven weeks or less confirmed by ultrasound.
3. Hemoglobin of more than 10gm/dl
4. women who gave informed consent to participate in the study and who were willing to come for follow-up

Exclusion criteria:

1. Gestational age more than seven weeks
2. Ectopic pregnancy
3. Hemoglobin less than 10 gm/dl
4. Any previous surgery on the uterus
5. Women with hypertension, diabetes mellitus, liver disease or bronchial asthma
6. Women with blood dyscrasias or taking anticoagulant drugs

The women were explained about the medications , advantages, disadvantages, side effects and informed consent was taken for surgical termination (suction evacuation) if medical method fails. From all the women, history was taken about the period of amenorrrhoea, obstetric, medical and surgical history. Clinical examination of vital data, abdominal, speculum and pelvic examination were done.

The following investigations were done:

Hemoglobin, bleeding time, clotting time, blood group and Rh type,HBSAg,HIVtest after counseling and consent, ultrasound for gestational age and location of pregnancy.

Willing Women who met the inclusion criteria were randomly allocated to two groups by a computer based random number generator. Neither the investigators nor the women were blinded to the allocation. All the medicines were supplied by the hospital free of cost.

Day1:Group1: given 200mg mifepristone orally

Group2: given 600mg mifepristone orally

Day 3: Misoprostol 400ug(2 tablets) given orally for both groups.

Day 14: clinical and ultrasound examination was done for both groups.

On day 1, both groups were observed for 30 minutes at the hospital and then sent home. In case of Rh negative blood group, 50 µg of inj.Anti D was given. On day 3, Misoprostol 400µg (2 tablets) given orally, observed for an hour and then sent home. Women were asked to contact the investigators or to come to the hospital in case of excessive bleeding (>2 pads per hour for 2 consecutive hours, fever >100°f or abdominal pain, vomiting or diarrhea lasting >24 hours. All the women were asked to come for follow-up on day14.clinical and ultrasound examination was done on day14.If the abortion was incomplete or the pregnancy is continuing, the patient was posted for suction evacuation under sedation with pentazocin. Incomplete abortion was defined as clinical or ultrasonic evidence of products of conception in the uterus on the 14th day.

Continuation of the pregnancy was diagnosed if the uterine size has increased, gestational sac was intact on ultrasound or if urine HCG test was positive on day14.

All women were advised abstinence for two weeks. If they were willing, oral contraceptives were started on day 15.Women who opted for intrauterine contraceptive device were asked to come within a week of the next period. They were told that the next period may be delayed for one or two weeks and to report to the hospital if the delay is more than 2 weeks.

Analysis

The data was analyzed using MS Excel 2003 and Epiinfo 7 statistical package. The results were put into suitable tables and analyzed using proportions (percentages)The difference between proportions were tested using the chi square test. In cases where the observed values were less than 5, Yates' correction of chi square test was applied. The significance was set at 5% level (p=0.05)

Results

Table1: Demographic variables

Variable	Mifepristone				
		200mg		600mg	
		Number	Percentage %	Number	Percentage %
Age in years	<20	8	8	12	12
	20-30	78	78	71	71
	>30	14	14	17	17
	x^2=1.42	P=0.49			
Gravidity	1	8	8	12	12
	2	84	84	80	80
	3or more	8	8	8	8
	x^2=0.90	P=0.64			
Gestational age	<5 weeks	6	6	4	4
	5-6 weeks	56	56	53	53
	6-7 weeks	38	38	43	43
	x^2=2.21	P=0.32			

Both groups were comparable in terms of age, gravidity and gestational age

Table 2: Complete abortion rate

groups	success		failure	
	No. of cases	percentage	No. of cases	percentage
Group 1 (200mg)	92	92	8	8
Group11 (600mg)	96	96	4	4

x^2=1.42 p=0.23

Table-4: Induction abortion interval

Time in hours	200mg		600mg	
	No. of cases	percentage	No. of cases	Percentage
2-6	41	45	64	66
7-12	44	48	31	33
13-24	5	5	1	1
25-48	2	2	0	0

x^2=14.26 p=0.0025

Table 3: Complete abortion rate-relationship to gravidity and gestational age

Gravidity	200mg			600mg			Statistical significance
	No.of cases	successful	percentage	No.of cases	successful	percentage	
1	8	7	87	12	12	100	x^2=3.50 p=0.06
2	84	78	92	80	78	97	x^2=1.90 p=0.16
≥3	8	7	87.5	8	6	75	x^2=0.3 p=0.32
Gestational Age							
<5 weeks	6	6	100	4	4	100	x^2=0.0 p=0.1
5-6 weeks	56	53	94.6	53	51	96.7	x^2=0.76 p=0.38
6-7weeks	38	35	92.1	43	40	93	x^2=01.24 p=0.26

Table5: Complications during the course of the study

complications	200mg		600mg		P value
Pain abdomen	20	20	30	30	0.11
Excessive bleeding	10	10	16	16	0.22
Incomplete abortion	5	5	3	3	0.4
Blood transfusion	2	2	0	0	---
vomiting	6	6	8	8	0.60
diarrhoea	3	3	5	5	---
fever	1	1	0	0	---
infection	0	0	0	0	---

Discussion

This trial was conducted to compare a regimen of 200mg mifepristone and 400ug oral misoprostol with a regimen of 600mg and 400ug oral misoprostol in early pregnancy less than 49 days. Blinding of investigators and patients could not be done as the medicines were supplied by the hospital. There was no difference between the two regimen in terms of abortifacient efficacy,complete abortion rate and complication rate. The only difference was a shorter induction abortion interval in the 600mg group.

Demographic factors:

Age: In the present study, the mean age was 23 years. In the WHO multicentre study of 1589 women, the mean age of the women was 27 years[9]. In another study by Ashok et al[10], the mean age was 26±5.3 years. In an American study of 2121women seeking termination of pregnancy, the mean age was 27 years[11] .Most of the women belonged to 20-30 year age group in all the studies including the present one.

Gravidity: In the present study, majority of women were second gravida. In the WHO study[9], 66% of the women were of parity one or more. In the study by Ashok etal[10], 47.5% were primiparous and 52.5% were of parity more than one. In the American study by spitz et al[11], 73%of the women had one or more previous pregnancies. In all the studies, parous women with one or more children were seeking medical termination of pregnancy.

***Gestational age*:** Different studies have included women of gestational age ranging from 7weeks to 9 weeks. In the present study the upper limit of gestational age was 49 days or 7 weeks. Most of the women were in the gestational age of 5-6 weeks, followed by 6-7 weeks. Only, a few women presented, before 5 weeks. In some studies, women of gestational age up to 9 weeks were included [9, 10 11, 13], A multicenter study by Schaff EA et al[12] included women up to 8 weeks. As all these studies compared the efficacy at different gestational ages, their results can be compared to those of the present study.

Complete abortion rate: In the present study, 92% in the 200mg group and 96% in the 600mg group had complete abortion and the difference was not statistically significant. In the WHO study [9], 89%of those who received the 200mg dose and 88% of women who received 600mg dose of mifepristone had complete abortion. In the study by Ashok et al., all women received 200mg of mifepristone followed by 800mg of vaginal misoprostol and 97.6% of these women had a complete abortion. In some studies all the women received 600mg of mifepristone, but they were divided into groups based on the gestational age and the efficacy was compared .The incomplete abortion rate ranged from 2 to 10% depending on the gestational age[11, 13,14].

Complete abortion rate-relationship to gestational age

In the present study, the complete abortion rate was 100%below 5 weeks, 94.7 to96% between 5-6 weeks and 92 to 94% after 6weeks.There was no statistically significant difference between the two groups, but the number of women in the gestational age 5 weeks is too low to draw a conclusion. The WHO study [9] found that regardless of mifepristone dosage, the likelihood of treatment failure rose with increasing delay in menses. Overall, the failure rate was 8%, 11%, 13%and 20% among women with a menstrual delay of 14 days or less, 15-21 days, 22-28 days and 29 days or more respectively. In the study by Ashok et al [10], women were divided into two groups based on gestational age. Those in the higher band i.e.>49 days had to undergo surgical evacuation more often than those in the lower band i.e. < 49 days. In the American multicenter trial[11], the

rates of pregnancy termination were 92 percent in the <49-days group, 83 percent in the 50-to-56-days group, and 77 percent in the 57-to-63-days group. All the studies including the present one found an inverse relationship between gestational age and complete abortion rate, irrespective of the dose of mifepristone.

Complete abortion with mifepristone alone: In the present study, none of the women aborted after mifepristone alone. Other studies found a complete abortion rate ranging from2 to 5% with mifepristone alone [9, 10, 11].

Induction abortion interval: in the present study, 66%of the women in the 600mg group and 45% of those in the200mg group had a complete abortion within 2-6hours of misoprostol administration. The time from the administration of mifepristone to complete abortion was 58hours in the 200mg group and 51 hours in the 600mg group and the difference was statistically significant. The median time for abortion was 51 hours in the WHO study [9] and is comparable to the present study. But the WHO study did not find any difference between the two groups in the percentage of women who aborted within 3 hours of misoprostol. In the American multicenter study, termination occurred within 4 hours after the administration of misoprostol in 49 percent of the women and within 24 hours in 75 percent in the<49 days group. In other studies [14], 61 percent of patients had abortion within four hours.

Complications: The most common complications in the present study were pain abdomen, heavy bleeding, nausea, vomiting and diarrhea. There was no statistically significant difference in the complication rate between the two groups. Two women in the 200mg group and none in the 600mg group needed blood transfusion. The WHO study[9] also did not find any difference in the complication rate, except for a significantly higher blood transfusion rate in the 600mg group. The overall transfusion rate was low in all the studies, including the present one [9, 10, 11].Infection of the genital tract diagnosed by the presence of fever was reported in a few studies' [10, 14] whereas none in the present study had infection or needed antibiotics.

Conclusion: Mifepristone at a dose of 200mg followed 48 hours later by 400ug of misoprostol is as effective as 600mg of mifepristone followed 48 hours later by 400ug of misoprostol for women seeking medical abortion up to 49 days of gestational age. There is no statistically significant difference in the complete abortion rate and the complication rate between the two groups. The only difference was that the induction abortion interval was more in the 200mg group. In both groups, the efficacy decreased with an increase in the gestational age.

In developing countries like India, the low dose regime reduces the cost by two third, without compromising on efficacy and safety.

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Original Research Article

Feeding practices among children attending under five clinic in a tertiary teaching hospital in South Karnataka

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Abstract

Introduction: Nutrition is the cornerstone of socioeconomic development of a country. Malnutrition has been responsible directly or indirectly, for 60% of all deaths among under five years of age annually. Over 2/3rd of these deaths are often associated with inappropriate feeding practices. **Objectives:** To determine the socio-demographic characteristics of mothers and to know the feeding practices of children attending under five clinic. **Materials and method:** Retrospective record based data was obtained from the register of under five clinic, MIMS, Mandya from the mothers who attended under five clinic from January 2013 – December 2013 (1 year). **Results:** In the present study, 9357 mothers attended under five clinic.65.4% of mothers were in the 20-25 years age group. 42.2% of mothers had secondary education. Majority of the families (88.8%) belongs to lower socio economic class and 65.6% were living in joint family. 95.4% of the mother didn't give pre lacteal feeds. Majority of the mother initiated breast feeding within 3 hours (80.7%). Significant association observed between mothers education and initiation of breast feeding, exclusive breast feeding and literacy status of the mother.

Conclusion: Undesirable cultural practices such as giving pre-lacteal feeds, late initiation of breast feeding, lack of appropriate timing for starting complimentary feeding are still prevalent among the mothers and these should be discouraged by proper IEC activities.

Key words: Under five clinic; feeding practices; breast feeding; weaning

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Introduction

Good nutrition early in life is a key input for human capital formation, a fundamental factor for sustainable and equitable - economic growth. Any major deviation in the nutrient intake either in quality or in quantity from its requirement can affect

growth in many ways[1]. Nutrition is the cornerstone of socioeconomic development of a country. It is an essential component of millennium development goals (MDGs) and Primary Health Care (PHC). It is necessary to make significant progress in nutrition in order to achieve other MDGs[2]. Malnutrition has been responsible directly or indirectly, for 60% of all deaths among under five years of age annually. Over 2/3rd of these deaths are often associated with inappropriate feeding practices and they occur during first year of life.[3]

Breast feeding is the first fundamental right of the child. The initiation of the breast feeding and timely introduction of adequate, safe and appropriate complimentary foods inconjunction with continued breast feeding are of prime importance for the growth, development, health & nutrition of infants & children everywhere. However, they are many cultural practices associated with infant feeding of which certain undesirable practices need to be discouraged. One in every third malnourished children lives in India [4].

The Third National Family Health Survey (NFHS-3) of India reported that overall 21.5% of children aged under three years were breastfed within one hour of birth, 48.3% of the children aged zero to five months were exclusively breastfed, and 53.8% of the children aged six to nine months received solid or semi-solid food and breast milk.[5] The practice of breastfeeding among Indian mothers is almost universal, but initiation of breastfeeding is quite late and the colostrums is usually discarded. Breastfeeding practices in rural communities are shaped by their beliefs, which are influenced by social, cultural, and economic factors.[6]

There are only few studies available regarding the feeding practices of under five children, hence the proposed study seeks information regarding the feeding practices among under five children.

Materials and method

Retrospective record based study was conducted from January 2013 to December 2013 for a period of 1 year. A total of 9357 mothers were attended the under five clinic.
All the information regarding pre lacteal feeds, initiation of breast feeding, exclusive breast feeding, at what age weaning was started and also about the socio demographic characters of the family which were registered in the under five clinic, MIMS, Mandya.
Inclusion Criteria: Data of children attended under five clinic, MIMS, Mandya

Exclusion Criteria: Data of children who attended before January 2013 & after December 2013 and Children with incomplete data.

Statistical Analysis: The data was entered using Microsoft excel software. Statistical software Epi-info 3.5.2 was used to analyze the data. Descriptive statistics and chi-square test were used.

Results

In the present study, 9357 mothers attended under five clinic.65.4% of mothers were in the 20-25 years age group. 42.2% of mothers had secondary education, while 5.6% were illiterate. Majority of the families (88.8%) belongs to lower socio economic

class and 65.6% were living in joint family (Table1.).

Table 1: Socio-demographic characteristics of study participants

Indicators	Number (N=9357)	Percentage (%)
Age Group of mothers		
<20	644	6.8
20-25	6120	65.4
26-30	2098	22.4
31-35	421	4.4
>36	74	0.7
Mothers Education		
Illiterate	531	5.6
Primary	1006	10.7
Secondary	3957	42.2
PUC	2295	24.5
Graduation & above	1568	16.7
Socio-economic status (Modified B.G.Prasad's classification)		
Class I	158	1.6
Class II	883	9.4
Class III	3223	34.4
Class IV	3895	41.6
Class V	1198	12.8
Type of family		
Nuclear	3218	34.3
Joint	6139	65.6

Table 2. infers that, 95.4% of the mother didn't practice pre lacteal feeds to their children. No significant association observed. ($p>0.05$)

Majority of the mother initiated breast feeding within 3 hours (80.7%), while only 0.26% of mother didn't breast fed their child. Significant association observed between mothers education and initiation of breast feeding (Table 3.) ($p<0.05$)

As per Table 4,ajority of the educated mothers had given exclusive breast feeding to their children (94.2%).In illiterate mothers (94.9%) have practiced exclusive breast feeding. Significant association found between mothers education and exclusive breast feeding ($p<0.05$)

Most of the literate mothers started weaning food to their children at 6 months. Significant association observed ($p<0.001$)(Table 5).\

Discussion

The present study reveals that, 95.4% of the mother didn't give practice pre lacteal feeds to their children, which is far better than national average (57.2%) according to NFHS 3 figures for India[5]. Study done by Anand BK et al showed that, 54.7% of the infants were given pre lacteal feeds[7] and study done by Khan AM et al shows that 38% of infants received prelacteal feed.[8]

In our study, 80.7% mother initiated breast feeding within 3 hours. Similar findings observed in a study done by Syed E Mahmood et al (78.8%)[9] A study in Ghana reported that 22% of all neonatal deaths could be prevented if all women could initiate breastfeeding within one hour of delivery [10] Most of the educated mothers had given exclusive breast feeding to their children in our study (96%). Significant association observed between mothers education and exclusive breast feeding ($p<0.05$). The results were far better than NFHS-3 data (46.4%)[5] and Khan AM et al study (57%)[8]. A study from slum of Delhi has shown that only 20% of the children below 6 months were exclusively

breastfed.[11]

Most of the literate mothers started weaning food to their children at 6 months or thereafter. Khan AM et al[8] studies showed 33% of mothers started weaning food before completion of 6 months, similar trends were observed in a study by Chudasama RK[12].

