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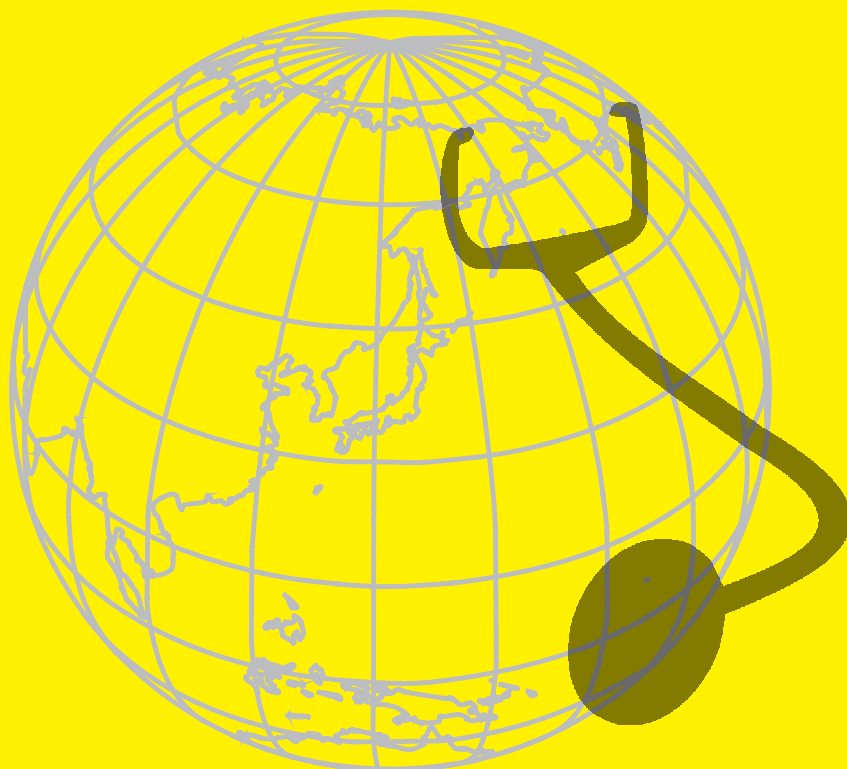
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Efficacy of Mifepristone and Misoprostol in Late First Trimester Medical Abortion, Missed Abortion and Blighted Ovum

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ABSTRACT

AIM and Objectives: To study the safety and efficacy of mifepristone and misoprostol in medical abortion of pregnancies with gestational age 49 to 91 days (7 to 13 wks).

Materials and Method: A prospective study was conducted in patients attending OPD and compared with another group of patients who were not willing for medical abortion and underwent surgical evacuation. Success rate, excess bleeding per vaginum, gastro intestinal side effects were evaluated.

Discussion: Medical abortion is an effective method of termination in the late first trimester viable and nonviable pregnancies.

Conclusion: Medical abortion in these groups of patients, reduces the number of invasive procedure done and has acceptable side effects.

Keywords: Mifepristone, Misoprostol, Late First Trimester Abortion, Missed Abortion And Blighted Ovum

INTRODUCTION

Medical termination of pregnancies with Mifepristone and Misoprostol in gestational age upto 63 days^{1,2} and in second trimester is well documented³.

Missed abortion, blighted ovum and pregnancies with gestational age 64 to 91 days often require surgical evacuation. Medical termination in these patients will avoid an invasive procedure, avoids anaesthesia, decreases the chances of infection, complications like cervical laceration and uterine perforation.

MATERIALS AND METHOD

After obtaining ethical clearance, and informed consent from the patients a prospective study was

conducted at PSGIMSR & Hospitals during the period Jan 2011 – June 2012. 120 pregnant women seeking termination of pregnancies with gestational age 49 to 91 days (7 to 13 wks) and patients with missed abortion and blighted ovum were included. This group was compared with another group of 120 similar patients who were not willing for medical termination and wanted surgical evacuation with concurrent sterilization.

Inclusion Criteria & Risk Factors

Patients who had undergone previous LSCS, were included, Hypothyroidism and auto immune disease and Rh negative women were included.

Exclusion Criteria

Patients with severe anaemia, multiple gestations, incomplete abortions, molar pregnancy, undiagnosed adnexal mass, hypersensitivity to prostaglandins and those not willing for medical abortion were excluded from the study.

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METHODOLOGY

Gestational age was calculated with patients Last menstrual period and confirmed by ultrasound.

120 patients in the study group were given mifepristone 200mg orally. After 48 hrs patients were recalled and 1st dose of 600mcg misoprostol was administered vaginally. If the products of conception were not expelled, 2nd and 3rd dose of misoprostol 400 mcg was administered vaginally at an interval of 4 hrs total maximum dose of misoprostol administered was 1400mcg. Surgical evacuation was done if the patient did not expel the products, or had excessive bleeding and for retained products. Ultrasound was done on the next day for those patients who did not expel after the maximum dose. The remaining patients had ultrasound after one week. Comparison group of patients had 400 mcg of misoprostol administered vaginally and underwent surgical suction evacuation and check curettage after 4 hrs and ultrasound was done after a week.

RESULTS

Patients were in the age group 18 to 35 yrs in the study. Age did not influence the outcome.

Table 1: Parity

Parity	Study Group	Comparison Group	Total
Primigravida	57	45	102
Multigravida	63	75	138
Total	120	120	240

Table 2: Risk factor.

Risk	Study Group	Comparison Group	Total
Nil	80	79	159
Present	40	41	81
Total	120	120	120

Table 3: Types of cases.

Type of cases	Study Group	Comparison Group	Total
Missed abortion	55	61	116
Blighted ovum	34	29	63
MTP	31	30	61
Total	120	120	240

In the study group 45.83% of cases were missed abortion, 28.3% were blighted ovum and 25.8% were those requesting medical termination of pregnancy. This was almost similar to the comparison group consisting of 50.8% missed abortion, 24.1% blighted ovum and 25% requesting MTP.

Table 4: Misoprostol dose vs parity.

Dose	Primigravida	Multigravida	Total
600 microgram	13	11	24
1000 microgram	29	33	62
1400 microgram	15	19	34
Total	57	63	120

P VALUE = 0.742 and not significant.

20% of patients required 1 dose. 51.6% patients required 2 doses. 28.4% required 3 doses.

Table 5: Misoprostol dose vs retained products in ultrasonogram.

Dose	USG: Cavity empty	USG: Retained products	Total
600 microgram	24	0	24 (100%)
1000 microgram	57	5	62 (91.9%)
1400 microgram	17	17	34 (50%)
Total	78	22	120

Table 6: Success rate in different abortions

	Total number	Complete expulsion	Success %
Missed abortion	55	45	81.8%
MTP	31	23	75%
Blighted ovum	34	30	88.2%

Success rate in surgical evacuation group was 98.4%

Average dose to expulsion time was 7 hrs 37 minutes in medical abortion group and 4 hrs in suction evacuation group. No significant difference was observed in the failure rate in patients with gestational age 49 to 63 days and 63 days to 91 days.

DISCUSSION

Mifepristone inhibits the action of progesterone. The dose of mifepristone initially prescribed for Medical abortion was 600 micrograms. Effectiveness of lower dose of 200 micrograms of misoprostol was analysed by Raymond et al in their study of 87 trials.²

Misoprostol is a prostaglandin analogue. It is economical and readily available. It is easily stored and does not require refrigeration. But it is a potent teratogen.

Parity did not influence the dose of misoprostol required. Patients who expelled the products of conception with 600mcg of misoprostol had no retained products. Whereas those who required 1000 and 1400 mcg of misoprostol had retained products in 8.1% and 50% of patients and required suction evacuation and check curettage respectively.

In our study, success rate with complete expulsion in medical abortion group was 81.8% in missed abortions, 75% in MTP and 88.2% in blighted ovum group. Whereas in the comparison group the success rate was 98.4%. Ashok et al reported 5.4% in medical abortion group and 2.1% in surgical group required second procedure⁴. Hamoda et al reported suction evacuation was required in 4.2% of patients⁵. Coughlin et al in their study on patients with missed abortion and blighted ovum reported success rates of 70.5% in 600mg mifepristone group and 66.7% in 200 mg mifepristone group⁶. Ultrasound was done after 10 days in their study. Dalenda et al reported success rate of 80.8% in 400 mcg oral misoprostol group and 77.4% in 800mcg intravaginal misoprostol group⁷. Bracken et al reported 89% success rate in pregnancies with gestational age 84 to 84 days⁸. Their first dose of vaginal misoprostol was 800 mcg.

In our study side effects in medical abortion group consisted of excessive bleeding per vaginum in 4.16% patients and required surgical evacuation. None required blood transfusion. 6.6% patients had abdominal cramps. Dalenda et al reported abdominal pain in 71% of patients who were administered 400mcg misoprostol orally and in 43.8% patients who had vaginal administration of single dose of 800mcg misoprostol⁷. In our study 5.8% patients had rise in temperature. However 83% patients had no side effects in our study.

Average cost per patient for medical termination was Rs 680/- and for the comparison group it was Rs.1200/-. But the patients who required surgical evacuation in the study group had to incur extra cost for the procedure.

CONCLUSION

Mifepristone and Misoprostol are effective for late first trimester abortions, missed abortions and blighted ovum. It is a non invasive method with few side effects. It is important that the patients are followed up till abortion is complete. 8% of patients who required 1000mcg misoprostol and 50% of patients who required 1400 micrograms of misoprostol required surgical suction evacuation. Higher the dose of misoprostol required greater is the need for suction evacuation.