Early initiation of breastfeeding, exclusive breastfeeding for six months, and timely introduction of age-appropriate complementary feeding are the key interventions to achieve the Millennium Development Goal 1 and 4, which address child malnutrition component of the targets and mortality respectively[13]. Too early or late introduction of complementary feeds is common and is responsible for under nutrition between six and twenty-four

Table 2: Mothers education with pre-lacteal feed practices

Mother Education	**Pre-lacteal feed**				**Total**
	Yes	**%**	**No**	**%**	
Illiterate	19	4.3	512	5.7	531
Primary	49	11.4	957	10.7	1006
Secondary	181	41.8	3776	42.3	3957
PUC	96	22.3	2199	24.7	2295
Graduation&above	87	20.2	1481	16.6	1568
Total	**432**	**100**	**8925**	**100**	**9357**

χ^2:5.53, d.f:4. P: >0.005.

Table 3: Mothers education with initiation of breast feeding

Mother Education	**Initiation of breast feeding**								**Total**
	Not given	**%**	**Within ½ hour**	**%**	**<3 hours**	**%**	**>3 hours**	**%**	
Illiterate	1	4	95	5.7	341	5.8	94	5.2	531
Primary	4	16	204	12.3	643	11	155	8.7	1006
Secondary	7	28	768	45.9	2464	42	718	40.2	3957
PUC	6	24	379	22.7	1459	24.7	451	25.3	2295
Graduation & above	7	28	224	13.4	973	16.5	364	20.6	1568
Total	**25**	**100**	**1670**	**100**	**5880**	**100**	**1782**	**100**	**9357**

χ^2:50.85, d.f:12. P: <0.001.

Table 4: Effect of mother's education with exclusive breast feeding

Mothers education	Exclusive breast feeding				Total
	Yes	%	NO	%	
Illiterate	504	5.6	27	7.9	531
Primary	974	10.8	32	9.2	1006
Secondary	3824	42.5	133	38.5	3957
PUC	2227	24.8	68	19.8	2295
Graduation&above	1483	16.3	85	24.6	1568
Total	**9012**	**100**	**345**	**100**	**9357**

χ^2: 24.063, d.f: 4, P< 0.05

Table 5: Effect of mother's education with age at weaning

Mothers education	< 6 months	%	≥6 months	%	Total
Illiterate	30	6.7	501	5.6	531
Primary	57	12.9	949	10.6	1006
Secondary	186	41.9	3771	42.3	3957
PUC	96	21.6	2199	24.7	2295
Graduation & above	75	16.8	1493	16.8	1568
Total	**444**	**100**	**8913**	**100**	**9357**

χ^2: 48.18, d.f: 12, P<0.001

months. Growth faltering incipiently worsens from around six months of age and results in malnutrition in later months and years.

Conclusion

Deficiency in practice regarding feeding practices was revealed in our study. Best tool to promote breastfeeding is proper counseling of mother during antenatal and postnatal visits. Area-specific programmes are to be planned to create an enabling environment for comprehensive nutrition and health education to mothers or care-givers. There is need for promoting awareness of correct practices for infant feeding and the care of the newborn. Creating an awareness of the advantages of exclusive breastfeeding will further strengthen and support this common practice in rural communities and avoid early introduction of complementary foods for socio-cultural reasons.

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Original Research Article

Prevalence and Predictors of Ocular morbidity among Primary School Children of Urban Kerala

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Abstract

Background: Data on eye diseases among primary school children is scarce. One third of India's blind lose their eyesight before the age of 20 years and many of them are under 5 when they become blind. So, early detection and treatment of ocular morbidity among children is important. **Aim:** To estimate the prevalence & factors associated with ocular morbidity among primary school children of age 4-12 years. **Settings:** Government, Government aided & Private coeducational schools in an urban area of Parur municipality in Ernakulam district of Kerala state in India. **Design:** School based Cross-sectional study. **Materials and Methods:** The co-educational schools were selected by stratified random sampling & 1100 school children studying in primary classes were examined from July 2011-December 2012. **Statistical analysis:** The data was tabulated by using MS EXCEL and analysed using SPSS 11 version. Qualitative variables were summarized using percentage, proportion and association of various factors with ocular morbidity was assessed using Chi square test. The strength of association was quantified using the Odds Ratio with 95% Confidence Interval. **Results:** Prevalence of ocular morbidity in primary school children is 17.8% (95% Confidence Interval 15.1- 20.1). Among this, 49.2 % of children had refractive error. The predictors of ocular morbidity were difficulty in seeing black board, difficulty in reading books, mothers using glasses, the television viewing distance and being a boy. The predictors for refractive error were the higher age groups, children who had low birth weight & children studying in private schools, **Conclusion:** A high prevalence of ocular morbidity among primary school children was observed. The leading cause of ocular morbidity was refractive error. Awareness of the factors that causes ocular morbidity can enable us to predict the chances for developing ocular disorders among school going children. Methods for early detection of the ocular morbidities by regular eye screening programmes and prompt treatment can prevent future complications and childhood blindness.

Keywords: Ocular morbidity, prevalence, refractive error, primary school children.

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Introduction

Ocular morbidity (OM) describes any eye disease regardless of resultant visual loss. Visual impairment is a worldwide problem that has a significant socioeconomic impact. Childhood blindness is a priority area because of the number of years of blindness that ensues. A study of the pattern of ocular diseases in children is very important because, while some eye conditions are just causes of ocular morbidity, others invariably lead to blindness. School children form a sizeable segment of the community and they represent 25% of population. (1)

Screening of school children for visual impairments, as a part of school health should not only be a key component of an effective blindness prevention programme but also an easy approach for a large-scale screening. Data on the prevalence and causes of blindness and severe visual impairment in children are needed for planning and evaluating preventive and curative services for children, including planning special education and low vision services.

Although vision is very important to people of all ages, it is more so in children as it has a key role in their mental, physical, and psychological development. Most of adult blindness is easily treatable, but visual morbidity in children, if not detected and prevented, in time leads to permanent disability. A child with visual impairment has to bear the scourge of visual disability for the years to come. (2)

In the world, the prevalence of visual impairment for the year 2010 was estimated to be 285 million people, of whom nearly 39 million were blind, about 90 percent of them living in developing countries. About 80 percent of blindness is avoidable (treatable or preventable). However, a large proportion of those affected remain disabled for want of access to affordable eye care. An estimated 19 million children are visually impaired. Of these, 12 million children are visually impaired due to refractory errors, a condition that could be easily diagnosed and corrected. (3) In India, the estimated prevalence of blindness for the year 2004 was about 11.2per 1000 population, of this 0.1 per 1000 population was in the age group 0-14 years (4)

In the few studies done in Kerala for ocular morbidity in children, the prevalence of ocular morbidity and refractive error was found to be similar to the findings in the other states of India. Considering high health indicators in Kerala one would expect higher detection & treatment rates in Kerala, but this is not so. (3) Statistics relating to ocular morbidity among the primary school children from Kerala are few in the literature. Hence the present study was conducted with the objective of estimating the prevalence of ocular morbidity and its determinants among primary school children in urban Kerala. Data on causes and prevalence of ocular morbidity in school children is essential for planning and evaluation of preventive and curative services for children. In view of the above facts, a comprehensive school eye service with periodic evaluation seems to be appropriate to reduce ocular morbidity and thereby reduce the prevalence of childhood blindness and severe visual impairment.

Objectives :1.To estimate the prevalence of ocular morbidity in primary school children of an urban area in Central Kerala;2To study the factors associated with ocular morbidity among these children.

Materials and Methodology

After getting the approval from review board and ethical committee, a cross sectional study was done among the government, private and aided Co-educational schools in an urban area of Parur municipality in Ernakulam district of Kerala state. Schools were selected using stratified random sampling technique. According to a study done in Karnataka, prevalence of ocular morbidity was found to be 10% in primary school children. With this information, the estimated sample size was 865 by using the formula $n= Z\alpha^2 pq/d^2$. The final sample size was 1100 by adding a non response rate of 20%. Informed consent was obtained from the principals and parents of the children. Pretested semi-structured questionnaire was used to collect information on socio-

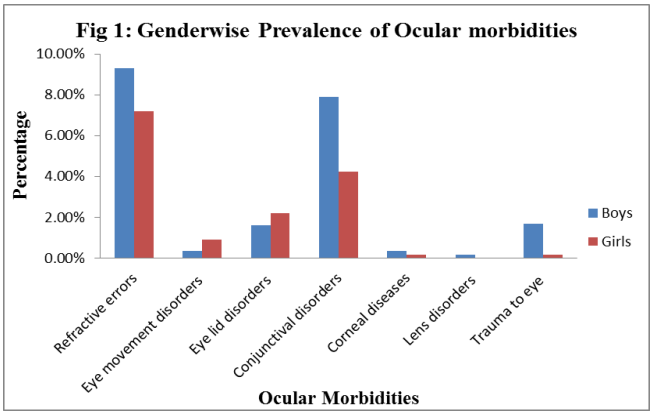
demographic variables, symptoms of eye diseases, television and computer viewing patterns. The Snellen's Chart for visual acuity, Ischiara's chart for colour blindness, Torch examination for external examination of eye, Cover-uncover Test for squint, Slit lamp examination were used for detailed examination of different ocular conditions and Retinoscopy for estimating the refractive power accurately. A diagnosis of congenital disease was made when the disease was present since birth, and the other disease were diagnosed if any ocular abnormality was found in either one or both eyes of the child. The study period was July 2011- December 2012. The data was tabulated by using MS EXCEL and analysed using SPSS 11 version. Qualitative variables were summarized using percentage and proportion, association of ocular morbidity with various factors were assessed by using Chi square test. The strength of association was quantified using the Odds Ratio with 95%CI.

Results

The results include data of 1100 primary school children of Parur Municipality. The study assessed the prevalence of ocular morbidity and the associated factors.

Of the 1100 students studied, there were 558 (50.72%) boys & 542(49.2%) girls. Among them 715(65%) belonged to the age group 8-12 years. About 53% belonged to private schools, 42% represented the government aided schools and the rest belonged to the government school. Regarding the data related to their parents, 77.9% of children's father & 73.6% of children's mothers had post high school education. Among the fathers only 2.7% were professionals and the others were engaged in unskilled, semiskilled and skilled occupation. Majority of the mothers were unemployed.

Fig 1 shows the gender wise prevalence of ocular morbidities



In this study the prevalence of ocular morbidity was 17.18%, of which refractive errors accounted to the most common ocular morbidity (49.2%). Out of the total boys studied the prevalence of Refractive error was 9.32% and 7.96 %in girls. Conjunctival disorders like conjunctivitis and xerophthalmia accounted to 7.89 % in boys and 4.24%in girls. The prevalence of trauma to the eye was 1.6% in boys and 0.18% in girls. Eyelid disorders like stye, blepharitis & ptosis were 1.61% in boys and 2.2% in girls. Eye movement disorders like squint & nystagmus accounted to only 0.35% in boys & 0.9 % in girls. 0.35% of boys and 0.18% of girls had corneal disease and only one boy had lens opacity.

Table 1 shows the prevalence of ocular morbidity across back ground characteristics.

There was statistically significant association between the sexes showing that boys had more ocular morbidity than girls. This study also shows that as age advances chances of developing ocular morbidity increases.

Table 2 shows that 13 students had very low birth weight, and among them 38.5% had ocular morbidities, followed by 17.9 % among the low birth weight and 16.6% among the normal birth weight students. There was no statistically significant association between birth weight and ocular morbidity. (p= 0.109). But there was significant association of ocular morbidity and use of glass by mothers. (Pearson Chi-square=1.77, p=0.009) though there was no association between ocular morbidity and the use of glass by fathers.

Table 1: Background Characteristics of Students			
Characteristics	**Boys (n=558) (%)**	**Girls (n=542) (%)**	**Total (n=1100) (%)**
Age group			
4-7 Years	211 (37.8)	174 (32.1)	385 (35)
8-12 Years	347 (62.2)	368 (67.9)	715 (65)
School			
Private	293 (52.5)	294 (54.2)	587 (53.4)
Government	27 (4.8)	24 (4.4)	51 (4.6)
Aided	238 (42.7)	224 (41.3)	462 (42)
Socio economic classification*			
Upper	9(1.6)	5 (0.9)	14 (1.3)
Upper middle	62 (11.2)	75 (13.8)	137 (12.5)
Lower middle	235 (42.1)	204 (37.6)	439 (39.9)
Upper lower	252 (45.2)	258 (47.6)	510 (46.4)
Paternal Education			
Profession &graduate	62(11.4)	64(11.5)	126(11.5)
Up to Post high school	421(77.7)	436(78.1)	857(77.9)
Up to middle school	58(10.39)	59(10.9)	117(10.6)
Maternal education			
Profession &graduate	113(20.8)	95(17)	208(18.9)
Up to Post high school	399(73.6)	411(73.7)	810(73.6)
Up to middle school	30(5.5)	51 (9.4)	82(7.5)
Fathers Occupation			
Profession Semi profession	18(3.2)	12(2.2)	30(2.7)
Clerical, shop-owner, Skilled worker	41(7.3)	44(8.1)	85(7.7)
Semiskilled Worker, Unskilled worker Unemployed	499(89.4)	486(89.7)	985(89.5)
Mothers Occupation			
Profession, Semi profession	38(6.8)	36(6.6)	74(6.7)
Clerical, shop-owner,Skilled worker	19(3.4)	26(4.8)	45(4.1)
Semiskilled Worker, Unskilled worker Unemployed	501(89.8)	480(88.60	981(89.2)

Table 3 shows that out of 160 students, who had symptoms of difficulty in seeing blackboard, 81 of them had ocular morbidities and out of 125 students who had difficulty in reading books, 60 of them had ocular morbidities. A statistically significant association between the symptoms of difficulty in seeing blackboard and difficulty in reading books with ocular morbidity was seen.

Table 2 : Prevalence of ocular morbidities across back ground characteristics

Factors	No of subjects with ocular morbidity (%)	Total prevalence n=1100 (%)	Chi square	p value
Sex				
Boys (n=558)	111(19.9)	10.10	**5.85**	**0.016**
Girls (n=542)	78 (14.4)	7.10		
Age in years				
4 - 7 (n=385)	54(14.0)	4.91	**4.15**	**0.042**
8 - 12 (n=715)	135(18.9)	12.27		
School				
Private(n=587)	99(16.87)	9	3.1	0.136
Government (n=51)	14(27.45)	1.27		
Aided (n=462)	76(16.45)	6.90		
Socioeconomic status				
Upper (n=14)	21(16.7)	1.90	1.03	0.793
Upper Middle (n=137)	26(18.98)	2.36		
Lower Middle (n=439)	79(18)	7.18		
Upper Lower (n=510)	82(16.08)	7.45		
Paternal education				
Profession &graduate(n=126)	21(16.7)	1.90	0.08	0.964
Up to Post high school(n=857)	147(17.2)	13.36		
Up to middle school (n=117)	21(17.95)	1.91		
Maternal education				
Profession &graduate(n=208)	32(15.38)	2.90	0.8I	0.670
Up to Post high school(n=810)	141(17.40)	12.82		
Up to middle school (n=82)	16(19.51)	1.45		
Fathers Occupation				
Profession Semi profession(n=30)	1(3.33)	0.09	1.11	0.570
Clerical, shop-owner, Skilled worker(n=85)	9 (10.58)	0.81		
Semiskilled Worker, Unskilled worker, Unemployed(n=985)	83 (8.42)	7.54		
Mothers Occupation				
Profession, semi profession(n=74)	12 (16.6)	1.10	3.78	0.150
Clerical, shop-owner, Skilled worker (n=45)	3 (6.67)	0.27		
Semiskilled Worker, Unskilled worker Unemployed(n=981)	171 (17.37)	15.54		

Fig 2 shows diagrammatic representation of students who had difficulty in seeing blackboard had more ocular morbidity than with no symptoms.

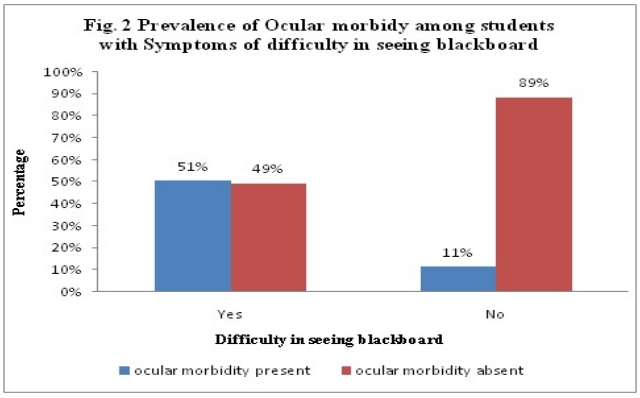


Fig 3 shows a diagrammatic representation of students who had difficulty in reading books had more ocular morbidity than with no symptoms.

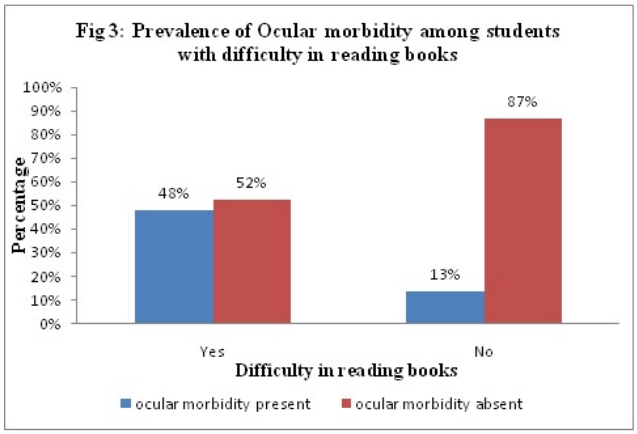


Table 4 shows the prevalence of ocular morbidity across patterns of viewing Television, Computer usage and study time. It is seen that the participants who see television at a distance of <3 meters had an ocular morbidity of (69.9%) which was found to be higher than those who see television at a distance of > =3 meters. (30.10%) and this was statistically significant. The time spent on computer and & for study did not have any association with ocular morbidity.

Table 5 shows that Refractive error is seen more in the age group 8-12 years compared to 4-7 years of age with statistical significance. Children studying in private schools were found to have more undetected refractive error which

Table 3 : Prevalence of ocular morbidity across birth weight and parents using glasses for refractive errors

Determinants	No of subjects with ocular morbidity (%)	Total prevalence n=1100 (%)
Birth Weight		
VLBW (n=13)	5(38.5)	0.45
LBW (n=256)	46(17.9)	4.18
NBW (n=831)	138 (16.6)	5.45
Father using glasses		
Yes (n=191)	35 (18.32)	3.2
No (n=911)	154(16.90)	14
Mother using glasses		
Yes (n=126)	32(25.40)	2.91
No (n=974)	157(16.12)	14.27

(*df -1, chi square=147 p= <0.001, ** df-1, chi-square=94.12, p= < 0.001)

Table 4: Prevalence of ocular morbidity among students with symptoms

Symptoms	Ocular morbidity present (%)	Ocular morbidity absent (%)
Difficulty in seeing blackboard*		
yes n= 160 (14.5)	81 (50.65)	79 (49.37)
no n= 940 (85.5)	108 (11.49)	832(88.5)
Difficulty in reading books**		
yes125(11.4)	60 (48)	65(52)
no 975(88.6)	129(13.2)	846(86.77)

(*df - 1, chi square=147, p= <0.001, ** df-1, chi-square=94.12, p= < 0.001)

Table 6: Prevalence of Refractive Error Across Background Characteristics

Characteristics	No of Subjects examined (%)	No of subjects with refractive error	No of subjects without refractive error	Chi square	P value
Sex					
Boys	558(50.7)	53 (57) 9.498%	505(50.1)		
Girls	542(49.3)	40 (43) 7.380%	502(49.9)	1594	0.21
Age in years					
4-- 7	385(35)	20(21.5)5.94%	365(36.2)	8.13	0.004
8 - 1`2	715(65)	73(78.5)10.209	642(63.8)		
School					
Private	587(53.4)	51(54 . 8)8.688	536(53 .2)		
Government	51(4.6)	9(9 .7)17.64	42 (4 .2)	6.637	0.036
Aided	462(42)	33(35. 5)7.173	429(42 . 6)		
Socio economic status					
Upper 1	14(1.3)	1 (1 . 1)7.14	13 (13)		
Upper Middle2	137(12.5)	14 (15 .2)10.218	123 (12 .2)		
Lower Middle3	439(39.9)	43 (46.2)9.79	396 (39 .3)	3 271	0.35
Upper Lower 4	510(46.4)	35 (37 .6) 6.86	475 (47 . 2)		
Birth weight					
VLBW	13(1.2%)	4 (30.76%)	9 (0 . 9)		
LBW	256(23.3)	28 (10.94%)	228(22 . 6)	11 .735	0. 003
NBW	831(75.5)	61 (7.34%)	770 (76 . 5)		

was statistically significant. And there was statistically significant association between very low birth weight babies and refractive errors.

Discussion

This study conducted among 1100 Primary School Children of an urban area in central Kerala showed the prevalence of ocular morbidity to be 17.18%. Among this refractive error was the leading cause of ocular morbidities in 49.2%.of children, followed by conjunctival diseases (35.4%), eyelid disorders (11.1%), trauma to the eyes (5.2%) corneal disorders (1.6%), lens disorder (0.5%)

The determinant factors of ocular morbidity in our study were: having difficulty in seeing blackboard, difficulty in reading books, mothers using glasses, being a boy, and belonging to age group 8-12 years. Since refractive error was the commonest ocular morbidity, we looked into its risk factors. Difficulty in seeing blackboard, and difficulty in reading books, children who had low birth weight, and the age group 8-12 years, children studying in government school were the determining factors.

There were wide variations in the prevalence of ocular morbidities among children, adolescents and adults reported in different studies from India and the other countries. Though many studies have been done in school children very few studies have been done among primary school children. In India the prevalence of ocular morbidities in children varied from 10.08 % to 44.77 %.[6,7] A study in primary school children in an urban area of Surat in Gujarat showed prevalence of ocular morbidity to be 10.08 % [6] In another study among girls of primary classes the prevalence of ocular morbidity 20.35 %.[20] In a recent study conducted in rural area of Karnataka among 6-15years showed prevalence of ocular morbidity to be 44.77%. [7] Ocular morbidity as found in our study was more in boys and in the higher age groups. This finding was similar to the study done among the adolescent school boys in Gujarat [8] However, studies conducted in schools of North Maharashtra and Shimla showed no sex preponderance for overall prevalence of ocular morbidities.[9,10]

We did not find any difference in ocular morbidity across various income groups, occupational status and parental education this finding was similar to the studies done in Delhi and Malaysia. [11, 12]

Various factors related to ocular morbidity like birth weight and use of spectacles by parents were studied. The association between birth weight and ocular morbidity in children is controversial. While studies done in Belfast and in Liverpool University showed a statistically significant increase of ocular morbidity in preterm and very low birth babies, a study done in Delhi showed that children with normal weight were exposed to ocular diseases with comparable risk to that children who had low birth weight [13,14,15]. We observed that children with very low birth weight & low birth weight had more refractive errors than those children who had normal birth weight and there was statistical significant difference between the two groups. In our study it is also seen that the children whose mothers were using glasses for refractive errors, had more refractive errors compared to those children whose mothers who did not have refractive errors but it was not statistically significant. Since refractive error is the major cause of ocular morbidity in our study and also in the various studies done in India and outside, and rightly it has been considered one of the priorities of the recently launched global initiative for the elimination of avoidable blindness: VISION 2020 — The Right to Sight [16,17]

The second most common ocular morbidity in our study is xerophthalmia seen in 4.65%of boys and 2.39% of girls, followed by conjunctivitis in 3.22% of boys and 1.84 % of girls. A north Indian study showed the prevalence of Xerophthalmia as 1.8% which is lower than our study.[18] Xerophthalmia, the dry eye condition could be due to several causes, of which Vitamin A deficiency is a predominant cause. Since we did not look into this matter in detail, it is suggested that this condition be investigated in future studies. The next common ocular morbidity in our study was conjunctivitis this was similar in different types of school studied and in both genders. However various studies showed that government schools had higher prevalence since they come from the lower strata of the society and are more likely to have poor personal hygiene compared to private school children.[19] In our study trauma to the eye was significantly higher in boys than girls; this could be due to the difference in activity of boys compared to girls.

Conclusion

Awareness of the factors that causes ocular morbidities can enable us to predict the chances for developing ocular disorders among school going children. Methods for prevention of low birth weight, proper television viewing distances, early detection of the ocular morbidities by regular eye screening programmes should be emphasised. Prompt attention should be given when children finds difficulty in seeing black board and reading books which will prevent future complications and childhood blindness.

VISION 2020 advocates planning for the control of blindness in children. The magnitude and causes of blindness vary by level of economic development; different regions will, therefore, have different priorities for control.

Recommendations

Though school eye programme is envisaged to be held annually, in every government and government aided schools, it is not being implemented annually. Hence regular annual eye screening should be ensured not only in government schools but also in private schools, since one fifth of children have ocular morbidity.

Difficulty in seeing blackboard and reading books were associated with ocular morbidities and refractive error, school teachers should be educated about these two symptoms, so that children can be referred early for vision testing.

The parents should be educated of the symptoms pertaining to eye problems seen in children, so that early detection and treatment can be implemented to prevent blindness.

Health education to the students/children regarding good posture, proper lighting while reading and adequate television viewing distances should be provided by health care workers with the help of teachers and parents.

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Original Research Article

Awareness about modes of transmission of HIV/AIDS and related misconceptions among housewives in district Ludhiana, Punjab

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Abstract

Introduction: Most HIV infections among women who do not engage in sex work, in rural and urban areas, are attributable to their husbands' risky behavior. So the present study was planned to assess the awareness levels among housewives regarding modes of transmission of HIV/AIDS and also related misconceptions were explored .**Methods** : A community based study was conducted among housewives in rural & urban field practice area of Department of Community Medicine ,D.M.C&H Ludhiana district . Pre-designed questionnaire was used to explore awareness levels of housewives regarding modes of transmission of HIV/AIDS. Data analysis was done using SPSS 16.0 version. **Results** : In the study that majority of subjects in rural (99.6%) and urban (99.6%) had knowledge about unprotected sexual intercourse as route of transmission. Awareness about vertical transmission was comparatively low. The study depicted that higher is the educational level, more is the awareness about modes of transmission on AIDS among the study subjects. Misconception that HIV/AIDS can be transmitted by shaking hands with person suffering from AIDS was observed to be more in urban (48.6%) than rural (29.8%) subjects in this study .**Conclusions** : Marriage the cultural high point in life of Indian women has always been thought of as protective factor nurturing the traditional way of life.. HIV/ AIDS educational programes have limited effects on married women who don't perceive risk of HIV from their spouses. Programmes need to be updated within their continuum so as to take into account the needs of the target group to better ensure the requisite behaviour change.

Key words : HIV/AIDS ,Housewife , Rural ,Urban

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Introduction

HIV/AIDS continues to be a major global public health issue. AIDS has become the worst pandemic in human history – one from which no one is immune, regardless of gender, race, class or sexual orientation. AIDS is the leading infectious cause of adult death in the world. Untreated disease caused by HIV has case fatality rate that approaches 100% (1) .Globally, 35.0 million [33.2–37.2 million] people were living with HIV at the end of 2013 (2). An estimated 0.8% of adults aged 15–49 years worldwide are living with HIV, although the burden of the epidemic continues to vary considerably between countries and regions (3). India has the third highest number of estimated people living with HIV in the world .The total

number of people living with HIV/ AIDS in India was estimated at around 20.9 lakh in 2011, 86% of whom were in 15-49 years age-group(4).

Everywhere in the world HIV is transmitted through fairly limited number of mechanisms.HIV is predominantly a sexually transmitted disease worldwide. Heterosexual transmission is responsible for most HIV infections in poor countries (5). 90% of global total infections are caused by heterosexual transmission (6). Women are biologically more prone to HIV infection than men in terms of any single act of unprotected sex with an infected partner with the male- to female transmission of the virus being 2 to 4 times higher than the female to male transmission among such sero-discordant couples. Women are physically more susceptible to HIV infection than men. Data from number of studies suggest that male to female transmission is about twice as likely in comparison to female to male transmission(7). In India, women account for around one million out of 2.5 million estimated number of people living with HIV/AIDS (8).Various factors are involved in heterosexual transmission like frequent change of sexual partners ,unprotected sexual intercourse ,presence of STD ,social vulnerability of women and young people (9).

Risk of transmission with transfusion from HIV infected donor is 95% (10). HIV can be transmitted from mother to infant, in utero, intrapartum , post partum and by breast feeding (11) The probability of transmission of HIV from mother to infant ranges from 15-25% in industrialized countries and from 25-35% in developing countries(4). Around 10% of all HIV infections worldwide are attributed to injecting drug use (12).

This epidemic unfortunately remains an epidemic of women. Globally , AIDS related illnesses are the leading cause of death among women of reproductive age. At the end of 2012 it was estimated that 52 percent of people living with HIV and AIDS in low- and middle-income countries are women (13). Of all HIV infections in India, 39% (8.16 lakh) were among women (4).The global incidence of AIDS in women can be ultimately attributed to disadvantaged social position of women throughout most of the world .Most HIV infections among women who do not engage in sex work, in rural and urban areas, are attributable to their husbands' risky behavior .It is estimated that about 30 million men in India buy sex on a regular basis while the social and cultural limits placed on women's sexuality imply that a majority of women abstain from sex before marriage and post marriage remain monogamous (14). In Cambodia ,which has highest prevalence rates of HIV in South East Asia ,there is decrease in the prevalence rate among sex workers while those among married women are on the rise (14).

In India, marriage is regarded as the destiny of all women. Most married women have very little control over resources, mobility, leisure time and even their own body. Cultural norms do not allow a woman to show desire or question sexual behaviour of her partner. The burden of home care has always been on the woman. The woman has the least access to health care, due to her low status in the marital family. This is related to both cultural ideas as well as unavailability of health services. Marriage does not always protect a woman from becoming infected with HIV. Many new infections occur within marriage or long-term relationships as a result of unfaithful partners. A study of 400 women attending an STI clinic in Pune, India showed that25 percent were infected with STIs &14 percent were HIV-positive &93 percent of these women were married(13).