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NSI: Knowledge & Practice among Healthcare Workers

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ABSTRACT

A descriptive survey was done to assess knowledge & practice regarding NSI, & to find out the correlation between knowledge & practice among 100 health care workers like nurses, lab technicians of Private Hospitals, Pokhara, Nepal through purposive sampling. Self-administered questionnaire as demographic proforma, knowledge, and practice questionnaire were used. Majority of health care workers were females (93%) with mean age of 22.66 years (± 3.1). Forty two percent had wrong concept about the meaning of NSI. There were only 35% of workers who dispose the sharps in cardboard box where as 65% used wrong place. Only 22% had a proper practice of disposal of sharp box when it is 3/4th full. While finding a used needle on the floor after closing the box with sharp only 38% use a new box which is the correct means. Seventy nine percent of workers expressed that, they never received any training in the prevention &/ or treatment of NSI. There was a positive correlation between knowledge & practice scores ($p = 0.004$).

Keywords: Needle Stick Injury, Knowledge, Practice, HCW

INTRODUCTION

NSI (needle stick injury) is a punctured wound set by a needle point, other sharp instruments or objects. This is a major risk factor to transmit blood-borne diseases through the passage of the hepatitis B virus (HBV), the hepatitis C virus (HCV), and the Human Immunodeficiency Virus (HIV), the virus which causes AIDS. There are various causes of needle stick injuries as while drawing blood, administering an intramuscular or intravenous drug, or performing other procedures involving sharps, during needle recapping and as a result of failure to place used needles in approved sharps containers. Penetrating accidents of the surgeon or assistant with the scalpel or other sharp instruments are also handled as a needle stick injury¹.

A study conducted on health care of Kathmandu Medical College and Teaching Hospital showed that 4% and 61% of health care workers, respectively, were unaware of the fact that hepatitis B and hepatitis C can be transmitted by needle-stick injuries. 52 subjects (74%) had a history of needle-stick injuries and only

21% reported the injuries to the hospital authority. The survey revealed that knowledge of health care workers about the risk associated with needle-stick injuries and use of preventive measures was inadequate.²

According to a study 86% of nurses believe needle stick injuries are underreported, further pointing to a need for needle stick safety education. Several reasons for the underreporting were cited as too busy (36%), follow up time takes too long (23%), afraid of consequences to job (23%), afraid of reporting to health insurance (3%), forgetfulness (3%), don't know that needle stick injuries should be reported (3%), others (9%).³

The basic objective of this study was to assess the knowledge & preventive practices of health care workers on needle stick injury & to find out the correlation between knowledge & practice.

METHOD

In order to achieve the objectives of the study, descriptive survey approach was found to be appropriate. Data Analysis Technique

Data were collected by self-administered questionnaire from Nurses & Laboratory Technician working in Private Hospitals, Pokhara, Nepal. Sample were selected by purposive or judgmental sampling from various general wards (medical, surgical, orthopedic wards), ICU (general ICU, Paediatric ICU, Neonatal ICU, Haemodialysis, Medical ward, Surgical ward, OBG ward, Orthopedic ward, Paediatric ward, Private ward, Skin OPD), Laboratories (Biochemistry, Microbiology, Pathology). The instruments used for data collection were demographic/ professional Information questionnaire, knowledge questionnaire & practice questionnaire.

RESULTS

Hundreds of health care workers were interrogated. They were aged between 18- 34 years with mean age of 22.66 years (± 3.1). These workers were having average 1.85 years of working experience. Among them 89% were nursing staff and 11% were laboratory technicians. It was found that, 82% of health care workers were vaccinated against hepatitis B.

Knowledge questionnaire was composed of 13 multiple choice questions with four options in each. Responses were analyzed as “correct response” & “wrong response” (Table 1).

Table 1: Response of Knowledge Questioner from Health Care Workers

n=100

Sl. No	Items	Right Response(%)	Wrong Response(%)
1	What do you mean by needle stick injury?	58	42
2	Which of the following diseases are transmitted by needle stick injury?	90	10
3	Which of the following criteria falls under Universal Precaution Guidelines?	63	37
4	What should be done with used needles?	64	36
5	Where sharps should be disposed in?	37	63
6	When a needle stick injury occurs, it should be reported or not?	85	15
7	While disposing a box with sharps should wait until it is ___ full.	28	72
8	What should be done to dispose a box with sharp?	62	38
9	What should be done if a used needle is found on the floor after closing the box with sharp?	45	55
10	What is the commonest screening test for HIV?	88	12
11	Post Exposure Prophylaxis (PEP) should be taken after NSI from a patients positive for ___.	83	17
12	If PEP required, it should start maximum within ___ days.	37	63
13	If PEP given what should be done?	93	7

Source: Sample Survey

It was found that though 58% of workers answered the correct meaning of NSI, but 42% of them had concept that NSI is due to only injuries by used needles not with other sharps. Twelve percent of the health care workers were unaware of the fact that hepatitis B, hepatitis C & HIV can be transmitted by needle-stick injury. Majority (63%) of them knew that hand washing, use of gloves, mask, gown, goggles, proper disposal of sharps are the guidelines of Universal precaution of infection but 37% of the workers had the idea that documentation is also added in this guideline which is a wrong concept. Majority (64%) of health care workers knew that used needles should not be re- capped & should be destroyed before

disposal. This study also revealed that 49% of health care workers answered yellow box instead of cardboard box for sharp disposal. Majority (85%) correctly answered that, after a needle stick injury occurs, it should be washed with running water & reported immediately. Regarding the disposal knowledge, it was found that the workers have a fair knowledge except the changing of the disposal box time.

Practice questioner consisted of 10 multiple choice questions. Responses were analyzed and categorized in “correct practice” & “wrong practice”. (Table 2)

Table 2: Response of Practice Questionnaire from Health Care Workers

n=100

Sl. No	Practice questioners	Correct Response(%)	Wrong Response(%)
1	Do you use gloves for phlebotomy (while collecting blood) procedures/ while handling the sharps?	41	59
2	Do you wear gloves while handling any type of sharp instruments?	40	60
3	Do you recap/bent needle after use?	11	89
4	Where do you dispose the sharps?	35	65
5	While disposing a box with sharps you wait until it is ____ full.	22	78
6	What do you do with a box with sharp prior to disposal?	66	34
7	What do you do if you find a used needle on the floor after closing the box with sharp?	38	62
8	Have you ever received training in the prevention &/ or treatment of needle stick injury?	21	79
9	During the past two years have you read a copy of the hospital's health & safety policy on the safe & ethical disposal of clinical waste?	25	75
10	If you get a needle stick injury, what will you do?	85	15

Source: Sample Survey

It was found that, 41% of workers are using gloves during blood collecting, but 50% use gloves only occasionally and 9% said they never used gloves. This study found that most of the workers (89%) have a wrong practice as recapping/bending needle after use though in knowledge it was found that maximum of them knew that needle should not be re-capped. There were only 35% of workers who dispose the sharps in cardboard box where as 65% used wrong place. Only 22% had a proper practice of disposal of sharp box when it is 3/4th full. While finding a used needle on the floor after closing the box with sharp only 38% use a new box which is the correct means. Seventy nine

percent of workers expressed that, they never received any training in the prevention &/ or treatment of NSI. 75% of the health care workers said during the past two years they have not read a copy of the hospital's health & safety policy on the safe & ethical disposal of clinical waste.

While analyzing knowledge and practice level of health care workers regarding needle-stick injuries it was found that in an average the health care workers scored 8.33 (± 1.93) out of 13 in knowledge section where as the scored only 3.84 (± 1.58) out of 10 in practice section (Table 3).

Table 3: Knowledge, Practice scores of Health Care Workers

n= 100

Variables	Range	Score
Knowledge score	3 - 12	8.33 \pm 1.93
Practice score	0 - 7	3.84 \pm 1.58

Source: Sample Survey

Pearson's correlation was checked to assess the correlation between knowledge & practice scores. Result is displayed in Table 6 which denotes that there is positive correlation between knowledge & practice

scores ($p < 0.05$). It denotes that improved knowledge leads to improved preventive practice regarding needle stick injury (Table 4).

Table 4: Correlation of Knowledge with Practice regarding NSI

n=100

variable	Test of significance	Mean	rho- value	p-value
Knowledge	Pearson Correlation	8.33	0.283	0.004*
Practice		3.84		

* Significant (p < 0.05)

DISCUSSION

The circumstances leading to needle-stick injury depend partly on the type and design of the device and certain work practices. The current study found that 36% workers don't know what to do with used needles. This study found that most of the workers (89%) are practicing a wrong practice as recapping/ bending needle after use. The recapping of needles has been prohibited under the Occupational Safety and Health Administration (OSHA) blood borne pathogen standard. ⁶

The present study also revealed that 49% of workers answered yellow box instead of cardboard box for sharp disposal. Regarding the disposal knowledge, it was found that the workers have a fair knowledge except the changing of the disposal box time. 75% of the workers have given wrong answer for this. Considering the lack of proper planning in at least 35% of cases for collection of needle stick and sharps made it potential threatening condition for transmission of blood born infection to the other units and the workers. In this case, having of proper educational program about separation of sharps and needle stick from the hospital garbage is important⁷ In this study found only 35% of workers are disposing the sharps in proper places (cardboard box) where as 65% used wrong place. 78% workers showed wrong practice of changing of a disposing box with sharps.

This study revealed that knowledge of health care workers about the risk associated with needle-stick injuries and use of preventive measures was inadequate. A standing order procedure (SOP) should be formulated regarding needle-stick injuries in all health institutions after this survey. It should outline precautions to be taken when dealing with blood and body fluids. It should also contain reporting of all needle-stick injuries. Health care workers should be made aware of hazards, preventive measures and post-exposure prophylaxis to needle-stick injuries. A hospital-wide hepatitis immunization programme should also be started.