The position of women in society, socialization of boys and girls, segregation, the culture of silence and the taboo on discussions about sex contribute to the increased vulnerability of the low-risk groups i.e. women. Women, whether, married/single, divorced/ widowed, sex workers or seasonal migrants or adolescent girls, are most susceptible to the negative impacts- direct or indirect, i.e. infected or affected, of HIV and AIDS owing to the dynamics between the structural and cultural factors which places them in a weaker and vulnerable position than most others(14). So the present study was planned to assess the awareness levels among housewives regarding modes of transmission of HIV/AIDS and also related misconceptions were explored.

Material & methods

A community-based study was conducted in field practice area of Rural Health Centre (R.H.C.), Pohir and Urban Health Centre (U.H.C.), Kirti Nagar, Ludhiana of Department of Community Medicine, Dayanand Medical College and Hospital, Ludhiana. The study was done for a period of one year . The field practice area covers 10 villages under R.H.C. & 10 colonies under U.H.C.. A family folder system exists for the total population covered in both the field practice areas. From the existing family folders, a list of housewives in the age group 15- 49 years was prepared for each village/colony. A serial number was allotted to each of the housewife. Simple random sampling technique was used for selection of the subject by adopting lottery method. Housewife was contacted from the sample list prepared as mentioned above. A question "Have you heard of HIV/AIDS? was asked to be subject. If the response to the question was "No", then subject in the next contiguous house was taken so as to complete the sample size. Thus a sample of 1000 housewives comprising 50 housewives from each 10villages & 50 housewives from each 10 colonies were selected. A pre-designed & pre-tested questionnaire was used to assess the awareness levels of housewives regarding modes of transmission of HIV/AIDS .Also prevalent misconceptions among housewives regarding modes of transmission of HIV/AIDS were explored. The data collected were statistically analyzed using SPSS 16.0 version.

Results

Table – 1 Distribution of subjects according to education

Education	Rural (n=500)	Urban (n=500)
Illiterate	41 (8.2)	75 (15.0)
Primary	02 (0.4)	08 (1.6)
Middle	201 (40.2)	135 (27.0)
Matric	164 (32.8)	163 (32.6)
10+2	67 (13.4)	67 (13.4)
Graduate	18 (3.6)	43 (8.6)
Postgraduate	07 (1.4)	09 (1.8)

Figures in parentheses indicate percentages
χ^2 = 37.029, df = 6, p =0.000, significant

The socio-demographic profile of the study revealed that in the rural area, out of 500 subjects, 46.6% were in the age group of 25-34 years and 17.2% were in age group of 40-49 years. Whereas in urban area, out of 500 subjects, 47.4% subjects were in the age group of 25 -34 years and 13.0% subjects were in the age group of 40-49 years. It was observed that 40.2% of subjects in the rural area were educated till middle, 32.8% till matric and 8.2% of them were illiterates. In contrast of 32.6% subjects in the urban area were educated upto matric while 27% were educated till middle and 15% were illiterates (Table1). In the present study, maximum number of husbands of the subjects were educated till matric in both rural and urban area. Husbands of 6.2% subjects in rural and 5.8% subjects in urban area were

Table – 2. Knowledge of subjects about various routes of transmission of HIV/ AIDS

Route of Transmission	Rural (n=500)			Urban (n=500)			Comparison
	Yes	No	Don't know	Yes	No	Don't Know	
Unprotected Sexual Intercourse	498 (99.6)	-	02 (0.4)	498 (99.6)	-	02 (0.4)	χ^2 = 0.000, df=1, p=1.000. non-significant
Blood Transfusion	415 (83.0)	55 (11.0)	30 (6.0)	408 (81.6)	63 (12.6)	29 (5.8)	χ^2 = 0.619 df=2, p=0.734 non-significant
Infected Mother to Fetus	346 (69.2)	124 (24.8)	30 (6.0)	370 (74.0)	110 (22.0)	20 (4.0)	χ^2 = 3.642, df=2, p=0.162 non-significant
Drug Addicts	138 (27.6)	295 (59.0)	67 (13.4)	142 (28.4)	303 (60.6)	55 (11.0)	χ^2 = 2.320, df=2, p=0.509 non-significant
Routine injections in Hospital	88 (17.6)	336 (67.2)	76 (15.2)	106 (21.2)	343 (68.6)	51 (10.2)	χ^2 = 7.644, df=2, p=0.054 significant

Figures in parentheses indicate percentage

Table 3 Knowledge about routes of transmission of aids according to educational status of subjects

(a) Rural

Education	N	Knowledge about routes of transmission of AIDS				
		Unprotected sexual intercourse	Infected mother to fetus	Blood transfusion	Drug addicts	Routine injections
Illiterate	41	41 (100.0)	14 (34.1)	16 (39.0)	04 (9.8)	02 (4.9)
Primary	02	02 (100.0))	-	-	-	-
Middle	201	200 (99.5)	134 (66.7)	162 (80.6)	36 (17.9)	29 (14.4)
Matric	164	163 (99.4)	123 (75.0)	147 (89.6)	55 (33.5)	39 (23.8)
10+2	67	67 (100.0)	52 (77.6)	66 (98.5)	30 (44.8)	14 (20.9)
Graduate	18	18 (100.0))	17 (94.4)	17 (94.4)	09 (50.0)	04 (22.2)
Post-Graduate	07	07 (100.0)	06 (85.7)	07 (100.0)	04 (57.1)	-
Total	500	498	346	415	138	88

b) Urban

Education	N	Knowledge about routes of transmission of AIDS				
		Unprotected sexual intercourse	Infected mother to fetus	Blood transfusion	Drug addicts	Routine injections
Illiterate	75	75 (100.0)	36 (48.0)	40 (53.3)	09 (12.0)	07 (9.3)
Primary	08	08(100.0)	08 (100.0)	07 (87.5)	04 (50.0)	03 (37.5)
Middle	135	134(99.3)	91 (67.4)	106 (78.5)	30 (22.2)	31 (23.0)
Matric	163	162 (99.4)	133 (81.6)	145 (88.9)	46 (28.2)	36 (22.1)
10+2	67	67 (100.0)	55 (82.1)	61 (91.0)	28 (41.8)	13 (19.4)
Graduate	43	43 (100.0)	39 (90.7)	40 (93.0)	20 (46.5)	11 (25.6)
Post-Graduate	09	09 (100.0)	08 (88.9)	09 (100.0)	05 (55.6)	05 (55.6)
Total	500	498	370	408	142	106

found to be illiterates. The main occupation of the husbands of subjects in rural area was found to be farming whereas husbands of the subjects in urban area were mainly labourers. Majority of subjects in rural (89.8%) and urban (93.4%).area belonged to middle socio-economic group.

It was observed in the study that majority of subjects in rural (99.6%) and urban (99.6%) had knowledge about unprotected sexual intercourse as route of transmission. Infected mother to fetus, blood transfusion were cited as route of transmission by 69.2% and 83.0% subjects in rural and 74% and 81.6% subjects in urban area, respectively. No significant difference was found between the responses of subjects in rural and urban area.

Less than one-third subjects in rural (27.6%) and urban (28.4%) area responded that drug addicts act as route of transmission of AIDS(Table 2). Surprisingly few subjects in rural (17.6%) and urban (21.2%) area reported routine injections act as a route of transmission of AIDS. A statistically significant difference was found between the responses of rural and urban subjects (p=0.054).

Table 3 depicts knowledge of subjects in rural and urban area about routes of transmission of AIDS according to education status. Most of the subjects in the rural as well as urban area knew that unprotected sexual intercourse is a route of transmission of AIDS. The study depicted that higher is the educational level, more is the awareness about modes of transmission on AIDS among the study subjects. Among the post-graduates in rural area , all of them knew that blood transfusion can lead to AIDS but surprisingly no postgraduate subject knew that even routine injection can result in transmission of AIDS. Whereas in urban area, all the postgraduate subjects knew that blood transfusion can result in transmission of AIDS. Routine injections can lead to transmission of AIDS was mentioned by 55.6% of these subjects in urban area.

Among the illiterates in rural area , mother to child transmission of AIDS was known to 34.1% subjects & 4.9% subjects mentioned routine injections as a route of transmission of AIDS. While illiterates in urban area 48% responded that infected mother can transmit HIV/AIDS to the fetus. Only 12% & 9.3% illiterate subjects (Table 3) knew that routine injections & drug addicts can result in transmission of AIDS, respectively.

It was observed in the study that almost all of the subjects in both rural & urban areas knew that unprotected sexual intercourse can lead to HIV/AIDS transmission irrespective of their socio-economic status .Overall, knowledge of subjects regarding routes of transmission of AIDS was observed to increase with increase in socio-economic status.

The study revealed that handshaking was mentioned by 43.9% illiterate subjects in rural area whereas 54.7% of illiterate subjects in urban area mentioned that handshaking can result in transmission of AIDS as shown in Table 4. Misconception that sharing clothes or food , toilet can transmit AIDS was responded by 43.9% illiterate subjects in rural area. Whereas in urban area , 54.7% illiterate subjects mentioned that sharing clothes / food can result in transmission of AIDS while 52% subjects responded that sharing toilets with infected person can transmit AIDS.

Surprisingly, none of the post graduate subject in the rural area had any such misconception (Table 5). Whereas in urban area, 22.2% post graduate subjects had misconception that handshaking can result in transmission of AIDS. Sharing clothes or food or toilet with infected

Table – 4. Misconceptions about transmission of HIV/AIDS

Misconception	Rural (n=500)			Urban (n=500)			Comparison
	Yes	No	Don't know	Yes	No	Don't Know	
Handshaking	149 (29.8)	317 (63.4)	34 (6.8)	243 (48.6)	235 (47.0)	22 (4.4)	χ^2 = 38.615, df=2, p=0.000 significant
Sharing Clothes/Food	152 (30.4)	314 (62.8)	34 (6.8)	245 (49.0)	233 (46.6)	22 (4.4)	χ^2 = 37.672 df=2, p=0.000 significant
Sharing of Toilets	149 (29.8)	316 (63.2)	35 (7.0)	235 (47.0)	239 (47.8)	26 (5.2)	χ^2 = 32.610, df=2, p=0.000 significant

Figures in parentheses indicate percentage

Table – 5.Misconceptions regarding aids according to education status of subjects

a) Rural

Education	N	Misconceptions		
		Hands Shaking	Sharing Clothes / Food	Sharing Toilets
Illiterate	41	18 (43.9)	18 (43.9)	18 (43.9)
Primary	02	-	-	-
Middle	201	71 (35.3)	73 (36.3)	72 (35.8)
Matric	164	48 (29.3)	49 (29.9)	48 (29.3)
10+2	67	09 (13.4)	09 (13.4)	09 (13.4)
Graduate	18	03 (16.7)	03 (16.7)	02 (11.1)
Post graduate	07	-	-	-
Total	500	149	152	149

(b) Urban

Education	N	Misconceptions		
		Hands Shaking	Sharing Clothes / Food	Sharing Toilets
Illiterate	75	41 (54.7)	41 (54.7)	39 (52.0)
Primary	08	06 (75.0)	06 (75.0)	06 (75.0)
Middle	135	93 (68.9)	93 (68.9)	90 (66.7)
Matric	163	71 (43.6)	72 (44.2)	67 (41.1)
10+2	67	23 (34.3)	23 (34.3)	24 (35.8)
Graduate	43	07 (16.3)	08 (18.6)	07 (16.3)
Post graduate	09	02 (22.2)	02 (22.2)	02 (22.2)
Total	500	243	245	235

Figures in parentheses indicate percentages

person can result in transmission of AIDS was mentioned by 22.2% post graduate subjects.

Discussion

The present study reflects that of 65.6% subjects in rural area & 64.8% belonged to younger age group (less than 35 years). It was observed that 40.2% of subjects in the rural area were educated till Middle, 32.8% till Matric and 8.2% of them were illiterates. In contrast of 32.6% subjects in the urban area were educated upto Matric while 27% were educated till Middle (Table1). However illiterates were found to be 15% in urban area. More number of illiterates in urban area in our study could be because urban field practice area comprises of native as well as migrant population from Bihar, Uttar Pradesh.

Heterosexual transmission accounts for the majority of cases of HIV/AIDS in India. It was observed that majority of subjects in rural & urban area in the present study had knowledge that unprotected sexual intercourse is a mode of transmission of AIDS. 83.0% subjects in rural & 81.6% in urban area mentioned that blood transfusion can also be the mode of transmission of AIDS. In the study done by Subramaniam, Ezhil and Gupte in Tamil Nadu (2004), 51.5% rural women mentioned that unprotected sexual intercourse can result in AIDS transmission and 21.5% responded that AIDS can spread through blood transfusion (15) Subjects in our study especially from rural area were watching serials like "Jasoos Vijay" on Doordarshan which is involved in spreading awareness about AIDS .This could be the reason that subjects were more aware about this aspect of HIV/AIDS.

Awareness of sexual mode of HIV transmission is almost universal. Most of the study subjects were aware about sexual modes of transmission of HIV/AIDS as observed in studies by Nwokoji & Ajuwon (2004) in Nigeria(16), , Balk and Lahiri (1997)in 13 Indian States(17).

In the present study it was observed that awareness about vertical transmission was comparatively low. 69.2% subjects in rural and 74% in urban area responded that AIDS transmission can occur from infected mother to fetus. In National Family Health Survey-3, it was seen that less than half of women (47%) knew that HIV can be transmitted from mother to her baby. It could be because literacy level in our study was comparatively higher than that in NFHS-3 sample, where over half (55%) of women aged 15-49 were literate (18).

Present study showed that almost similar number of subjects both in rural (27.67%) as well as urban (28.4%) responded that drug addiction acts as mode of transmission of AIDS in the present study. The difference was found to be statistically significant. However in another study by Sudha, Vijay and Lakshmi (2005) conducted among general public to determine their awareness levels, attitudes & beliefs towards HIV/AIDS in Hyderabad, found that 43.5% general public knew that IVD users could get infected with HIV(19) .Low level of awareness in our study could be because subjects were housewives only whereas in study by Sudha, Vijay and Lakshmi subjects included people from all walks of life i.e. students, businessmen, cultivators etc. Very few subjects (17.6% in rural and 21.2% in urban) mentioned that routine injections can result in AIDS transmission. However in a rapid survey among college students by Verma and Pavri (1988) in Bombay & Pune, 76% mentioned that unsterilized needles & syringes can result in AIDS transmission (20). This could be because of difference in educational background among both study subjects.

The present study reflects that higher is the educational level, more is the awareness about modes of transmission on AIDS which is in accordance with other studies e.g. Raheel *et al*

(2007) in Pakistan (21), Nkya *et al* (2006) in Tanzania (22).

It is also observed that with increase in socio-economic status, awareness about modes of transmission increases. Another study by Singh, Chaudhary and Haldiya (1997) in Jaipur among pregnant women observed similar findings (23).Results observed in our study are as expected that awareness levels of individuals are expected to increase with increase in educational level & with rise in socio-economic status.

Misconception that HIV/AIDS can be transmitted by shaking hands with person suffering from AIDS was observed to be more in urban (48.6%) than rural (29.8%) subjects in this study. In the Study by Singh, Chaudhary and Haldiya (1997) in Jaipur it was observed that 19.1% pregnant women had the misperception that HIV can be transmitted by shaking hands(23). The reason could be the difference in educational background of subjects & lack of access to information regarding HIV/AIDS. The present study reflects the misconception that a person can get AIDS by sharing clothes or food of infected person was responded by 30.4% subjects in rural as compared with 49.0% subjects in urban area. Ayranci (2005) in a study done among individuals aged 11-83 years in Turkey observed similar findings. 33.7% of the respondents had the misconception that AIDS can be contracted by sharing clothes of infected person and 37.7% believed that AIDS can be transmitted by sharing food with infected person (24) . In the present study 29.8% of the subjects in rural and 47% in urban area had the misconception that HIV/AIDS can be transmitted by sharing toilets. However in the study by Ayranci (2005) done in Turkey, it was observed that 33.4% of the subjects had the misconception that AIDS can be contracted through sharing public toilets(24) The difference could be because of different background of study subjects.

Overall, misconceptions were found to be more among urban than rural subjects in our study. This could be because illiterates were observed to be more in urban area (15%) as compared to rural area (8.2%) & also in addition to native population, in urban area comprises of migrant population also.

Misconceptions about transmission of AIDS were observed to decrease with increase in education status & socio-economic status in the present study. Similar findings were reported in the study done among individuals in Turkey by Ayranci (2005).It was reported that those with higher education disagreed significantly more with all the misconceptions compared to less educated persons(24).

Conclusions

The study revealed that majority of subjects (99.6%) in rural as well as urban area knew that AIDS can be transmitted by unprotected sexual intercourse. The subjects with higher education had more correct knowledge on routes of transmission of HIV/ AIDS as compared to less educated & illiterate subjects in the rural as well as urban area. Misconceptions like handshaking (48.6%, 29.8%), sharing clothes/ food (49%,30.4%), sharing of toilets (47.0%,29.8%) resulting in transmission of the disease, were more in urban subjects than rural subjects. However, as the education level rose, misconceptions regarding transmission of AIDS were observed to decrease among subjects in rural and urban area.. Marriage the cultural high point in life of Indian women has always been thought of as protective factor nurturing the traditional way of life.. HIV/ AIDS educational programes have limited effects on married women who don't perceive risk of HIV from

their spouses. Programmes need to be updated within their continuum so as to take into account the needs of the target group to better ensure the requisite behaviour change. Culturally appropriate campaigns need to be targeted using every channel of communication as prevention of HIV/AIDS is crucially dependent on social and sexual behaviour of the population, aside from factors such as level of awareness, availability and accessibility of services.

CONFLICT OF INTEREST - Nil
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Original Research Article

A cross sectional survey on tobacco consumption and implementation of tobacco related legislations in small town of Gujarat, India

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Abstract

Objectives: 1.To determines the prevalence of tobacco consumption in petlad town and thereby produce estimates for other small town of Gujarat. 2. To assess implementation status and impact of tobacco control act.
Materials and Methods: This community based cross sectional survey was conducted in Petlad town, Dist. Anand, Gujarat, India. Petlad town has four administrative zones and each zone has 3 administrative wards. It was decided to take face to face interviews in four directions from ward office within each ward. The questionnaire was developed based on questionnaire used by centre for Disease Control.
Observation and Results:
Total prevalence of tobacco consumption was 43.7% in our study. Raw tobacco (30.9%) and mava/masala (43.7%) were the most common products among different type of products consumed. 60.6% tobacco consumers started consumption before the age of 21 years. With reference to implementation of cigarettes and other tobacco products act, only 60.3% tobacco consumers were aware that smoking is not allowed at public places. 49.6% tobacco consumers believe that tobacco products are sold to minors.
Conclusions: After ban on gutkha, tobacco consumers have shifted to raw tobacco and mava/masala. Selling of tobacco products to persons having age less than eighteen is still present and it requires strict actions like sting operations. Advertisement of zero percent nicotine products is one type of indirect advertisement and should be stopped.

Keywords: De-addiction, Prevalence, Tobacco products, Tobacco products act.

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Introduction

Tobacco use is a major preventable cause of premature death and disease, currently leading to over six million deaths worldwide and causing hundreds of billions of dollars of economic harm annually in the form of excess health-care costs and lost productivity[1]. The vast majority of these deaths are projected to occur in developing countries.

Nearly 275 million adults (15 years and above) in India (35% of all adults) are users of tobacco, according to the Global Adult Tobacco Survey India, 2009-10. About 8–9 lakh people die every year in India due to diseases related to tobacco use.[2] Majority of the cardiovascular diseases, cancers and chronic lung diseases are directly attributable to tobacco consumption. Almost 40 percent of tuberculosis deaths in the country are associated with smoking.[3]

India's tobacco problem is more complex than probably that of any other country in the world, with a large consequential burden of tobacco-related disease and death. The most prevalent form of tobacco use in India is smokeless tobacco and commonly used products are khaini, gutkha, mava-masala (mixture of arecanut with tobacco and slaked lime), snuff, betel quid with tobacco and zarda.
Tobacco consumption is quiet common in the state of Gujarat, but not much data are available related to prevalence, quitting patterns and law enforcement related to tobacco advertisement, selling and consumption in small towns of Gujarat.
Objectives of the study were as follows: 1.To determine prevalence of tobacco consumption in petlad town and thereby produce estimates for other small town of Gujarat. 2. To assess implementation status and impact of tobacco control act. 3. To know attitude and practices of tobacco addicts about de-addiction. The findings of the study will help in designing tobacco control strategies including law enforcement and understanding epidemiology of tobacco consumption in small towns of Gujarat.

Materials and Methods

This community based cross sectional survey was conducted in Petlad town, Dist. Anand, Gujarat, India which is the urban field practice area of Community Medicine Department, Pramukhswami Medical College.
Participant Enrolment
The total population of the town is 55,330 as per census survey 2011 and is situated in central Gujarat, India. Petlad town has four administrative zones and each zone has 3 administrative wards within 9.19 square km of area. From each zone one ward was selected by random sampling. Thus total four wards (ward no 2, 6, 8, 12) were selected. It was decided to take interviews in four directions from ward office within each ward. In each direction all households residing in petlad town, having the age above 10 year and who give informed consent were included in the study. Interviews were conducted until forty interviews are not completed in each direction.
A total of 600 participants were required from the city which constitute the study population for estimating the prevalence of tobacco consumption. The sample size was calculated using the formula $[4*p*(1-p)]/L^2$ where p represents estimated proportion which was taken as 40% with relative precision of 4%.[5]
The participants who enter the study but not completed the interview or do not give answer to all questions were considered as non-response.
Data Collection
The questionnaire was developed based on questionnaire used by centre for Disease Control.[4]The questionnaire was pre-tested for length and content on 30 respondents and necessary modifications were done as required. The questionnaire was divided into three sections: 1. Socio-demographic characteristics: Age, Sex, level of education etc. 2.Measuring prevalence of tobacco consumption. Information about consumers who made quit attempt and received Health Care Assistance for same. 3. Information about noticing anti-smoking messages, health warnings on tobacco products and advertisement of tobacco products.
Different type of tobacco product consumed in India includes Raw Tobacco, Gutkha, Mava/Masal, Snuff etc. Raw Tobacco consist dried tobacco leaves which are crushed and mixed with slaked lime and chewed as quid. Gutkha consist areca nut pieces coated with powdered tobacco which also contains scented chemicals. Mava is a combination of areca nut pieces, scented tobacco and slaked lime that is

mixed on the spot and chewed as quid. Dry snuff is mixture of tobacco powder and some scented chemicals.

Most of the questions were close ended. After selecting household, face to face interview was conducted in the participants' local language by trained investigators. Interview of each family member was taken in isolation to ensure confidentiality.

Data analysis

Office Excel 7.0 and STATA 12.0 were used to carry out data entry and statistical analysis. Univariate analysis was done to assess the distribution of the sample and to compute overall prevalence of chewing of tobacco and smoking of tobacco. Simple and two-way cross tabulations and chi-square analysis were main analytical methods.

Ethical issues

The study protocol and informed consent were approved by the HREC Pramukhswami Medical College. Written informed consent was collected from each participant at enrolment. Participation in the study was completely voluntary.

Results

Socio-demographic profile of our study population shows that there were 336 (56.0%) males and 264 (44.0%) females. Out of 600 surveyed population proportion of 21-30 years, 31-40 years and 11-20 years age group was 29.3% (176), 23.3%(140) and 18.7%(112) subsequently. Educational status shows that proportion of illiterate, primary level educated and secondary or higher level educated was 26.7%(160), 38.7%(232) and 34.7%(208) subsequently.(Table.1.)

Prevalence of tobacco consumption increases with age. 41-59 year age group was having highest prevalence 59.0% (46), while 11-20 year age group was having lowest prevalence 21.4%(24). The difference was significant statistically. 8.66% (52) consumers have age less than 18 years. Prevalence of tobacco consumption among males (57.2%, n=192) was significantly higher than prevalence among females (26.5%, n=70). Prevalence among illiterate, primary level educated and secondary or higher level educated persons was 45.0%, 47.4% and 38.5% subsequently but difference was not significant statistically.

Out of 338 non-consumers only 14 (4.14%) were consuming tobacco in past and then quitted it. Rate of de-addiction was higher among males (6.25%, n=10) than females (2.06%, n=4). (X^2 = 8.75, p = 0.01). Surprisingly rate of de-addiction was higher

Table 1: Distribution of the participants on the basis of Age, Sex and Education

	Tobacco consumers (N=262)	Non-consumer (N=338)	Total (N= 600)
Age			
11-20	24 (21.4)	88 (78.6)	112
21-30	68 (38.6)	108 (61.4)	176
31-40	78 (55.7)	62 (44.3)	140
41-50	46 (59.0)	32 (41.0)	78
>50	46 (48.9)	48 (51.1)	94
		(X^2=41.07, p=0.00)	
Sex			
Female	70 (26.5)	194 (73.5)	264
Male	192 (57.1)	144 (42.9)	336
		(X^2=56.37, p=0.00)	
Education			
Illiterate	72 (45.0)	88 (55.0)	160
Primary	110 (47.4)	122 (52.6)	232
Secondary/ higher level	80 (38.5)	128 (61.5)	208
		(X^2=03.63, p=0.16)	

Table 2: Details about Tobacco consumption by gender

	Male (N=192)	Female (N=70)	Total (N=262)
Types of Tobacco			
Bidi/cigarette	26 (13.5)	0 (0)	26 (9.9)
Gutkha	30 (15.6)	18 (25.7)	48 (18.3)
Raw Tobacco	71 (37.0)	10 (14.3)	81 (30.9)
Snuff	6 (3.1)	28 (40.0)	34 (13.0)
Masala/Mava	43 (22.4)	8 (11.4)	51 (19.5)
others	16 (8.3)	6 (8.6)	22 (8.4)
		(X^2= 78.13 P=0.00)	
Age of initiation (in years)			
<=15	49 (25.5)	3 (4.3)	52 (19.8)
16-20	76 (39.6)	31 (44.3)	107 (40.8)
21-25	34 (17.7)	10 (14.3)	44 (16.8)
26-30	11 (5.7)	8 (11.4)	19 (7.3)
31-35	14 (7.3)	4 (5.7)	18 (6.9)
>35	8 (4.1)	14 (20.0)	22 (8.4)
		(X^2 =30.10 P=0.00)	
Frequency in a Month (in days)			
1-9	12 (6.2)	6 (8.6)	18 (6.9)
10-19	8 (4.1)	0 (0)	8 (3.1)
>19	172 (89.6)	64 (91.4)	236 (90.1)
		(X^2= 3.34 P =0.19)	
Frequency in a Day			
<=3	99 (51.6)	50 (71.4)	149 (56.9)
4-6	27 (14.0)	14 (20.0)	41 (15.6)
7-9	16 (8.3)	2 (2.9)	18 (6.9)
>=10	50 (26.0)	4 (5.7)	54 (20.6)
		(X^2= 17.23 P=0.00)	

among illiterate (9.09%, n=8) than literate (4.69%, n=6). (X^2 = 11.49, p = 0.02). Among male tobacco consumer most common type of tobacco product consumed was raw tobacco (37.0%, n=71) followed by mava/masala (22.4%, n=43). Among female consumers most common product was snuff (40.0%, n=28) followed by gutkha (25.7%, n=18). Among young age group (11-30 years) most common product was raw tobacco (25.0%, 38.3%) while among elder group bidi (21.7.4 %) and snuff (21.74%) were common. (X^2 = 71.99, p = 0.00). Snuff was most common among illiterate while raw tobacco was most common among literate (30.0% & 42.5%). (X^2 = 31.66, p = 0.00).

16-20 years of age was most common period among both males (39.6%, n=76) and females (44.3%, n=31) during which tobacco consumption was started. Among males 49 males (25.5%) started consumption before 16 years of age in contrast to females in whom only 3 (4.3%) females started consumption before 16 years of age. Among illiterate, primary level educated and secondary or higher level educated group 14.3%, 20.9% and 23.7% started consumption before 16 years of age subsequently. (X^2 = 32.98, p = 0.00). Among all educational groups most common age for initiation of tobacco consumption was 16-20 years of age and there was no difference.(Table.2)

More than 19 days per month was the most common frequency of tobacco consumption among both males (89.6%, n=172) and females (91.4%, n= 64). Situation was similar in all age groups and different educational groups.

51.56 %(n=99) males consume tobacco less than four times per day while among females percentage was 71.4% (n=50). The frequency of tobacco consumption per day was higher among males. Difference was not significant among different educational groups. 83.33% out of all tobacco consumers within 11-20 year age group consume tobacco less than four times per day. Among other age group same

Table 3: Information about implementation of tobacco control initiatives

	Tobacco consumers (N=262)	Non consumers (N=338)	Total (N=600)
In last 30 days have you noticed informatory messages about dangers of smoking?			
Yes	214 (81.7)	266 (78.7)	480 (80.0)
No	28 (10.7)	36 (10.7)	64 (10.7)
No response	20 (7.7)	36 (10.7)	56 (9.3)
		(X^2 =1.60 P=0.45)	
Did you notice any health warnings on tobacco packages?			
Yes	228 (87.0)	230 (68.0)	458 (76.3)
No	22 (8.4)	48 (14.2)	70 (11.7)
No response	12 (4.6)	60 (17.8)	72 (12.0)
		(X^2=32.56 P=0.00)	
In last 30 days, have you noticed any advertisement which promoted tobacco product?			
Yes	70 (26.7)	94 (27.8)	164 (27.3)
No	192 (73.2)	244 (72.1)	436 (72.7)
		(X^2= 0.08 P= 0.77)	
Is shopkeeper, from whom you are purchasing tobacco products, selling tobacco products to Minors?			
Yes	130 (49.6)	68 (20.1)	198 (33.0)
No	106 (40.5)	160 (47.3)	266 (44.3)
Don't know	26 (9.9)	110 (32.5)	136 (22.7)
		(X^2= 73.82 P=0.00)	
Is smoking legally allowed at public places like bus station, railway station, garden, school etc.?			
Yes	54 (20.6)	44 (13.0)	98 (16.3)
No	158 (60.3)	182 (53.9)	340 (56.7)
Don't know	50 (19.0)	112 (33.1)	162 (27.0)
		(X^2 =17.09 P=0.00)	

percentages were in the range of 43.48% to 61.76%. Thus younger age group was having low tobacco consumption frequency per day. Among persons having tobacco consumption frequency 7-9 and > 10 per day, 100% and 75% persons started consumption before age of 21 year subsequently. Similar percentage in low frequency group (< 3 and 4-6 per day) was 53.69% and 48.78% subsequently. Thus those who consume more frequently usually start at an early age. (X^2=39.90 p=0.00).

132 (50.38%) tobacco consumers said that they tried to quit tobacco during past twelve months. Among different age group and among different sex group difference in attempt to quit tobacco was not significant. Percentage of persons who made attempt to quit tobacco increased with level of education. Rate of attempt to quit tobacco consumption was 40.0%, 47.3% and 65.0% among illiterate, primary level educated and secondary or higher level educated subsequently.(X^2=10.26 p=0.00). However, only six consumers (2.3%) visited doctor or other health care provider for de-addiction.

71.76% of tobacco addicts (n=188) were motivated to quit tobacco from warning labels on tobacco packages. Rate of motivation was higher among 11-20 year age group (83.33%, n=20) and 21-30 year age group (79.41%, n=54) after that it gradually declined. (X^2=21.95 p=0.00). Rate of motivation was significantly higher among males (76.0%, n=146) than among females (60.0%, n=42).(X2=10.97 p=0.00). Rate of motivation significantly increased with status of literacy from 27.8% among illiterate to 40.4% among secondary or higher level educated. (X^2=20.5 p=0.00).