CONCLUSION

The study concludes that nearly fifty percent of health care workers had wrong concept regarding the meaning of NSI. There is a need of more awareness regarding the diseases spread through NSI & preventive measures of NSI. Practice regarding prevention of NSI was not satisfactory. Majority of health workers had NSI more than two times which denotes NSI is a major occupational hazard. Present study shows that improved knowledge leads to an improved practice or vice-versa.

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Conflict of Interest: As per hospital rules and agreement while taking permission, anonymity of the hospitals has been maintained while publishing.

Source of Funding: Self-funding.

Ethical Clearance: Administrative permission was taken from hospital authorities; as well consent was signed by each participant while collecting data.

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Awareness among Youth - a Tool in Reducing their Vulnerability to HIV/AIDS

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ABSTRACT

Background: Reaching youngsters at an impressionable age before they become sexually active can lay the foundation for a responsible lifestyle, including healthy relationships and safe sex habits¹.

Objective: To know the awareness of HIV/AIDS among pre-university [PU] students.

Settings and Design: Study Design - Cross-sectional, Descriptive study. **Duration of study:** 3 months [October 2012 to December 2012]. **Participants:** 300 pre-university students from 2 randomly selected colleges of Davangere city.

Method and Material: A pre-tested, semi-structured anonymous questionnaire was used for the study.

Statistical analysis used: Tests of significance like Pearson's Chi-square test were applied, P values <0.05 were considered significant for outcome variables.

Results: In the present study, majority of the students, 49.3% belonged to the age group 17-18 years. All the students had heard of HIV/AIDS but only 24.33% were able to write full form of HIV & 45% were able to write full form of AIDS. While the majority of the students, 83.3% named sexual route as the mode of transmission, only 31.6% named sharing of syringes and needles, from infected mother to daughter are also the modes of transmission of HIV/AIDS. **Conclusions:** The study established that students' have knowledge gaps in many areas relating to HIV/AIDS. The existence of knowledge gaps may be seen as violation of students' rights to information & education.

Keywords: Youth, Awareness, HIV/AIDS

INTRODUCTION

The younger age group is identified as bearing half of the burden of HIV worldwide. In India people in the age group of 15-24 years comprise almost 25 percent of the country's population; however, they account for 31 percent of AIDS burden¹. This clearly indicates that young people are at high risk of contracting HIV infection. Lack of access to correct information, tendency to experiment and an environment which makes discussing issues about sexuality a taboo adds to their vulnerability. With this background the present study was conducted to know the awareness of youth, particularly of pre-university [PU] students of Davangere city.

MATERIALS AND METHOD

This is a cross-sectional study conducted between October 2012 and December 2012 among the PU colleges of Davangere city. A pre-tested, semi-structured, anonymous questionnaire was used for the study. Consent was taken from the concerned college principals & students after explaining to them the purpose of the study. Based on NFHS III [05-06]² data, which states percentage of people in the age group 15-19yrs who have heard of HIV/AIDS is 75%, sample size was calculated to be 150 using the formula $n = 4pq/d^2$, at 5% significance with 10% allowable error. 150 students from a randomly selected Govt. PU

college and Govt. aided PU college each, i.e., a total of 300 students participated in this study.

Questionnaire consisted of both open and close ended questions to know the students' awareness regarding the HIV/AIDS, its modes of transmission, diagnosis, management, preventive measures and source of information.

Statistical analysis

Data collected was entered into Microsoft Excel & analyzed with SPSS version 17.0 by means of simple comparison of proportions. Test of significance like Pearson's Chi-square test was applied, a P value < 0.05 was considered significant for outcome variables.

RESULTS

In the present study, majority of the students, 67% belonged to the age group 17-18 yrs, with mean age 17.4±0.1yrs. (see Table 1)

Table 1: Distribution of respondents according to their age

Age [years]	Males [%]	Females [%]	Total [%]
15-16	30 [19.6]	52 [35.4]	82 [27.3]
16-17	12 [7.8]	05 [3.4]	17 [05.7]
17-18	111 [72.5]	90 [61.2]	201 [67]
Total	153 [51]	147 [49]	300 [100]

All the students had heard of HIV/AIDS but only 24.3% were able to write the full form of HIV and 45% wrote the full form of AIDS. 28% told HIV is a bacterium and females were more knowledgeable than males [p value < 0.01] (see Table 2)

Table 2: Distribution of respondents according to their knowledge of HIV/AIDS

	Males [%]	Females [%]	Total [%]
Heard of HIV/AIDS [yes]	153 [100]	147 [100]	300 [100]
Wrote expansion of HIV*	46 [30.1]	27 [18.4]	73 [24.3]
Wrote expansion of AIDS*	58 [37.9]	77 [52.4]	135 [45.0]
AIDS is due to infection with HIV virus**	87 [56.9]	106 [72.1]	193 [64.3]

*P value < 0.05, **P value < 0.01

Regarding modes of transmission, multiple answers were given, 35.7% named all four modes of transmission i.e., through unprotected sexual contact, transfusion of infected blood, by sharing needle and from infected mother to baby (see Table 3). 25.3% told HIV/AIDS is completely curable, 45% were of the opinion if positive mother is treated during pregnancy she can give birth to healthy baby. All of them said it is not possible for a positive mother to give birth to negative baby. 55% told vaccine is available to protect against HIV infection. 71% were aware that Govt. of India provides free of cost medication for people with HIV/AIDS (see Table 3). Regarding the modes of transmission of HIV also females were more aware than males [p < 0.001]

Table 3: Distribution of students according to their awareness of modes of transmission and management of HIV/AIDS [*P value < 0.05, **P value < 0.01, *P value < 0.001]**

Modes of transmission*	Males [%]	Females [%]	Total [%]
Unprotected sex	119 [77.8]	122 [83.0]	241 [80.3]
Transfusion of blood	123 [80.4]	116 [78.9]	239 [79.7]
Sharing of needles***	58 [37.9]	86 [58.5]	144 [48.0]
From mother to baby**	60 [39.2]	84 [57.1]	144 [48.0]
Sharing food/clothes***	85 [55.6]	51 [34.7]	136 [45.3]
Kissing/hugging***	91 [59.5]	50 [34.0]	141 [47.0]
Mosquito bite**	26 [17.0]	49 [33.3]	75 [25.0]
All 4 modes**	43 [28.0]	64 [43.5]	107 [35.7]
Management	Males [%]	Females [%]	Total [%]
Completely curable	32 [20.9]	44 [29.9]	76 [25.3]
It is possible to have a healthy baby for a positive mother	67 [43.8]	68 [46.3]	135 [45.0]
Vaccine is available	80 [52.3]	85 [57.8]	165 [55.0]
Govt. gives free medication	109 [71.2]	104 [70.7]	213 [71.0]

About modes of prevention also we got multiple responses, 12% told avoid promiscuous sexual behavior, practicing safe blood transfusion, using disposable syringes, screening of pregnant women compulsorily for HIV/AIDS and condom use. Among 12% of them majority [58.3%] were female students (see Table 4). Females awareness regarding modes of prevention of HIV/AIDS was found to be more than males [p value < 0.001]

Table 4: Distribution of students according to their awareness of modes of prevention of HIV/AIDS. [*P value< 0.05, **P value< 0.01,*P value< 0.001, # multiple answers]**

Modes of prevention*	Males [%]	Females [%]	Total [%]
Avoid pre/extra marital sexual relationship**	76 [49.7]	100 [68.0]	176 [58.7]
Safe blood transfusion*	92 [60.1]	109 [74.1]	201 [67.0]
Using disposable syringes**	45 [29.4]	66 [44.9]	111 [37.0]
Screening of pregnant women	80 [52.3]	89 [60.5]	169 [56.3]
Safe sex [condom use]***	128 [83.7]	93 [63.3]	221 [73.7]

50% of them told teachers as the source of information next only to media [32.7%] (see Table 5).

Table 5: Distribution of students according to their source of information

Source of information	Males [%]	Females [%]	Total [%]
Media [Newspaper/ Television/Radio/ Hoardings]	55 [35.9]	43 [29.3]	98 [32.7]
Teacher	71 [46.4]	79 [53.7]	150 [50.0]
Parents/Friends	13 [8.5]	17 [11.6]	30 [10.0]
Health professional	14 [9.2]	08 [5.4]	22 [7.3]

DISCUSSION

Most young people become sexually active during adolescence. In the absence of right guidance and information at this stage they are more likely to have multi-partner unprotected sex with high risk behavior groups. Particularly vulnerable are impoverished, unemployed, under-employed, mobile/migrant youth, adolescents in sex work, young injecting drug users and street children as they are faced with high risk behavior in their everyday life. They are also less likely to have information on the risks of contracting HIV and means of protecting themselves from the infection. Such youth may face repeated risk of HIV infection through sexual exposure due to coercion or other compulsions.

Young women are biologically more vulnerable to HIV infection than young men – a situation aggravated by their lack of access to information on HIV and even lesser power to exercise control over their sexual lives. Early marriage also poses special risks to young people, particularly women. This is especially relevant

for India, where almost 50 percent girls are married off by the time they are 18 years of age.

In the present study majority of the students had heard of HIV/AIDS which is similar to observations of National Family Health Survey [NFHS] III done in 2005-06².

In our study only 64.3% of the students had correct knowledge about causative agent, which is less than what was observed(90%) in a study conducted among PU students of Nepal by Singh S K et al³.