Total 204 persons out of 262 tobacco addicts showed willingness to accept de-addiction services. Rate of willingness was low among illiterate (57.1%, n=40) compared to primary (85.4%, n=94) and secondary or higher level educated (85.0%, n=68). The rate of willingness among male and female was not different significantly. The different age group showed that rate of willingness declined with advancing age being highest among 11-20 years

(91.7%, n=22) and lowest among more than 50 year age group (60.8%, n=28). (X^2=20.5 p=0.01).

80% of surveyed population was aware about anti-tobacco messages on television. There was little difference in proportion of persons aware about anti tobacco messages among tobacco consumers (81.7%) and non consumers (78.7%). Rate of awareness increases with literacy status being lowest among illiterate (62.0%, n=98) and highest among secondary or higher level educated (94.2%, n=196). (X2=59.9, p=0.00). Difference in rate of awareness among male (83.9%, n=282) and female (75.0%, n=148) was significant at 5% level. (X^2=7.56 p=0.023). With increasing age group, rate of unawareness increased from 8.9% in 11-20 year age group to 14.9% in above 50 year age group. (X^2=35.5 p=0.00).(Table 3.)

87% tobacco consumers noticed warnings on tobacco packages against 68% non-consumers. Male consumers (91.7%) were more aware about warnings than female consumers (74.3%). (X^2=13.80 p=0.00) Rate of noticing warning was not significantly different among different age groups. (X^2=19.26 p=0.00)

Tobacco promoting advertisements were noticed by 27.3% of survey population. The difference in noticing advertisement was not significant among consumers and non consumers. 32.7% of male noticed advertisements against 20.4% females only. (X^2=11.23 p=0.00). Illiterate, Primary level educated and Secondary or higher level educated persons showed rate of noticing advertisements 17.1%, 23.3% and 38.5% subsequently. (X^2=22.3 p=0.00). 11-20 year age group showed higher rate of notice (44.6%) than any other age group. (X^2=39.39 p=0.00).

Out of 262 tobacco addicts 49.6% (n=130) said that tobacco products are sold to minors. 56.7% of surveyed population was aware about the legislation that smoking is not allowed at public places. Rate of awareness was higher among consumers (60.3%) than non-consumers (56.7%). Similarly rate was higher among males (22.0%) than females (9.1%) (X^2=40.38 p=0.00). Literacy status was also having positive impact on awareness about legislation with rate increasing from 11.4% among illiterate to 21.2% among secondary or higher level educated. (X^2=29.79 p=0.00). Percentage of persons having knowledge about legislation was highest in the age group 31-40 years (28.6%).

Discussion

Our study showed that total prevalence of tobacco consumption was 43.7%.(57.1% in male and 26% in female) while report of Global Adult Tobacco Survey (GATS) –Gujarat shows that 46% male and 11% female were current tobacco consumers[6].

GATS data suggests that smoking is the predominant practice among adult males, while smokeless tobacco use is more common among females. In our study we observed that only 13.5% male consumers were smokers and not a single women was consuming smoked tobacco. 86.5% of male consumers were consuming smokeless tobacco.

Raw tobacco and mava/masala were most common product among different type of tobacco products consumed. After ban on Gutkha in the country, most probably consumers have shifted to raw tobacco and mava/masala. Similar action is also required against these products.

In the present study, prevalence of tobacco consumption in the age group of 11-20 years was 21.4% which is lower than study conducted by Naresh et al (reported 33% prevalence)[7].

Even if there is law which bans selling tobacco products to minors, in our study 8.7% consumers were having age less than 18 years. 49.6% tobacco consumers were believes that tobacco products are sold to minors. It suggests poor implementation of the law. Implementation of the law can be strengthened by using dummy customers or sting operations.

Most common age period during which persons start consuming tobacco was 11-20 years (61%) similarly findings from GATS-Gujarat indicate that 41% initiate tobacco before the legal age of 18 years.

Usually it is difficult to achieve the de-addiction and sometimes results are not satisfactory therefore our efforts should be directed towards younger age groups with the aim that they do not adopt habits of tobacco consumption. Our de-addiction efforts should also give priority to 11-20 years age group as frequency of consumption is less among this age group. Another reason for above recommendation is that those who have higher frequency of per day tobacco consumption usually have started consumption at an early age.

Rate of de-addiction was also low in our study demanding for more availability and accessibility of de-addiction services. It can be concluded from our results that persons were willing to quit tobacco but they do not have proper guidance about availability of appropriate de-addiction services. As a result very few persons visit doctors. There is strong need for marketing besides availability and accessibility of de-addiction services. Significant number of consumers themselves made attempt to quit tobacco and they can be selected initially for de-addiction services to get better results.

Anti-tobacco messages on television were observed by most of our surveyed population suggesting good implementation of the law promoting broadcasting of anti-tobacco messages. However implementation of the law banning smoking at public places would be poor as suggested by the result that only 60% tobacco consumers were aware about it. Even though both direct and indirect tobacco promoting advertisements are totally banned few persons in our study observed the advertisements. It might be advertisements of zero percent nicotine products but still it is indirect advertisement and requires action.

This study had limitations. The data used in this report were based on self-report thus are subject to misclassification bias, however estimates obtained from population based surveys that use self report are generally valid. The data were also subjected to recall bias specifically for age at initiation and duration of tobacco consumption. In our country particularly in villages and town tobacco consumption is socially unacceptable in women and young people, household based estimate of tobacco consumption prevalence made on the basis of self-report might underestimate the true prevalence.

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Original Research Article

A Community Based Comparative Study on Gender Preferences, Awareness and Attitude regarding Sex Determination among Women of North Karnataka

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Abstract

Background: Gender preferences for children have been widely observed around the globe. In India, female infanticide has been practiced for centuries. The problem is getting worse as scientific methods of detecting the sex of the fetus and for termination of pregnancy are improving. This is happening across the country in spite of a massive influx of legal regulations banning the same. In this light, the study of awareness of same becomes very relevant and needs to be evaluated.

Objective: To study awareness and attitude regarding sex determination and gender preferences of rural and urban women

Materials and methods: A descriptive cross-sectional study was conducted by interviewing married women of reproductive age group (15-49 years) attending general OPD and antenatal clinics in rural (N=488) and urban (N=400) area. Data was analyzed using Statistical Package of Social Sciences (SPSS) version 19.0, results expressed in percentages and chi-square test.

Results: Male preference was more in rural area (49.4%) as compared to urban area (34.25%) which was statistically significant (X^2= 20.60, df=1, p< 0.001). Only 223 (45.7%) rural participants when compared to 344 (86%) urban participants were aware of the fact that sex determination is a crime. 172 (35.1%) rural women and 300(75%) of urban women knew the method of fetal sex determination among them. 72 (14.8%) of rural women and 287 (71.5%) of urban rightly knew ultrasonography as the method of fetal sex determination.

Conclusion: There is a necessity to gear the efforts against this social malady by intensive IEC campaigns for raising awareness about rules forbidding pre-natal sex determination and strict implementation of PNDT Act especially in rural areas.

Keywords: Sex discrimination, Gender preferences, PCPNDT Act

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Introduction

Skewed sex ratio is an issue of major concern and has long-term social and demographic consequences. At the heart of the problem is the low status of women in society, a patriarchal social framework and value system based on son mania.(1) The devaluation of girls and discrimination against them manifests itself in several ways. Discrimination begins even before birth with the practice of sex selection. This has been stated as one of the key reasons for the low child sex ratio (CSR). The problem is getting worse as scientific methods of detecting the sex of the foetus and for termination of pregnancy are improving. This seems to be fulfilling the long felt need of the people through female feticide.(1) Despite the existence of

preconception and prenatal diagnostic technique(PNPCDT) Act, there is dire need to strengthen their law since the number of conviction is despairingly low as compared to burden posed by this crime.[2] Hence the present study is conducted with the objective to assess the gender preference and awareness and attitude regarding sex determination among women of reproductive in rural and urban areas of North Karnataka.

Materials and Methods

A descriptive cross-sectional study was conducted between August 2014- January 2015 among all married women of reproductive age group (15-49 years) attending general OPD and antenatal clinics in three urban and three rural field practice areas of Belagavi. At a confidence interval of 95%, considering the population of three rural and three urban health centres, the sample size using "survey system'' software was N= 400 and N= 488 for urban and rural areas respectively. [Available at http://www.surveysystem.com/sscalc.htm developed-Creative Research Systems]. A pre-designed pretested questionnaire was used to obtain information. Informed written consent was taken from every participant. Data analysis was done with SPSS 19.0 version expressed as percentages, Chi-square test for proportions. All married women with at least one child were included as study participants and non permanent residents of the respective places were excluded from the study.

Results

A total number of 488 women from rural areas and 400 women participants from urban areas were studied.. Majority of women were in the age group of 25-29 years both in rural (28.3%) and urban (30.25%) areas. (Table-1) In this

Table–1: Baseline characteristics of study participants

Baseline Characteristic	Rural (N=488) Women(%)	Urban (N=400) Women(%)
Age:		
15 - 19	54 (11)	6 (1.5)
20 – 24	102 (21)	99 (24.74)
25 -29	138 (28.3)	121 (30.25)
30 – 34	87 (17.8)	77 (19.25)
35 – 39	65 (13.3)	40 (10)
40 – 44	26 (5.3)	37 (9.25)
45 – 49	16 (3.3)	20 (5)
Religion:		
Hindu	282 (57.8)	253 (63.2)
Muslim	200 (41)	133 (33.3)
Christian	6 (1.2)	14 (3.5)
Education:		
Illiterate	229 (46.73)	60 (15)
Primary school	164 (33.77)	122 (30.5)
Secondary school	88 (17.9)	151 (37.8)
PUC/ Diploma	7 (1.6)	59 (14.7)
Graduation	0	8 (2)
Family type:		
Nuclear	110 (22.5)	201 (50.25)
Joint	378 (77.5)	199 (49.75)
Socio-economic class		
Class I	0	8 (2)
Class II	18 (3.6)	61 (15.2)
Class III	335 (68.7)	92 (23)
Class IV	69 (14.2)	177 (44.3)
Class V	66 (13.5)	62 (15.5)

Table-2: Association of Gender Preference with residential area of the participants

Gender Preference	**Rural**	**Urban**
No Preference	247(50.6)	263(65.75)
Male Preference	241(49.4)	137(34.25)

X^2= 20.60, df= 1, p<0.001

Table-3: Awareness among participants regarding fetal sex determination

Variable	Rural	Urban
Fetal sex determination is considered as a crime		
Yes	223 (45.7)	344 (86)
No	265 (54.3)	56 (14)
Place where sex determination can be done		
Aware	122 (25)	328 (82)
Private hospital	108 (22)	236 (59)
Govt. Hospital	2 (0.5)	18 (4.5)
Both	12 (2.5)	74 (18.5)
Not aware	366 (75)	72 (18)
Method of sex determination		
Knows	178 (36.5)	300 (75)
USG	72 (14.8)	287 (71.5)
With needle	6 (1.2)	18 (4.5)
Others	100 (20..5)	0
Does not know	310 (64.5)	100 (25)
Punishment or penalty for fetal sex determination		
Known	165 (33.8)	316 (79)
Not known	323 (66.2)	84 (21)
Type of punishment given for fetal sex determination		
Fine	21 (4.3)	39 (9.7)
Imprisonment	70 (14.4)	132 (37.2)
Both	3 (6.1)	98 (24.5)
Not known	71 (14.5)	47 (11.75)
Doctor is punished for this crime		
Yes	151 (31)	316 (79)
No	337 (69)	84 (21)
Type of punishment given for doctor		
Cancellation of registration	4 (0.8)	94 (23.5)
Fine	70 (14.5)	11 (2.8)
Imprisonment and fine	57 (11.7)	75 (18.8)
Not known	20 (4)	136 (34)
Variable	Rural	Urban
Fetal sex determination is considered as a crime		
Yes	223 (45.7)	344 (86)

study the association of gender preference with the residential area male preference was more among rural women (49.4%) when compared to urban women (34.25%) which was statistically significant (X^2= 20.60, df= 1, p<0.001). (Table-2)In our study the level of awareness among women participants regarding fetal sex determination was done . Majority of the urban women (86%) as compared to rural women (45.7%) knew that fetal sex determination is a crime. Regarding the place of fetal sex determination the level of knowledge was more in urban women(82%) compared to rural women(25%).(Table-3)The most common answer was private hospital as the place of fetal sex determination from both rural(22%) and

Table-4: Attitude of participants regarding fetal sex determination

Particulars	Rural (N=488)	Urban (N=400)
Should sex determination of fetus be done? Yes No	157(32.2) 331(67.8)	106(26.5) 294(73.5)
Should law against sex determination be strictly enforced? Yes No	212(43.5) 276(56.5)	256(64%) 144(36%)
Should person (doctors, staff and relatives) performing sex determination be punished severely? Yes No	198(40.57) 290(59.5)	260(65) 140(35)

urban(59%) women. Study revealed that 172(35.1%) rural women and 300(75%) of urban women knew the method of fetal sex determination among them 72(14.8%) of rural women and 287(71.5%) of urban rightly knew ultrasonography as the method of fetal sex determination. Only 165(33.8%) of rural women were aware of the fact that fetal sex determination is a punishable offence/penalty and its implications whereas 316(79%) of women in urban area were aware of the same. Imprisonment was the most common answer in both rural (14.4%) and urban (37.2%) women as the type of punishment. Only 151(31%) rural women were aware that even doctor is punished for this crime whereas majority of the urban women 316 (79%) were aware of the punishment. shows the attitude of the participants regarding fetal sex determination. Majority of the urban women 274 (68.5%) said fetal sex determination should not be done, 256 (64%) said law against it should be strictly enforced and 260 (65%) said the person involved with it may it be the doctor, staff or relatives should be punished (Table – 4)

Discussion

Our study showed that gender preference for a male child was more among rural women similarly a study conducted at Jamnagar, Gujarat by Vadera B *et al*.[(1)] showed preference to male child was higher among rural (70.68%)than in the urban women(53.28%) which was statistically significant also Narayan Das had also observed a similar difference between the rural and urban population in his study of Sex Preference and Fertility Behavior.[(3)] Our study also showed that 86% of urban women were aware that prenatal sex determination is a crime, 35.1% rural women and 75% of urban women knew the method of fetal sex determination among them 72 14.8% of rural women and 71.5% of urban knew ultrasonography as the method of fetal sex determination Similarly a study by Shrivastava S *et al*.[(4)] conducted at Bareilly revealed that 80% females were aware of prenatal sex determination and 67% unaware of PNDT Act. A study which was conducted by Ghose S *et al*.[(5)] found that 95% of the pregnant women were aware of the availability of a method for intrauterine sex determination. When they were asked whether female feticide was punishable, 53% of the participants said that they were aware that doing so was punishable under the law. A study by Puri S *et al*.[(6)] in slums of Chandigarh showed that only 11.66% of subjects had knowledge where sex determination can be done and 65.5% agreed to

the fact that it is a crime, but acquaintance about the legal punishment and penalty for sex determination was found to be only 16.3%. Our study also brings into light that 32.2% of rural women and 26.5% of urban had the attitude that fetal sex determination is justified which is similar to the study done by Shrivastava S *et al*.[4] conducted at Bareilly. In our study son preference was seen more in rural women indicating association of education with son preference in the participants. Also the increased awareness about the illegality and immorality of gender selection may be a reason for not having or not disclosing so strong bias toward son preference in urban women as has been mentioned in the other studies. The often dramatic recent rises in sex ratios at birth have been largely attributed to these new technologies. The technology is however, not equally available to all parents. Access is socially and economically structured so that outcomes reflect more than just son preferences. In some places the economic relationship is more curvilinear where middle income couples have both adequate means to access the technology and stronger son preferences to motivate its use; lower income couples lack the means and higher income couples, the desire for sons.