The awareness regarding modes of transmission, methods of prevention and treatment was found to be significantly higher among females compared to males but that is the opposite of what was observed in a study conducted among adolescents in Uttar Pradesh by Srivastava Anurag et al⁴.

In our study 35% students knew the modes of transmission and 55% were aware of modes of prevention of HIV/AIDS which is less than what was observed i.e.,more than 90% and 80% respectively in a study among youths aged 15-24yrs in rural areas of the Saurashtra region of Gujarat, India by Yadav S B et al⁵ but it was more than what was observed (about 20%)in a study conducted among adults in Savar, Bangladesh by Rahman M M et al⁶.

The present study established that students' have knowledge gaps in many areas relating to HIV/AIDS which was similar to what was observed in a study conducted among rural school going adolescents in Gujarat by Singh Anjali et al⁷.

Lack of access to correct information (almost 73 percent of young people have misconceptions about modes of HIV transmission), tendency to experiment and an environment which makes discussing issues around sexuality taboo adds to their vulnerability.

CONCLUSION

There is widespread awareness of HIV/AIDS among students, combined with widespread misconceptions. The study established that students' have knowledge gaps in many areas relating to HIV/AIDS. The existence of knowledge gaps may be seen as violation of students' rights to information & education. HIV/AIDS messages should be available to all, especially to youth who are more vulnerable to HIV/AIDS.

RECOMMENDATIONS

Reaching youngsters at an impressionable age before they become sexually active can lay the foundation for a responsible lifestyle, including healthy relationships and safe sex habits. The Adolescent Education Programme was one of the key policy initiatives of NACP II. Ministry of HRD and NACO collaborated to develop this school-based programme.

Efforts should be made to promote IEC regarding HIV/AIDS to youth. HIV/AIDS messages should be available to all, especially to youth who are more vulnerable to HIV/AIDS. Good communication skills and behavior change is required to bridge knowledge gap.

Red Ribbon Club is a voluntary on-campus intervention programme for students in educational institutions. The club is proposed to be established in every school and college to provide youth with access to information on HIV/AIDS and voluntary blood donation. The club also works towards promotion of life skills to bring about behavioral change among the youth. Already RRCs are established in more than 16,000 schools and colleges.

Limitations

Small sample size and limited study period are the limitations of this study.

Source of Support: Nil

Ethical Clearance: Obtained from the institution's "Ethical Committee".

Conflict of Interest: Nil

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Computer Based Intervention (CBI) to Prevent Fast Food Consumption and Create Awareness on Healthy Dietary Habits among Adolescents

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ABSTRACT

Adolescents constitute 25% of Indian population. Investing the adolescent's education, health, and rights will yield great benefits for generations to come. Experts believe that most of the eating habits, including preference for and reliance on fast food are formed in childhood and track into adolescence and adulthood. Adolescent healthcare should be seriously overlooked which demands more knowledge, skill, and support to understand good nutrition. Information and communication technologies have revolutionised our society especially adolescents. There is a growing recognition that "adolescent friendly" nutrition intervention strategies are needed and they are adequately provided to ensure a preventative and curative health care of adolescent age.

Objectives: In order to achieve this goal, the present research tries to impart an educational intervention on the importance of healthy food habits, good nutrition and health hazards of consuming fast food, using a computer based intervention package.

Study design: First phase of the present research was the preparation and production of the computer based intervention(CBI) package. Schools were identified and the permission to conduct the intervention and assessment of the pre and post- awareness of adolescents of the participating schools were also obtained. Pre and post nutrition knowledge measurement questionnaire was prepared and assessment was conducted at the selected schools.

Results: Comparison of nutrition awareness before and after the intervention programs revealed that the nutritional awareness of the adolescents improved dramatically after the CBI sessions. More than 97 percent of the participants remarked that the CBI package was informative, interesting, and relevant.

Conclusion: The study suggested the need of active participation and involvement of governmental agencies, NGOs, schools, healthcare professionals, teachers, and parents to organize the nutrition dissemination on a regular basis from multiple sources and in various formats. Thus adolescents should be made aware and responsible their health and equip them to live their life healthy and happy.

Keywords: *Adolescents, Fast food, Computer based intervention, Awareness, Healthy dietary habits*

INTRODUCTION

The largest generation of adolescents in history—1.2 billion strong—is preparing to enter adulthood in a rapidly changing world. Their educational and health status, their readiness to take on adult roles and

responsibilities, and the support they receive from their families, communities and governments will determine their own future and the future of their countries.

According to Devadas (2000)¹, adolescence is a crucial phase in life since at least some of the nutritional insults of childhood can be raised during this period. Generally adolescents need to eat a healthy and balanced diet that will provide them with the vitamins, minerals and nutrients to cope up with the accelerated growth demands. So, the importance of a healthy diet during the adolescence cannot be overlooked.

Fast food has become a prominent feature of the diet of adolescents throughout the world. The consumption of fast food is on the rise and if current trends are to be believed, then it will continue to rise exponentially in future (Bowman et al., 2004;² Nielson et al., 20;³ Jahns et al., 2001;⁴ Clauson, 2000;⁵ Lin et al., 1999⁶).

About 10 years back fast foods were considered as an occasional treat, but trends have changed so drastically that nowadays adolescents consider it as a regular, standard and appropriate meal. A steady diet of fast foods that contains too much fat and energy and too little fiber, vitamins and minerals can be unhealthy for children and adolescents (American Academy of Paediatrics, 2004⁷).

According to Bowman et al. (2004)², fast food items contain more total fat, more saturated fat, more total carbohydrate, more added sugars, more sugar sweetened beverages, less fluid milk and fewer fruits and non-starchy vegetables. Fast foods tend to be low in iron, calcium, riboflavin, vitamin A than few sources of folic acid (Spear, 2002)⁸.

Even though the importance of a healthy and balanced diet is brought out by the scientific and research community, healthy eating habits are not the priority of the adolescents. Instead of eating a balanced and nutritious meal, the adolescents go after the fast food that is now easily available.

A steady diet of fast foods that contains too much fat and energy and too little fiber, vitamins and minerals can be unhealthy for children and adolescents (American Academy of Paediatrics, 2004)⁷. Consumption of the unhealthy and often harmful junk food can lead to a host of physical and mental problems including overweight, hypertension, high cholesterol, diabetes, increased cardiovascular risk, depression, low self-esteem, lack of self-confidence, inferiority complex, and so on.

Given the persuasive influence of commercialism in the lives of young consumers and their increasing

purchasing power, purchase influence and habits, special efforts are required to help them make informed choices and purchases. Therefore the adolescents must be educated about the health hazards of fast foods and should be made aware of the importance of having healthy food habits and practices. Adolescents, who are engaged in unhealthy food consumption practices, must be targeted for such intervention.

The need to deliver nutrition education through a computer-based program has been widely recognized and accepted. Addressing the issues related to fast food consumption and increasing the awareness about the health hazards of fast foods is urgent. These two critical factors—improving the awareness about the dangers of fast food consumption through a computer based programme—form the rationale of this project.

MATERIALS AND METHOD

Ernakulam (also known as Cochin or Kochi) is the industrial capital of Kerala and almost all new developments and trends begin here. The rapid urbanization and industrialization and the resultant changes in lifestyle of people of the Ernakulam district, have its impact on the society and family and hence on the life of adolescents. So Ernakulam city was identified as the locale of the study.

The first phase of the study was to plan an adolescent friendly computer based intervention package, then the initial draft of the package was prepared. Field testing of the initial draft of the CBI was done. Feedback and comments were incorporated in the final version of the CBI.

Second phase of the study included identification of schools and subjects for the intervention program. Prior permission was taken from school authorities to conduct the pre and post awareness assessment and conduct of the intervention program. Pre nutritional awareness measurement was done followed by the conduct of CBI package in a systematic manner.

The third phase of the research was to measure the post awareness of adolescents and collection of feedback on CBI package.

RESULTS AND DISCUSSION

Development of Computer based intervention (CBI) Package

The information for the CBI was gathered and edited. Initial draft of the CBI was prepared and field tested. The CBI was modified according to the suggestions and feedback obtained. Preparation and production of the final version of the CBI was completed on time.

CBI is given in the CD form that can be either copied or downloaded. CBT contained several modules that helped to improve the health awareness of the adolescents. It also contains quizzes to test the impact of the awareness improvement programme. The software platform used for creating the program was Microsoft Windows Vista, MS-Office 2007, Camtasia Studio 5 and various other utilities. The final CBI package could be run on both PCs and Macs. The programs are in the movie format, so that the viewers can watch it and learn from it at their convenience and pace.

The CBI package contains the following sections

1. Basic Food Facts
2. Introduction to Fast Foods
3. Health Impacts of Fast Foods
4. Fundamentals of Healthy Living
5. Healthy Weight and Healthy Lifestyle
6. Eating Right
7. Food Safety
8. Choosing the Right Food

Pre and post awareness measurement and collection of feedback on CBI.

The feedback about the CBI package was collected. Almost all the participants (more than 95%) felt that awareness programs are essential in developing and maintaining a healthy lifestyle and good food habits in the adolescent stage. More than 97 percent of the participants remarked that the CBI package was informative, interesting, and relevant. Most of the adolescents (more than 98%) preferred the computer assisted intervention to other forms of intervention strategies like lectures, seminars, books, magazines, etc. The major reasons for the preference towards the computer based intervention package was attractiveness, ability to learn at one’s own pace and time, ability to choose the preferred medium (computers, television, Internet, cellular phone, iPod or other MP4 players), ease of learning, etc. Most participants confirmed that they would suggest the awareness improvement CBI package to their parents, friends, and teachers. Many participants also suggested the conduct of the CBI package on a regular basis as part of awareness improvement efforts and health awareness building.