CONCLUSION:

This study explores son preference is prevalent in both urban and rural areas more so in rural areas. To bring the skewed sex ratio to normal there is dire need to strengthen the PCNDT Act, moreover it is necessary to educate women, empower them with inheritance rights and carry out intensive information, education and communication campaigns. Media must be encouraged to generate mass awareness on sex selective acts and their legal implication.

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Original Research Article

Effect of Iron Supplementation in Partial Breastfed Infants- A Randomized Control Trial

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Abstract

Objectives: To study effect of iron supplementation on growth, hematological profile, and morbidity pattern in partial breastfed infants. **Methods:** This is a Randomized double blind study Setting: Teaching hospital Lucknow. Methods: Partially breastfed infants were enrolled at 3½ months±2wks after obtaining approval from Institutional ethical Committee and informed consent from parents They were randomized to receive iron and placebo respectively for a duration of 5 months daily .Follow up was done at 6 and 9 months . Growth and hematological parameters and morbidity data if any were recorded. **Results:** Weight, length, growth velocity and increments in anthropometric indices did not differ statistically among supplemented groups. At 9 months, hematological indices Mean Corpuscular Value (MCV) was 80.66+4.55 and 78.63+4.43 (t 2.20,p value 0.03) ,Serum iron was 102.58±18.43 and 79.41±22.96 (t=2.94,pvalue 0.004*) ,Serum ferritin was 78.52±21.02 and 61.20±16.85(t= 4.96 p-value 0.0001*) in supplemented and non-supplemented group respectively. There was a significant decrease in Upper Respiratory Tract Infections (URTI) and incidence of pneumonia was slightly lower in iron-supplemented group. However occurrence and duration of other morbidities did not differ statistically among groups. Conclusion: Iron supplementation does not effect growth in partial breastfed infants . However stores were optimized and incidence of upper respiratory tract infections decreased in these infants.

Keywords: iron supplementation, growth, breastfed

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Introduction

Iron deficiency (ID) and iron-deficiency anemia (IDA) is a worldwide concern in infants and children. Among children in the developing world, iron is the most common single-nutrient deficiency [1]. Prevalence of anemia in age group 6-36 months is 79.2%[2]. Thus iron supplementation is an essential strategy for anemia prevention in areas where prevalence is high [3].

International consensus is that optimal breastfeeding practice for infants and young children consists of exclusive breastfeeding for the first six months of life, with continued breastfeeding up to two years of age and

beyond. However, many mothers do not comply with these recommendations due to cultural beliefs and traditions [4] and maternal work conditions [5]. The result is that many infants worldwide are only partially breast-fed from an early age [6]. Coefficient of uptake of iron in breast milk is as high as 50%, whereas it is less than 12% from cow milk derived formula [7].

NFHS-3 data shows that exclusive breastfeeding rates in children under six months are only 46.4 %. Hence partial breastfeeding might contribute to iron deficiency in infants. Iron supplements are often prescribed during infancy but their benefits and risks have not been well documented. However, a positive impact of iron supplementation on growth of infants has been reported [8,9]. There is paucity of studies on effect of iron supplementation on non-anemic infants .The unresolved debate and controversy over the effect of iron on growth, hematological profile in infant and morbidity prompted us to do this study.

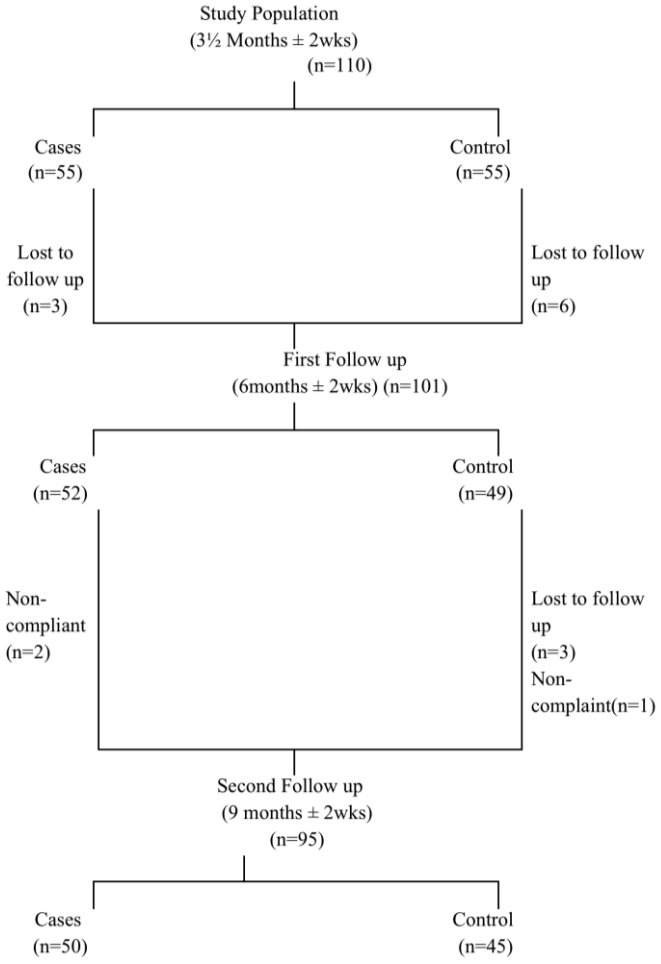
Methods

This is a randomized double blind placebo controlled iron supplementation trial study at Era's Medical College and hospital Lucknow after obtaining approval from Institutional ethical Committee and written and informed consent from Subjects.

Study Population:

In Present study, a total of 115 infants were enrolled at age of 3½ Months ± 2wks and follow up done at 6 months ± 2 wks and 9 months ± 2wks.After the enrollment these subjects were randomized into two groups A and B on the basis of random numbers generated by computer. Both groups received coded bottles identical in color, taste and external appearance. The bottles contained 150 ml of solution, which was sufficient for supplementation for a period of 5 months daily.

Figure 1. Flow chart of Study population of this study



Group A received iron (ferrous ascorbate containing 10.5 mg/ml of elemental iron) as a supplement in a dose of 2 mg/kg/day of elemental iron and the dose was adjusted according to each infants weight. The Group B received a placebo. Compliance with the intervention was monitored by asking the mothers whether the drops were given and by measuring the amount of fluid remaining in the bottle when the patient came for the follow-up.

Inclusion Criteria: All normal Term AGA babies who were partially breastfed were included. 'Partial breastfeeding' was defined as giving a baby(0-6 months) some breastfeeds, and some artificial feeds, either milk or cereal, or other food.

We have specified breastfeeding outcomes according to the categories of breastfeeding

defined by the WHO [10,11].

Exclusion Criteria: Infants having Iron deficiency as per WHO criteria (hemoglobin value <11gm/dl) , H/o bloodtransfusion ,H/o significantmorbidityrequiringhosptalization,

H/o Iron supplementation ,on iron fortified formula feeds, non-compliant subjects (Those babies who were included in the study group but their compliance for medicine/placebo was poor) on follow-up were excluded. Compliance of Subjects who received the study drops <75% of the days during the study period were considered "non-compliant" .

Total 116 were enrolled . Six babies were excluded because two refused for blood investigations, three had Hb<11mg/dl and one had h/o hospitalization in the past.

Blood samples were analyzed at 3½ mo ± 2 wks and 9 mo± 2 wks for hemoglobin(Hb), Packed Cell Volume (PCV),red cell indices i.e. mean corpuscular volume (MCV), mean corpuscular hemoglobin (MCH), mean corpuscular hemoglobin concentration (MCHC) and Serum Ferritin, Serum Iron, total iron binding capacity (TIBC), Transferrin saturation, C-reactive protein (CRP) (for ferritin control).At 6 mo ± 2 wks only Hb ,PCV and MCV,MCH and MCHC were done.

Weight, length head circumference was taken of all infants at enrollment and at subsequent follow-ups. Growth Velocity was calculated by weight gain by infant's over a desired time interval at follow-ups

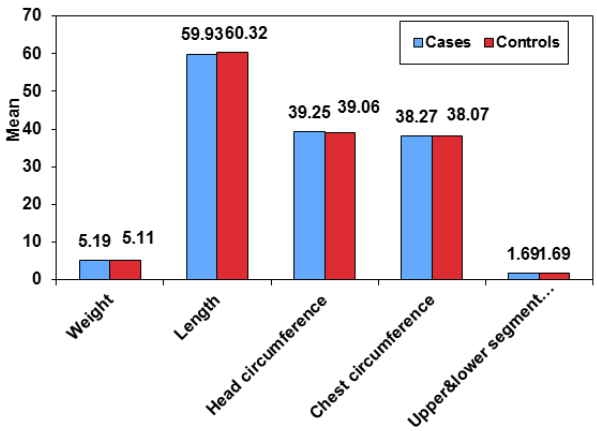
Morbidity data was collected on each follow up by providing a proforma (written in local language) for mother to record the infants stool frequency, consistency and cough, cold, fever, vomiting and any other symptom of illness.

The data was collected on a pre-designed questionnaire All the data was entered in Microsoft Excel computer program and checked for any inconsistency. The descriptive analysis was done using proportions, means and standard deviations. The Chi-square test was used to compare the dichotomous/categorical parameters between cases and controls. The repeated measures analysis (ANOVA) was used to test the differences in means from baseline to follow-ups and cases & controls. The unpaired t-test was used to compare the means of the parameters between cases and controls. The paired t-test was used to compare the means of the parameters from baseline to different follow-ups. The p-value <0.05 was considered as significant.

Results

Out of 110 infants included at 3½ mo ± 2 wks, 55 were cases and 55 controls .Baseline anthropometric measurements in both groups were comparable. On follow up at 6 and 9 months change in anthropometric parameter in both groups was not statistically significant as shown in Table 1.

Figure.2. Anthropometric measurements of the infants at baseline



Growth velocity per month i.e. linear growth/change in length from 3 months to 6 months and 9 months was 0.46±0.07 and 0.29±0.04 for cases and 0.45±0.07 and 0.28±0.03 respectively as shown in Table 2.

Table 1: Comparison of anthropometric parameters from baseline to 9 months in cases and controls

	Cases	Controls	t	p-value
Weight				
Baseline	5.18±0.64	5.11±0.69	0.20	0.84
6 months	6.51±0.65	6.49±0.63	0.04	0.97
9 months	7.77±0.64	7.73±0.62	0.28	0.78
Length				
Baseline	59.93±1.96	60.32±2.24	1.46	0.15
6 months	64.78±2.19	65.48±2.35	0.94	0.15
9 months	69.65±2.13	66.51±2.14	0.92	0.05
Head circumference				
Baseline	39.25±1.10	39.06±1.18	0.32	0.75
6 months	41.49±1.23	41.28±1.02	1.10	0.27
9 months	43.83±1.00	42.67±1.00	0.74	0.46

*Significant

Table 2: Growth velocity per month from 3 months to 6 and 9 months

Follow-ups	Cases	Controls	t	p-value
6 months	0.46±0.06	0.45±0.07	0.88	0.38
9 months	0.29±0.04	0.28±0.03	0.12	0.91

*Significant

Table 3: Comparison of haematological parameters from baseline to 9 months in cases and controls

	Cases	Controls	t	p-value
Hemoglobin				
Baseline	11.79±1.01	11.88±0.93	0.51	0.61
6 months	12.17±0.82	11.95±0.91	0.87	0.39
9 months	12.27±0.79	12.10±0.95	0.98	0.33
PCV				
Baseline	35.47±3.33	35.65±2.97	0.20	0.84
6 months	36.91±2.46	36.18±2.52	0.62	0.54
9 months	37.42±1.90	36.78±2.75	1.33	0.19
F and p-value	10.17, 0.0001*	2.81, 0.07		
MCV				
Baseline	77.30±7.67	78.79±5.45	1.86	0.07
6 months	79.37±4.79	78.60±4.03	0.17	0.86
9 months	80.66±4.55	78.63±4.43	2.20	0.03*
MCH				
Baseline	27.83±4.64	27.99±3.69	0.184	0.854
6 months	28.73±4.91	27.34±3.91	1.515	0.133
9 months	29.13±4.35	28.37±4.18	0.866	0.389
MCHC				
Baseline	33.94±1.27	34.06±1.42	0.63	0.53
Serum ferritin				
Baseline	67.73±27.61	66.34±17.49	1.61	0.11
9 months	78.52±21.02	61.20±16.85	4.96	0.0001*
Serum iron				

	Cases	Controls	t	p-value
Baseline	95.33±24.50	101.23±18.12	0.98	0.33
9 months	102.58±18.43	79.41±22.96	2.94	0.004*
TIBC				
Baseline	280.50±46.77	283.56±43.05	1.06	0.30
9 months	269.78±29.38	281.24±30.76	1.86	0.07
Transferrin saturation				
Baseline	35.27±11.06	36.87±7.97	0.11	0.92
9 months	26.57±7.80	31.38±7.43	0.45	0.66

*Significant

Table 4: Pattern of Morbidity

Follow-up	Cases		Controls		Z	p-value
	No.	%	No.	%		
Diarrhea						
6 months	24	47.1	14	31.1	2.54	0.11
9 months	21	41.2	16	35.6	0.32	0.57
Vomiting						
6 months	10	19.2	8	15.7	2.05	0.13
9 months	9	17.3	10	22.2	2.10	0.12
Fever						
6 months	10	19.2	11	20.0	1.05	0.11
9 months	13	23.6	14	31.1	3.30	0.06
URTI						
6 months	17	33.3	18	40.0	0.46	0.50
9 months	9	17.6	20	44.4	8.14	0.004*
Others						
6 months	3	5.8	5	9.8	1.98	0.08
9 months	4	7.7	4	8.9	0.89	0.56

*Significant, Z-test of proportions

Comparison of hematological parameters from baseline to 9 months in cases and controls is shown in Table 3. Baseline hematological parameters like Hb, PCV, MCV, MCH, MCHC S.Iron and S.Ferritin in cases and controls were comparable with no statistical difference. At 9 months MCV a was 80.66±4.55 and 78.63±4.43 (t 2.20, p –value 0.03), S ,Ferritin was78.52±21.02 and 61.20±16.85(t 4.96, pvalue 0.0001) ,S. Iron was 102.58±18.43 and79.41±22.96(t 2.94,p-value 0.004) in cases and controls respectively which was statistically significant. Pattern of Morbidity like diarrhea, vomiting, fever in cases and control was similar with no statistical difference. However upper respiratory tract infection was significantly decreased at 9 months in cases as compared to controls as shown in Table 4.

Discussion

In our study, no significant difference was observed in Growth parameters of both groups at 6 months and 9 months respectively. This is similar to other studies which support the view that iron supplementation does not affect the growth parameters of children [12,13,14]. However, a positive impact of iron supplementation on growth of infants has been reported [8,9]. The reason could be that they included anemic and malnourished children.Kapur*et al* [15] showed that not only iron supplementation but the change in dietary and nutritional pattern also effects growth. Some studies have also reported a negative impact of iron supplementation on growth in infants [16, 17] .It may be due to greater morbidities in iron replete infants and also possibly because they received a higher dose i.e. the treatment dose instead of supplemental dose of 2mg/kg/day [18].

In our study no significant difference in Hb, PCV, MCH, MCHC, TIBC and Transferrin saturation levels were observed at 6 months and 9 months in both groups. However MCV,SerumEerritin and Serum Iron levels were a found to be significantly higher in intervention group as compared to control group at 9 months .Some studies [19,20,21] showed that iron supplementation significantly increased hemoglobin in infants as they included anemic infants.

A low Mean Corpuscular Volume (MCV) may indicate early/latent iron deficiency that has not yet resulted in anemia[22].The standard reference range for MCV, Serum Ferritin and Serum Iron are wide. Our results show that healthy infants in our study population may have iron deficiency depicted by baseline MCV value towards lower limits of normal range. This latent iron deficiency got corrected in the case group with iron supplements.

In our study no significant difference in diarrhea, vomiting and fever were observed between two groups during follow-up as in other studies .Abdelrazik*et al.* [14] state that iron supplementation significantly increased risk of diarrhea and fever among malnourished infants hence diarrhea may be linked to immunological status of infants rather than oral iron therapy itself. In our study, upper respiratory tract infections significantly decreased with iron supplementation. In a study by Angela de Silva *et al.*[23], it was observed that iron supplementation children in the age range 5-10 yrs significantly improves iron status and reduces morbidity from upper respiratory tract infections in children.

In our study the incidence of pneumonia is seen to be lower in iron supplemented group. Association between lower respiratory tract infections including anemia and iron deficiency has been shown [24,25]. because hemoglobin act as a tissue oxygen buffer which stabilizes the oxygen pressure in tissues.

Like many previous studies, the present study too do not see an impact of iron supplementation on anthropometric growth

pattern, the differences if any observed in a study are more likely to be dependent on overall nutritional status, socioeconomic status[26] and other environmental factors [27]

The role of iron supplementation in partial breastfed infants is to prevent development of anemia . Iron deficiency may be prevented by these early interventions.

The present study highlights the role of iron supplementation on lowering of upper respiratory tract infections and emphasizes the need for iron supplementation in partial breast-fed infants even in absence of anemia because long-term beneficial effects of optimized iron stores are necessary.

Conclusion

Iron supplementation of partial breast-fed infants does not affect their growth but replenishes iron stores . The present study also highlights the role of iron supplementation on lowering of upper respiratory tract infections in these infants.

Competing Interest –none

Funding –none stated.

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Original Research Article

Attitude and Awareness of DOT Providers about TB in Tuberculosis Unit Patiala

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Abstract

Introduction: The Revised National Tuberculosis Control Program (RNTCP), based on the DOTS strategy, began as a pilot in 1993 and was launched as a National Program in 1997. The entire country was covered under DOTS by 24th March 2006. DOT providers are primarily responsible for the success of the programme at the field level by giving a VIP status to the patient in the programme. So the present study was conducted to know the attitude, beliefs and awareness of DOT providers regarding Tuberculosis. **Material and Methods**: A cross sectional study was conducted among the DOT providers of Tuberculosis Unit Patiala from July to September 2008. A pre-tested questionnaire was used to collect the relevant information from all the DOT providers. The questionnaire consisted of questions regarding their awareness and attitude about Tuberculosis, RNTCP and DOTS. **Results**: The study revealed that the majority of them i.e. 52% were in age group of 31-40 years. Forty two (84%) DOT providers were trained. All the DOT providers knew that tuberculosis is a curable disease. Only 78% of the DOT providers knew that sputum examination is the first line investigation to diagnose TB. Source of latest information about tuberculosis to DOT providers were health officials (78%), books (22%), seminars (10%), media (10%). Knowledge about treatment schedule between trained & untrained DOT Providers was found to be Highly Significant ($p<.01$). 40% of DOT Providers had fear of contracting the disease, no DOT provider worked for incentives, 74% said that treatment of TB patient should be kept confidential. 32% said that TB is a social stigma. **Conclusions:** After assessing the knowledge and attitude of DOT providers various gaps were found. So training to DOT providers should be imparted before they start giving DOTS therapy. Reorientation courses should be organized periodically to update the DOT providers regarding TB disease and Treatment. Constant monitoring and supervision is required for proper implementation of DOTS.

Keywords: DOTS, DOT Provider, RNTCP

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Introduction

Though India is the second-most populous country in the world one fourth of the global incident TB cases occur in India annually. In 2012, out of the estimated global annual incidence of 8.6 million TB cases, 2.3 million were estimated to have occurred in India. There is 42% reduction in TB mortality rate by 2012 as compared to 1990 level. Similarly there is 51% reduction in TB prevalence rate by 2012 as compared to 1990 level (1).

India had a national Tuberculosis programme (NTP) in operation since 1962. After initial success, programme didn't attain the

achievements that it promised. Through it only 1/3rd of total patients receiving treatment used to complete the treatment (2).

The Revised National Tuberculosis Control Program (RNTCP), based on the DOTS strategy, began as a pilot in 1993 and was launched as a National Program in 1997. The entire country was covered under DOTS by 24th March 2006 (3). In DOTS, an observer (health worker or a trained community volunteer who is not a family member) watches and supports the patients taking drugs. It is this DOT provider who ensures that the patient takes right drugs in right doses at right interval for right duration. DOT providers should be accessible, acceptable and accountable (4).

The information and education provided by the health care worker and the subsequent relationship of the TB client and their provider is an essential component in the successful treatment of the disease (5). Accurate health educational efforts should not overstate or over dramatize TB, as this could reinforce stigma and denial (6).

More importance should be given to treatment adherence under the current TB control program. Heavy financial burdens, lack of social support, adverse drug reactions and personal factors are associated with non-adherence. Direct observation and regular home visits by health workers appear to reduce the risk of non-adherence. More patient-centered interventions and greater attention to structural barriers are needed to improve treatment adherence (7).

DOT training needs to be imparted to the treatment providers and health personnel of both public as well as private sectors through perusal of training strategies for individual categories of trainees. Existing training limitations need to be resolved. Key training players have played a vital role in initiating the DOTS training process all over country and need to sustain the efforts. Both training and research complement each other and need encouragement for the effective TB control (8).

DOT providers play an important role in success of RNTCP. So the present study was conducted to know:

1. The attitude of the DOT Providers and their beliefs regarding the tuberculosis.
2. The knowledge about tuberculosis among the DOT Providers.
3. The relation between training status of DOT providers and various aspects of TB treatment.

Material and methods

A cross sectional study was conducted in Tuberculosis Unit Patiala from July to September 2008. There are 25 Government DOT centres in T.U. Patiala & there were 52 DOT providers in these centres including pharmacists, nurses, MPHWF, class IV, treatment organizer & radiographer. Out of 52 DOT providers, 50 gave consent for study. A pre-tested questionnaire was used to collect the relevant information from all the DOT providers. The questionnaire consisted of questions regarding their awareness and attitude about Tuberculosis, RNTCP and DOTS. The data collected from all the DOT providers was compiled and analyzed using SPSS 16.0 version.

Results

The present study comprises of sample of 50 DOT providers working in the Government DOT centres of Tuberculosis Unit Patiala. The awareness of DOT providers regarding tuberculosis, Revised National Tuberculosis Control Programme (RNTCP) and Directly Observed Treatment Short course (DOTS) was noted. Information regarding their attitude and beliefs towards tuberculosis was also collected.

Out of 50 DOT providers 37 (74%) were females and 13 (26%) were males. The mean age of the DOT providers was 39.98 years with

Table 1: Profile of DOT providers

Profile of DOT providers		No.	Percentage
Sex	Male	13	26
	Female	37	74
Age	20-30	5	10
	31-40	26	52
	41-50	18	36
	51-60	1	2
Employment status	MPHWF	21	42
	Pharmacist	15	30
	Nurse	5	10
	Class IV	7	14
	T/t Organizer	1	2
	Radiographer	1	2
Experience under RNTCP (in years)	<1	4	8
	1-3	10	20
	4-6	25	50
	7-9	11	22
Training Status	Trained	42	84
	Not trained	8	16
Duration of training	2 days	41	82
	2 weeks	1	2

Table 2: Relation of knowledge about various aspects of TB treatment with the training

Training Status of DOT provider	Knowledge about Treatment Schedule		Total
	Yes	No	
Trained	41	1	42
Untrained	5	3	8
Total	46	4	50
Chi-square- 6.49 (With Yates correction) P < 0.01 (highly significant)			
	Knowledge about sputum samples for follow up		Total
	Yes	No	
Trained	34	8	42
Untrained	1	7	8
	35	15	50
Chi-square – 11.91 (With Yates correction) P < 0.01 (highly significant)			

	Knowledge about way of sputum sample collection for follow up		Total
	Yes	No	
Trained	32	10	42
Untrained	1	7	8
Total	33	17	50
Chi-square – 9.48 (With Yates correction) P < 0.01 (significant)			

standard deviation of 6.09 years. The minimum age of the DOT providers was 25 years and maximum age was 52 years. Majority of them i.e. 52% were in age group of 31-40 years. 44 (88%) of DOT providers were in age group of 31-50 yrs. Maximum DOT providers were MPHWF (42%) while 15 (30%) were pharmacists, 5(10%) were nurses, 7 (14%) were class IV, 1 (2%) was radiographer and 1 (2%) was treatment organizer.

Forty two (84%) DOT providers were trained. Out of 42 trained DOT providers 42% had training from DTO and 40% had training from MOTC. One of the DOT providers had training from NTI Bangalore. Regarding the duration of training, 41 (82%) had training session of two days. One of the DOT providers had training for 2 weeks from National Tuberculosis institute Bangalore.

It was noted that 25 (50%) DOT providers had experience ranging from 4-6 years. Four (8%) had experience of less than 1 year. Ten (20%) and 11 (22%) were having experience of 1-3 years and 7-9 years respectively.

All the DOT providers knew that tuberculosis is a curable disease. All DOT providers knew that TB spread by droplets but simultaneously 8 (16%) DOT providers said that it can spread from mother to child and they comprised 4 pharmacists and 4 MPHWF. Four (8%) DOT providers i.e., 2 pharmacists, 1 MPHWF & 1 class IV said that it can spread via feco-oral route. Four (8%) DOT providers i.e., 1 pharmacist, 2 MPHWF & 1 class IV said that blood route can spread infection while 2 (4%) DOT provider (1 MPHWF & 1 class IV) said it can spread through skin to skin contact. All the DOT providers knew the most important symptom of TB i.e. cough with expectoration and majority (78%) knew about the other symptoms of TB.

48 (96%) DOT provider, said that tuberculosis is more common in lower socio-economic status, while 2 (4%) said that it commonly affects middle class. Only 78% of the DOT providers knew that sputum examination is the first line investigation to diagnose TB. Source of latest information about tuberculosis to DOT providers were health officials (78%), books (22%), seminars (10%), media (10%).

Forty six (92%) of the DOT providers knew that drugs in Intensive Phase are given in thrice weekly doses. While 100% knew that in Continuation Phase treatment is given daily (including pyridoxine). Knowledge about treatment schedule between trained & untrained DOT Providers was found to be Highly Significant (p<.01).

All the DOT providers (100%) used to weigh patient before starting treatment. Forty two (84%) DOT providers considered a contact case if child is <6yr old. 33 (66%) knew and educated the patient about change in urine colour on taking Rifampicin.

39 (78%) of DOT providers knew about the side effects like nausea and vomiting. Thirty three (66%) knew that jaundice is the side effect of ATT. Twenty five (50%), 13 (26%), 12 (24%) and 9 (18%) knew the side effects like itching, vertigo, joint pains and visual disturbance respectively. The most common reason told by DOT providers for default action of the patient was toxicity of drugs (52%) followed by improvement in symptoms (44%). Other reasons for default were change of address (24%), deterioration (12%) and affordability (8%).

40% of DOT Providers had fear of contracting the disease, no DOT provider worked for incentives, 74% said that treatment of TB patient should be kept confidential. 32% said that TB is a social stigma. According to 42% TB patient should be isolated and according to 68% TB patient should use separate utensils. 92% said that TB patient should eat high protein diet. 92% said that the patients taking treatment respect them. Only 22% said that they had difficulty in provision of DOTS.
Health education given by DOT providers on various aspects of TB were: regarding regular treatment (98%), for taking good diet (94%), proper disposal of sputum (92%), covering of mouth while coughing (94%), personal hygiene (90%), cessation of alcohol and smoking (74%).

Discussion

The study comprised of 50 DOT providers in TU Patiala. Out of 50 DOT providers 37 (74%) were females and 13 (26%) were males. The mean age of the DOT providers was 39.98 years with standard deviation of 6.09 years. Maximum DOT providers were MPHWF (42%) because they are the most easily available health care workers at any government health facility to provide DOTS therapy.

The study shows that majority of the DOT providers (84%) are trained under RNTCP. Out of trained DOT providers 41 (82%) had training session of two days. One of the DOT providers had training for 2 weeks & he was a treatment organizer who got training from National Tuberculosis institute Bangalore.

All the DOT providers were having work experience under RNTCP. All the DOT providers knew that tuberculosis is a curable disease. Almost similar results were reported in a study done in New Delhi (9). All DOT providers knew that TB spread by droplets. Similarly a study conducted among General Practitioners in Northern Areas of Pakistan it was found that according to 77 respondents (87.5%), TB was a droplet infection. (10)
48 (96%) DOT provider, said that tuberculosis is more common in lower socio-economic status, while 2 (4%) said that it commonly affects middle class. Similar results were found in a study conducted in Vietnam in 1996. (11)

Only 78% of the DOT providers knew that sputum examination is the first line investigation to diagnose TB. Similarly in a study done among DOT providers at Chennai, Chest X-ray was quoted by 81% while sputum examination was given by 65% as investigations to be done for tuberculosis (12).
In our study the most common source of latest information about TB was health official (78%). This could be because DOT providers in this study are in government DOT centres so they are frequently visited by the health officials and all of them are paramedics so they are not aware of the latest updates of journals and not attending the conferences.

Forty six (92%) of the DOT providers knew that drugs in Intensive Phase are given in thrice weekly doses. While 100% knew that in Continuation Phase treatment is given daily (including pyridoxine). Knowledge about

treatment schedule between trained & untrained DOT Providers was found to be Highly Significant (p<.01). Balambal also found in his study that 78 (80%) out of 97 DOT providers knew the treatment rhythm, intermittent during phase-I and daily during phase-II. (13)

All the DOT providers (100%) used to weigh patient before starting treatment. The knowledge about weight of patient above which additional dose of Rifampicin is needed was present in majority i.e. 84% of DOT providers. Forty two (84%) DOT providers considered a contact case if child is <6yr old. Thirty three DOT providers (66%) knew and educated the patient about change in urine colour on taking Rifampicin.

The most common reason told by DOT providers for default action of the patient was toxicity of drugs (52%) followed by improvement in symptoms (44%). Other reasons for default were change of address (24%), deterioration (12%) and affordability (8%). Similarly Pandit & Choudhary observed that majority of patients on DOT stopped treatment because of toxicity of drugs. The other reasons were feeling better during treatment and lack of knowledge about various aspects of TB and its treatment (14).

40% of DOT Providers had fear of contracting the disease, no DOT provider worked for incentives, 74% said that treatment of TB patient should be kept confidential. 32% said that TB is a social stigma. According to 42% TB patient should be isolated and according to 68% TB patient should use separate utensils. 92% said that TB patient should eat high protein diet. 92% said that the patients taking treatment respect them. Only 22% said that they had difficulty in provision of DOTS. These findings are consistent with the findings of study done by Balambal (2001) that none of the DOT providers worked for compensation. He also found that 72% feel that confidentiality in treatment is needed and only 32% of DOT providers confronted with problems like haemoptysis or breathlessness. (13)

The health education given by DOT providers on various aspects of TB were: regarding regular treatment (98%), for taking good diet (94%), proper disposal of sputum (92%), covering of mouth while coughing (94%), personal hygiene (90%), cessation of alcohol and smoking (74%). Similarly in a study done in New Delhi it was found that 85% of DOT providers proposed coverage of mouth during coughing and sneezing (9).

Conclusions: After assessing the knowledge and attitude of DOT providers various gaps were found. The knowledge and attitude of DOT providers about TB disease and treatment is an important component in disease control. There is a need to impart the training to DOT providers before they start giving DOTS therapy. Reorientation courses should be organized periodically to update the knowledge of DOT providers regarding the TB disease, its diagnosis, treatment and follow up of patients. Constant monitoring and supervision is required by trained staff in Tuberculosis Unit.

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