Comparison of Nutritional Knowledge before and after the Awareness Program

The comparison of the nutritional awareness before and after the CBI is furnished in Table 1.

Table 1. Comparison of Nutritional Awareness before and after Intervention

Sl. No	Variables	Awareness Levels		‘t’ value	‘P’ value
		Before (Mean ± SD)	After (Mean ± SD)		
1.	Eating Behavior	0.18 ± 0.36	1.15 ± 0.19	9.67	P<0.001
2.	Basic Food Facts	0.62 ± 0.48	1.34 ± 0.16	7.61	P<0.001
3.	Health Implications of Defective Nutrition	0.50 ± 0.69	1.09 ± 0.81	2.02	NS*
4.	Food Safety & Hygiene	1.09 ± 0.55	1.56 ± 0.21	2.58	P<0.05
5.	Fast Food Awareness	0.10 ± 0.23	0.66 ± 0.31	5.37	P<0.001
6.	Implications of Fast Food Consumption	0.10 ± 0.28	0.70 ± 0.10	6.44	P<0.001

* NS - Not significant

Comparison of nutritional awareness before and after the awareness CBI package revealed that the nutritional awareness of the adolescents improved dramatically after attending the intervention. Statistical analysis of the variables considered was highly significant except for ‘health impacts’. The

reason for this is that the participants already had reasonably good awareness about the health implications of defective nutrition as evident. The variables like eating behavior, basic food habits, fast food, and implications of fast food showed a statistically significant (at 0.1% level) improvement,

whereas awareness regarding hygiene indicated an improvement with a statistical significance of 5% level.

Summary and conclusion

The major achievements of the study are summarized below

1. Production of CBI package
2. The assessment of nutrition knowledge before awareness revealed that adolescents had very poor information about nutrition, health implications of fast food and good food habits.
3. The awareness improvement program using CBI helped in raising the adolescents' knowledge about healthy dietary habits, health hazards of fast food consumption and importance of good nutrition.

The present study emphasized the need of continuous intervention strategies for adolescents. The CBI package should be disseminated efficiently and effectively from multiple sources and in various formats according to the pace of the learner. Here the active interest and help of governmental agencies, NGOs, schools, parents and healthcare professionals, media professionals and celebrities are envisaged.

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Conflict of Interest: None declared

Ethical Clearance: Taken

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Clinical Study of the Mode of Delivery and Perinatal Outcome in Breech Delivery

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ABSTRACT

Objectives: To evaluate the outcome of the deliveries in breech presentation at labor and to compare the results by the route of delivery.

Method: Prospective study of randomised cases of 100 singleton pregnancies with breech presentation attending the teaching hospitals attached to JJM Medical College, Davangere. All primi and multigravida with singleton breech presentation with more than 28 weeks of gestation with the estimated fetal weight of more than 1.5kg and less than 3.5kg were considered. Mode of delivery and perinatal outcome were studied.

Result: Out of 100 cases, 46 delivered vaginally and 56 were delivered by cesarian section. The perinatal outcome was good in LSCS than vaginal delivery. Perinatal mortality was seen only in assisted breech delivery with an incidence of 4.5%. Perinatal loss was observed more in the birth weight of 2.5 to 3.5kg with an incidence of 6%.

Conclusion: In our study it was clearly observed that there was zero perinatal mortality considering both elective and emergency cesarean section when compared to vaginal breech delivery, more specifically risk is lowest with prelabor cesarean or during early labor. It was also noted that vaginal breech delivery in multiparous women had good perinatal outcome than in primiparous women. But there are suggestions that with active involvement of experienced obstetricians and applying appropriate management protocol vaginal breech delivery can achieve comparable safety for the infant with a cesarean section. There is still a place for vaginal breech delivery in selected cases of breech presentation more so in multiparous women

Keywords: Assisted Breech Delivery, Breech Presentation, Cesarean Section, Perinatal Outcome

INTRODUCTION

Breech presentation is the commonest of all malpresentations. Vaginal delivery of the breech presentation at term is associated with a much higher perinatal mortality and morbidity than that of vertex presentation. They are called 'Agrippa' because of its fanciful association with the word 'agre partus' which means born with difficulty. This has resulted in a high cesarean section rate which has approached 100% in some centers. "Let me watch a man delivering a primigravida breech and I will give you his obstetric rating" De Lee's statement (1937) still holds true. Although cesarean section drastically reduces the

perinatal mortality associated with breech delivery, it has totally not eliminated the associated fetal and maternal morbidity. Competency of any obstetric unit is inversely proportional to the perinatal mortality of breech deliveries conducted in that unit. A RCT of planned cesarean versus planned vaginal delivery for the singleton fetus with breech presentation at term. Planned cesarean delivery was associated with a lower risk of adverse perinatal outcome.¹ The outcome of all pregnancies with breech presentation after 37 weeks of gestation were retrospectively reviewed from Jan 1997 to June 2000. Of 641 women, 343(54%) underwent prelabor cesarean and 272(46%) had a trial of vaginal

delivery of who 146(49%) delivered vaginally. It was concluded that safe vaginal breech delivery at term can be achieved with strict selection criteria, adherence to a careful intra partum protocol and with an experienced obstetrician in attendance.²

METHODOLOGY

This is a prospective study of randomized cases comprising of 100 cases of pregnant women with breech presentations after 28 weeks or more attending the teaching hospitals namely

- Bapuji hospital, Davangere
- Chigateri General hospital, Davangere
- Women and children hospital, Davangere

during July 2010 to July 2012. Labor and perinatal outcome was studied in 100 cases of pregnant women with breech presentation including those who delivered vaginally and by LSCS and data is presented here which was analyzed and conclusion drawn.

Inclusion criteria for vaginal breech delivery

- All patients with breech presentation with more than 28 weeks of gestation
- All primi or multigravida with singleton breech presentation for planned delivery either by vaginal route or LSCS.
- No evidence of hyperextension of fetal head to be evaluated by ultrasound examination or x ray
- Estimated fetal weight of more than 1.5 kg and less than 3.5 kg evaluated by ultrasound.
- Frank breech

Inclusion criteria for LSCS

- Fetal distress
- Complete breech
- Cord prolapsed with incompletely dilated cervix
- footling presentation
- placenta previa
- large baby >3.5kg

- severe IUGR <1.5kg
- fetopelvic disproportion
- elderly primi

Exclusion criteria from the study

- Ante partum hemorrhage
- severe pre eclampsia
- eclampsia
- pregnancy with cephalic presentation
- transverse lie
- congenital malformations not compatible with life
- intrauterine death, still birth

Each patient was asked a detailed history. Careful general examination and systemic examinations were carried out in all the patients with special emphasis on per abdomen and per vaginal examination. Routine investigations were done for all patients. Ultrasound examination was done for most of the patients. Vaginal examination was done after rupture of membranes to confirm the previous pelvic examination findings and to assess the progress of labor. In the absence of any complications, labor was allowed to proceed. FHR was monitored carefully every 15 minutes. When the breech appeared at the vulval outlet, patient was brought to the end of the table and delivery conducted in the lithotomy position. When the fetal anus was visible and breech was distending the perineum, an episiotomy was given under local infiltration of the perineum by 1% xylocaine.

Breech was allowed to be borne upto the umbilicus by the mother's own expulsive effort. If the foot was caught in the vagina, it was released by hooking it out with a finger. As soon as the baby was born upto the umbilicus, time was noted. A loop of cord was drawn down and kept away to one side to prevent it from being compressed. The baby's body was covered with a sterile towel to prevent premature attempts at inspiration due to external cutaneous stimuli. With further bearing down efforts, the axillary folds of the baby come into view under the symphysis pubis, ordinarily the arms being flexed at the elbow and shoulders, it was easily born. When difficulty was

encountered Lovset's maneuver was adopted in miming the shoulders. After the delivery of the shoulders, baby was allowed to hang down from the vulval outlet with the back directly facing the obstetrician to maintain flexion and encourage descent by means of fetal body weight, meanwhile assistant giving suprapubic pressure to maintain flexion of the fetal head. As soon as nape of the neck was visible head was delivered using the Burns Marshall technique. Time taken from the birth of the umbilicus to complete the delivery of the baby is noted.

In vaginal deliveries a difficulty during delivery and the maneuver used was noted. If LSCS was carried out, indications were noted. During LSCS uterine anomalies were specifically looked for.

All newborns were immediately taken care of by the attending paediatrician. Babies were examined for any marks of injuries or congenital anomalies. Apgar scores at 1, 5 and 10 minutes were noted. Signs of prematurity in low birth weight babies with unknown LMP were looked for. In case of neonatal death, cause of death was determined. Mother and baby were followed up daily in the ward till discharge and called back after 1 month.

RESULTS

Out of 100 cases studied, 47 were primigravida with breech presentation giving an incidence of 47%, 32 were para 1 with an incidence of 32%, 14 were para 2 incidence of 14%. Para 3 and above were 7%.

Majority of the patients were more than 37 weeks in both primi and multigravida with an incidence of 92% and 98% respectively. Extended breech was more common in primigravida with an incidence of 68% whereas in multigravida complete breech was more common with an incidence of 68%.

Out of 53 multigravida, 3 had previous vaginal breech delivery with an incidence of 6%. Among 47 primigravida, majority of the cases had cesarean section with an incidence of 73% and 12 cases had assisted breech delivery with an incidence of 27%. Among multigravida, majority had assisted breech delivery with an incidence of 64% and cesarean in 36%. Emergency was more common than elective cesarean section with an incidence of 85.18% and 14.8% respectively. Most cases were referred late in labor from peripheral centres.

Table1: Indications for caesarean among primi (35)

Indications	No. of cases	Percent
Primi with breech	29	83
Fetal distress	5	13.5
Elderly primi	1	3.5

Table2: Indications for cesarean among multigravida (19)

Indications	No. of cases	Percentage
Previous LSCS	6	32
Fetal distress	4	21.5
Previous 2 LSCS	3	16
Complete breech	2	10.5
Large baby	2	10.5
Placenta previa	2	10.5

Out of 54 patients who underwent cesarean section, 2 had uterine anomaly i.e. subseptate uterus with an incidence of 4%.

Out of 46 vaginal deliveries, difficulty in the delivery of the after coming head was experienced in 4 cases with an incidence of 8.6%.

Table3: Relation of perinatal outcome to type of breech

Type of breech	No. of cases	Perinatal outcome		
		good	Low APGAR	died
extended	49	46	2	1
percent		94	4	2
complete	51	45	4	2
percent		88	8	4

Two perinatal deaths were a result of intrapartum asphyxia due to difficulty in delivery of after coming head in both extended and complete breech. Both cases came in second stage due to late referral from peripheral centres. One baby died of RDS due to prematurity with birth weight of 1.7kg.

Table4: Perinatal outcome in relation to mode of delivery

Mode of delivery	No. of cases	good	unsatisfactory	Died
Assisted breech delivery	46	41	3	2
percentage		89	6.5	4.5
LSCS	54	51	3	0
percentage		94	6	

Perinatal mortality was more in assisted breech delivery in primigravida with an incidence of 16.6% when compared to multigravida 3%.

Table5: Perinatal outcome in relation to birth weight

Weight in grams	No. of babies	good	Low APGAR	Died
1501-2000	12	7	5	0
percent		58	42	
2001-2500	32	31	1	0
percent		97	3	
2501-3000	34	32	0	2
percent		94		6
3001-3500	21	21		
percent		100		
>3500	1	1		
Percent		100		

DISCUSSION

In the present study, incidence of breech in primi is 47% and multi is 53% which is consistent with the findings of Igwegbe et al,³ 38.5% in primi and 61.5% in multi and Nahid et al⁴ 34% in primi and 66% in multi.

Incidence of complete breech 51% is more than extended breech 49% in the present study as we had more multiparous women. These findings were contradictory to other studies by Abdul Razak et al⁵ and Uma Rani et al.⁶

Perinatal mortality is high in cases of assisted breech delivery 6.5% compared with 0 in LSCS consistent with the findings of Hannab et al and Patwardhan M et al.⁷

Incidence of overall perinatal mortality in this study is low 3% compared with other studies Igwegbe et al³ 5%, Fawole et al⁸ 6.25%.

Perinatal mortality was more in primigravida breech 4.2% than in multigravida 1.8% consistent with the findings of Fathiya et al⁹ 2.4% in primi and 1.7% in multi.

CONCLUSION

In our study it was clearly observed that there was zero perinatal mortality considering both elective and emergency cesarean section when compared to vaginal breech delivery more specifically risk is lowest with prelabor or early labor cesarean. Cesarean section decreases the risk of adverse perinatal outcome due to both problems of labor and problems of delivery for the singleton fetus in breech presentation at term

compared with vaginal delivery. It was also noted that vaginal breech delivery in multiparous women had a good perinatal outcome than in primiparous women. But there are suggestions that with active involvement of experienced obstetricians and applying appropriate management protocols, vaginal breech delivery can achieve comparable safety for the infant. There is still a place for vaginal breech delivery in selected cases more so in multiparous women.

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Conflict of Interest: None of the authors of this study have any personal relationship with the subjects included in this study. This study was conducted purely for research purposes and there is no monetary benefit to any of the authors.

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Ethical Clearance: Ethical clearance for this study has been obtained from the pharmacology department of JJM Medical College, Davangere.

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Hand-Washing Behavior and Hygiene-Related Facilities among School Adolescents in Palestine

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ABSTRACT

Although, the importance of hand hygiene in reducing the infection cannot be underestimated; it is not enough when other hygienic resources and facilities are inadequate or unavailable. To determine the prevalence of hand-washing behaviors and hygienic facilities among school adolescents in Tarqumia, Palestine. A descriptive Cross-sectional study was conducted, and data was collected on hand-washing behavior and hygienic facilities from 720 seventh- through eleventh-grade students in 4 schools in Tarrqumia by anonymous self-administered questionnaire. Overall, only 6.25% of the sample never or rarely washed their hands before eating during the past 30 days; 8.06 % never or rarely washed their hands after using the toilet or latrine. This study demonstrates the prevalence of proper hand washing was very high among the school adolescents. Lack of adequate hygienic facilities in schools in Tarqumia prevents students from adopting proper hygienic behavior and impedes health promotion efforts.

Keywords: Hand Washing, Sanitation, Facilities, Drinking Water, Adolescents, Palestine

INTRODUCTION

Over the past few decades, multilevel hygiene improvements, such as sanitary living conditions and practices, potable water, and sewage facilities have been considered a major contributing factor in reducing morbidity and mortality from infections, specifically those transmitted by the faecal-oral and direct contact. Diarrheal diseases are the leading causes of 2-3 million deaths globally, where hand washing with soap could prevent a million deaths annually^{7,13}.

Yet, a considerable amount of deaths and illnesses related to these conditions causes enormous burden in developing countries, where public health infrastructure and medical care are inadequate or unavailable^{1,2}. WHO reported that, 88% of diarrheal

diseases are attributed to inadequate and unsafe water supply, as well as, inadequate sanitation and hygiene².

UNICEF estimates that only 51% and 45% of schools in developing countries have access to adequate water and sanitation, respectively³. This restricts hand washing and safe sanitation practices that are known to improve health^{4,5}. Furthermore, this may contribute to unequal learning opportunities. For example, lack of adequate, clean and secure toilets and washing facilities may prevent parents from sending girls to school. In addition, girls missing days at school or drop out of education at puberty, due to inadequate facilities for menstrual hygiene⁶.

Palestinian schools, specifically those in rural areas, often complain of shortage in drinking-water and sanitation and hand washing facilities; on the other hand; if they exist, they are often inadequate in both quality and quantity or did not work³.

Schools with lack of drinking-water, sanitation, and hand washing facilities, combined with lack of public health infrastructure, and inadequate health care are high-risk environment, and increase students' particular susceptibility to environmental health

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hazards in which susceptible individuals gather. Previous study had proven that certain infections, such as gastrointestinal and respiratory symptoms, can be reduced by improving personal hygiene practices such as hand-washing with soap, and public health infrastructure^{7, 8, 9 10, 11}. In addition, 44% of diarrheal morbidity and 23% of respiratory infections can be reduced by using soap for hand-washing^{7,12,13}. On the other hand, studies have shown that adequate sanitation and hand washing facilities alone without good hygiene knowledge and practices lead solely to little health improvements^{7,10}.

It is anticipated that the improvement of schools' environment hygiene conditions will have a substantial impact on integrating hygiene education into students' daily lives; consequently they can be effective messengers and agents for change in their families and the wider community. Conversely, communities in which schools are lack of adequate water supply; sanitation and hygiene, students are themselves more at risk. Families bear the burden of their children's illness due to bad conditions at school.

The majority of people with lack of access to basic infrastructures (water supply and adequate sanitation) live in developing countries¹³.

The current study examined a sample of early adolescents (i.e., 7th to 11th grade), which is typically a time in the developmental progression when youth are granted more autonomy with their decision-making regarding hand washing behavior and facilities.

METHOD

Study Design and Population

This study is part of a descriptive cross-sectional study conducted for three months from February of the academic year 2011 in four national schools at Tarqumia, Palestine. Data on hand washing practices, and school environment factors (e.g., availability of clean water, soap, and bathroom facilities) from 720 male and female students 13 to 17 years of age, grade 7 through 11 was collected by anonymous self-administered questionnaires.

We created a stratified sample that reflects the socioeconomic characteristics of adolescents registered in the Tarqumia school system. Stratification was based on gender and grades. Classes were selected proportionately to enrollment size and size of students

in the classes (proportional allocation), then simple random sampling without replacement was employed to select the required students from each class. The final sample size was 720 students (357 girls and 363 boys).

DATA COLLECTION

A standardized self-administered anonymous questionnaire was distributed to participating male and female students. This questionnaire includes 15 items used for school students; these items include a number of demographic to characterize students, hand washing practices, and hygienic facilities. Hand-washing behavior was assessed based on 4 criteria related to hand-washing technique: use of soap, use of clean water, hand washing before eating, and hand washing after using the toilet. All the collected data were checked, verified and edited and then analyzed (percentage and confidence interval) using statistical package for social science (STATA 11) with 95% level of confidence ($p < 0.05$).

Ethical considerations

The targeted population was school adolescents; therefore, this investigation was undertaken with prudence, and with respect of the rights and the integrity of people. Approval for conducting this study was obtained from the Palestinian Ministry of Health Education Ethical committee. Written students' consents were acquired prior to data collection. The participants were informed about their right to decline or withdraw from the study, any time in the process. We used an anonymous questionnaire that did not contain the name or the address of students.

RESULTS

Table 1 shows the socio-demographic of Tarqumia school students. From a total of 720 students 357 of them were females and 363 were males. The age ranged from 13 through 17 years old.

Up to 6.25% (95% CI: 4.59, 8.27) of male and female students reported that they never or rarely washed their hands before eating during the past 30 days. Male students were more likely at 6.89% (95% CI: 4.5, 10.2) to report that they never or rarely washed their hands before eating than female students at 5.60% (9% CI: 3.46, 8.52) during the past 30 days. The Pearson chi-square indicated no significant association ($p = 0.455$) between gender and washing hands before eating (Table 2).

Table 1: Demographic characteristics of the participants (n = 720)

Characteristics	No. of respondents	percent
Age-group		
≤13	122	16.9
14 - 15	299	41.5
≥16	299	41.5
Gender		
male	363	50.4
female	357	49.6
Grades		
7th grade	121	16.8
8th grade	148	20.6
9th grade	155	21.5
10th grade	148	20.6
11th grade	148	20.6

Overall, 8.06% (95% CI: 6.17, 10.29) of male and female students reported that they never or rarely washed their hands after using the toilet or latrine during the past 30 days. Male students were significantly more likely at 10.74% (95% CI: 7.75, 14.39) than female students at 5.32% (95% CI: 3.23, 8.19) to report that they never or rarely washed their hands after using the toilet or latrine during the past 30 days. The Pearson chi-square test indicated a significant association ($p < 0.001$) between gender and washing hands after using the toilet.

A total of 46.67% (95% CI: 42.97, 50.39) of male and female students reported that they lack a source of

clean water for drinking at school. Female students were significantly more likely at 54.06% (95% CI: 48.73, 59.32) than male students at 39.39% (34.33, 44.63) to report that they lack a source of clean water for drinking at school. The Pearson chi-square indicated a significant association ($p < 0.001$) between gender and reporting the lack of source of clean water.

Up to 39.17% (95% CI: 35.58, 42.84) of male and female students reported that they lack a place to wash their hands before eating at school. Male students at 41.60% (95% CI: 36.48, 46.86) were significantly more likely than female students at 36.69% (95% CI: 31.68, 41.93) to report that they lack a place to wash their hands before eating at school. The Pearson chi-square indicated no significant association ($p = 0.178$) between gender and reporting the lack of a clean water source.

Overall, 69.17% (95% CI: 65.65, 72.52) of male and female students reported the lack of clean toilets or latrines at school. Both male students at 68.32% (95% CI: 63.26, 73.08) and female students at 70.03% (64.98, 74.74) had nearly the same reporting percentage. The Pearson chi-square indicated no significant association ($p = 0.620$) between gender and reporting the lack of place to wash hands. The Pearson chi-square indicated no significant association ($p = 0.620$) between gender and reporting the lack of clean toilets or latrines at school (Table 2).

Table 2: Prevalence of hygiene-related behaviors and facilities by gender (n = 720; male = 363, female = 357)

Item	Gender		Total (95% C.I.)	Pearson Chi-Square	P-value
	Male%(95% C.I.)	Female% (95% C.I.)			
A. Prevalence of hygiene-related behaviors					
Never or rarely washed their hands before eating during the past 30 days	6.89 (4.51, 9.10)	5.60 (3.46, 8.52)	6.25 (4.59, 8.27)	3.65 (4)	0.455
Never or rarely washed their hands after using the toilet or latrine	10.74 (7.75, 14.39)	5.32 (3.23, 8.19)	8.06 (6.17, 10.29)	21.30 (4)	<0.001
Never or rarely used soap when washing their hands	14.60 (11.13, 18.66)	7.00 (4.58, 10.16)	10.83 (8.66, 13.33)	14.67 (4)	0.005
B. Prevalence of hygiene-related facilities in school					
Do not have a source of clean water for drinking at school.	39.39 (34.33, 44.63)	54.06 (48.73, 59.32)	46.67 (42.97, 50.39)	15.56 (1)	<0.001
Do not have a place to wash their hands before eating at school	41.60 (36.48, 46.86)	36.69 (31.68, 41.93)	39.17 (35.58, 42.84)	1.82 (1)	0.178
Whose toilet or latrines at school are not clean	68.32 (63.26, 73.08)	70.03 (64.98, 74.74)	69.17 (65.65, 72.52)	0.25 (1)	0.620

DISCUSSION

Overall, the majority of students reported high proportions of washing hands before meals, after toilet and with soap. The prevalence of hand washing among Palestinian school adolescents had the highest as compared to adolescents from other regional studies^{14, 15, 16}. The possible attributable reason for these high proportions of hand washing could be that, the majority of the Palestine population is Muslims and the focus on personal hygiene in Islam. Another possible explanation, it is plausible that the Palestinian school students were exposed to hygienic-related education program through external aid programs.

The results of the current study showed that, significant differences between male and female hand washing practices, where girls have better hygiene practice than boys. Similar differences have been observed in regional and international previous studies^{14, 15, 16, 17, 18}. Females are considered the primary care providers in the family, thus they could be targeted more than males by health education programs, and this might explain the gender difference.

Even if the school adolescents possessed knowledge of hygiene, inadequate of appropriate resources may negatively affect proper hand washing practices. Although UNICEF reported that the resources available in rural communities are generally lacking, data about the availability of resources in the targeted schools were collected in our study. Vast proportions of hygiene practices are depend on the availability of adequate resources. Well-designed and well-located hand washing facilities and latrines that include adequate amounts of soap and water, are necessary in promoting personal hygiene. Therefore, Ministry of Education, Municipalities and families bear the responsibilities about the lack of adequate resources that expose students at risk of transmissible diseases.

The unavailability of potable water and poor sanitary facilitation, hygiene, and de-worming were considered the most significant contributing factors for intestinal parasitic diseases. Improved sanitation, hygiene, and de-worming are considered the best control measures for preventing infection and re-infection¹⁹. Previous research in Palestine indicated that the most common intestinal protozoa in Palestine are *Entamoeba histolytica*, whereas *Enterobius vermicularis* is the most common intestinal helminth²⁰.

However, further efforts are required to focus on personal hygiene because of its important role in preventing health related problems, such as parasitic and faeco-oral infections. The results also revealed a school environmental problem regarding the availability and quality of drinking water.

Future studies should focus on assessing the knowledge that students possess towards hygiene, availability of resources (namely soap and water) and sanitation facilities at home and at school, and the reasons behind adopting hand washing. In conclusion, comprehensive knowledge about these issues should be used to develop and implement highly effective programs that will meaningfully mitigate the burden of communicable diseases among students in rural settings.

Because the majority of children attend school and school children are more receptive to learning and are more likely than are adults to adopt healthy behaviors at a younger age. They can also be agents of health change by reporting what they have learned in school to their social environments. Therefore, school-based hygiene education is critical and cost effective in order to promote proper hand washing behaviors to attenuate the rate of communicable diseases among school children and to mitigate the economic burden of these health problems on the Palestinian health care system.

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Conflict Interest: Nil

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Ethical Clearance: Taken

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Study of Common Patterns of the Segmental Bronchi in Right and Left Human Lungs and their Variations

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ABSTRACT

No two persons are similar, and also no two lungs are similar and even left and right lungs of same person differ from each other. To study common pattern of human lung is very interesting, as each lung has its unique pattern. The aim of the present study was to find out common pattern of the segmental bronchi in right and left lungs and variation if any.

The research involved 110 human lungs (47 right and 63 left lungs). A meticulous lobe wise dissection of both right and left lung was carried out to trace the segmental bronchi. Lung tissue and vessels were removed to clear the segmental bronchi on medial surface only. Thin coat of gelatin was given on the segmental bronchi prior to painting and photography

Keywords: Segmental Bronchi

INTRODUCTION

During the fourth week a tracheal bud develops at the distal end of the respiratory diverticulum and divides into two bronchial buds at the fifth week. The control of the branching pattern of the respiratory tree depends on the splanchnopleuric mesenchyme. Recombination of tracheal mesenchyme with bronchial respiratory endoderm results in inhibition of bronchial branching. Whereas recombination of bronchial mesenchyme with tracheal epithelium will induce bronchial outgrowth from trachea. Tenascin, an extracellular matrix molecule is present in the budding and distal tip region, but absent in the clefts.

Fibronectin an extracellular matrix molecule found commonly in basal lamina is found in the cleft and along the sides of the developing bronchi but not on the budding and distal tips.

The development of branches from a tubular duct involve interaction between the proliferating epithelium of duct and its surrounding mesenchyme and extracellular matrix which results in a series of clefts which produce characteristic branching pattern. The mesenchyme initiates cleft by producing collagen III fibrils within the putative clefts. If collagen is removed no cleft develops. If excess collagen is not removed supernumerary clefts appear.

The control of embryonic morphology involves families of genes coding for proteins that acts as transcription regulators. Ontogeny and phylogeny is achieved by utilizing developmental mechanisms with appropriate back or self balancing programs which ensure smooth developments of the embryo its survival and the generation of variations.⁽¹⁾

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In majority of cases these variations are asymptomatic and discovered only during bronchoscopy or at autopsy; but the location of the bronchopulmonary segments is more or less constant.

In 1943 Jackson-bronchoscopists, Huber-Anatomist and other surgical resident at Temple University medical school in Philadelphia employing dissection and injecting dyes gave nomenclature to bronchopulmonary segments⁽²⁾.

In the decade of 1945 to 1955 Boyden with his colleague has given valuable contribution regarding segment bronchi.

In present study total 110 human lungs were dissected. 34 photographs of lungs showing variations were taken.

MATERIAL AND METHOD

The study was carried out in department of Anatomy, B.J. medical college pune. 110 apparently normal cadaveric lungs from both male and female cadavers were collected and stored in 40% formalin solution jar in Anatomy department.

Total no. of specimens- 110 human lungs

Criteria for selection- apparently normal cadaveric lungs of both sexes were included. Lung damaged either due to injury or pathological process was omitted from the study.

METHOD

First the side of the lung was determined from the normal anatomical landmarks like apex, base and medial and lateral surfaces of the lungs. A meticulous lobe wise dissection of both right and left lung was carried out to trace the segmental bronchi. Dissection was carried out on the medial surface at the hilum. Lung tissue and vessels were removed to clear the segmental bronchi. Other surfaces of the lungs were kept intact. Any variation in the form of either number or course of the segmental bronchi (branching pattern) was noted. Then it was followed by painting and photography. Thin coat of gelatin dissolved in warm water was given on the segmental bronchi prior to painting. Following color code was used for both lungs.

Green color: right upper lobe and superior division of left upper lobar bronchus

Blue color: right middle lobe and inferior division of the left upper lobar bronchus

Yellow color: lower lobes of both right and left lungs.

Red color: all variations of segmental and sub segmental bronchi.

Photographs of the lung showing variations were taken.

The data collected was analyzed by proper statistical method and conclusions were drawn. Results were compared with previous studies.

FINDINGS

Chart no. 1. Variations in upper lobe of right

Variations	Total no. of lungs (47)	percentage
Trifurcation into apical, posterior and anterior	32	68.8
Bifurcation into apico-posterior and anterior	09	19.1
Bifurcation into apico-anterior and posterior	06	12.8

Chart no. 2. Variations in upper lobe of left lungs

Variations	Total no. of lungs (63)	percentage
Bifurcation into apico-posterior and anterior	59	93.7
Trifurcation into apico-posterior, anterior and lingular	04	06.3

Chart no. 3. Variations of lingular bronchi

Variations	Total no. of lungs(63)	percentage
Bifurcation into medial-lateral pattern	00	00
Bifurcation into superior-inferior pattern	61	98.8
trifurcation	02	3.2

Chart no. 4. Variations in middle lobe of right lung:

Variations	Total no. of lungs(47)	percentage
Bifurcation into	45	95.8
a)lateral and medial bronchus	33	70.2
b)Superior and inferior bronchus	12	25.5
Trifurcation	02	4.25

Chart no. 5. Variations in superior(apical basal) of right lung

Variations	Total no. of lungs(47)	percentage
1) Arises as a single stem	45	95.7
a. bifurcation	40	85.1
b. trifurcation	05	10.6
2) arises as a two stems	02	4.3

Chart no. 6. Variations in superior bronchus of left lung

Variations	Total no. of lungs(63)	percentage
1) arises as a single stem	63	100
a. bifurcation	59	93.7
b. trifurcation	04	6.34
2) arises as two stems	00	00

Chart no. 7. Variations in the basal trunk of right lungs

Variations	Total no of lungs (47)	percentage
1) first arises medial, then anterior and then bifurcation into lateral and posterior	38	80.9
2) bifurcation into antero-medial and postero-lateral	05	10.6
1. bizarre pattern	04	8.5
a. medial basal and rest	02	4.3
b. anterior basal and rest	00	00
c. lateral basal and rest	00	00
d. posterior basal and rest	02	4.3

Chart no. 8. Variations in the basal trunk of left lungs

Variations	Total no. of lungs(63)	Percentage
1) basal trunk bifurcate	52	82.5
a) basal trunk bifurcate into antero-medial and postero-lateral	48	76.2
b) basal trunk bifurcate into bizarre pattern	04	6.3
1. medial basal and rest	01	1.6
2. anterior basal and rest	00	00
3. lateral basal and rest	03	4.76
2) basal trunk trifurcate	11	17.46

Chart no. 9. Left lung common pattern and variations:

	Total lungs (63)	percentage
Total no. of common pattern in left lungs	46	73
Total no. of common pattern in left lower lobes	51	81
Total no. of common pattern in upper and lower lobes	40	63.5
Variations only in left upper lobe	11	17.5
Variations only in left lower lobe	06	9.5
Variations in both upper and lower lobe	06	9.5

Chart no. 10. Right lung common pattern and variations

	Total lungs (47)	percentage
Total no. of common pattern in right upper lobe	32	68.1
Total no. of common pattern in right middle lobe	33	70.2
Total no. of common pattern in right lower lobe	41	87.2
Total Variations only in right upper lobe	15	31.9
Total Variations only in right middle lobe	14	29.8
Total Variations in right lower lobe	06	12.76
Variations in right upper and middle lobe	04	8.5
Variations in right middle and lower lobe	05	10.6
Variations in right upper and lower lobe	00	00
Variations in all three lobes of right lung	04	8.5

DISCUSSION

Table no: 1. Variations in branching pattern of upper lobe

Variations	Left lungs (63)	Right lungs (47)	Z value	S/HS/NS
Upper lobe bronchus bifurcate	59 (93.7%)	15(31.9%)	7.2	HS
Apico-posterior and anterior pattern of bronchus	59(93.7%)	09(19.1%)	12.3	HS

From above table it is clear that the difference in branching pattern of upper lobe of

Right and left human lungs is statistically highly significant. The difference of apico-posterior and anterior branching pattern of bronchopulmonary segmental bronchi present in both right and left upper lobes is statistically highly significant. In present study trifurcate pattern in right upper lobe is more (68.8%) than bifurcate pattern (31.9%) which is not matching with Boyden and coworkers (trifurcate pattern 46% and bifurcate pattern 54%), so also in bifurcate pattern percentage of anterior segmental bronchus separate is more (19.1%) than percentage of posterior segmental bronchus separate (12.8%). But Boyden and coworkers found percentage of posterior segmental bronchus is higher (34%) than anterior segmental bronchus (20%). In the left upper lobe percentage of bifurcation into apico-posterior and anterior separate is more (93.7%) than Boyden and Hammer⁴(73%), but trifurcate pattern apico-posterior, anterior and lingular is less (6.3%) than Boyden and Hammer (27%). In case of

percentage of right middle lobe bronchus bifurcation and trifurcation are matching with that of percentage of Boyden and Hammer. Thus middle lobe bronchus show minimum genetic and racial variations.

Percentage of medial-lateral bifurcation in right middle lobe is more (33%) than left lingular lobe (2%). The difference is statistically significant. Percentage of superior-inferior pattern in lingular lobe is more (59%) than the right middle lobe (12%). The difference is statistically significant. But the percentage of trifurcation pattern in right middle lobe and left lingular lobe is almost same (2%).

In present study the percentage of bifurcation of common basal trunk of left lung is 82.5%, which is close to the percentage of Berg and Boyden⁶ (86%) and more than the percentage of Pitel and Boyden (66%). So we can conclude that range of bifurcation of common basal trunk of left lung is from 66% to 86%.

However the percentage of common basal trunk bifurcation into antero-medial and postero-medial is higher(76.2%)

Than the Pitel and Boyden⁸(56%). The percentage of bifurcation of common basal trunk of left lung into bizarre pattern is less (6.3%) than the Berg and Boyden (20%). The percentage of common basal trunk trifurcation into antero-medial, lateral basal and posterior is (15.9%) which is less than Pitel and Boyden(30%) and almost equal to that of Berg and Boyden (13.3%) .

CONCLUSION

- 1) The commonly observed pattern in right upper lobe is trifurcate i.e. apical, anterior and posterior segmental bronchi arising separately.
- 2) The percentage of anterior segmental bronchus separate in bifurcate pattern in right upper lobe was higher than posterior segmental bronchus separate.
- 3) The commonly observed pattern in left upper lobe is bifurcate with apico-posterior and anterior segmental bronchus separate.
- 4) The split anterior segmental bronchus was found in 23.8% in present study followed by trifurcation pattern (6.3%) in left lungs.
- 5) Commonly found pattern of lingular bronchi in left lung was bifurcation into superior – inferior lingular bronchi (93.6%). Variations found were trifurcation of lingular bronchus (3.2%) and medial –lateral pattern of lingular bronchus (3.2%).
- 6) In present study middle lobe of right lungs showed bifurcate pattern in 95.8% and trifurcate pattern was rare found in 4.2% of right lungs. Most commonly observed bifurcate pattern was medial –lateral pattern followed by superior –inferior pattern.
- 7) The right superior basal bronchus most commonly arose as single stem and bifurcates into its branches. the left superior basal bronchus also commonly arose as single stem and bifurcate into its branches
- 8) The branching pattern of right basal trunk showed three main varieties. Most commonly observed pattern was common basal trunk first gives medial

basal bronchus, followed by anterior basal bronchus and then remaining trunk dividing into lateral basal bronchus and posterior basal bronchus. The second pattern found was common basal trunk bifurcating into antero-medial and postero-lateral bronchi – the commonly observed pattern in left lower lobe. Third pattern is bizarre pattern – rare variation found in right lower lobe. The basal trunk divides either into medial basal and rest or posterior basal and rest.

- 9) The commonly observed branching pattern of left basal trunk was bifurcation pattern and trifurcation pattern was rare variation found in 17.5% of left lungs. In bifurcation pattern most commonly found pattern was antero-medial and postero-lateral pattern, followed by bizarre pattern i.e. medial basal and rest or posterior basal and rest. This rare variation is found in 6.3% of left lungs.
- 10) Left medial basal bronchus commonly arose with anterior basal bronchus. If it arose separately it is rare variation.
- 11) The left lateral basal most commonly arose in conjunction with posterior basal bronchus , if it arose separately it is rare variation.

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Conflict of Interest: Nil

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Efficacy of Lycopene in the Management of Oral Submucous Fibrosis- a Randomized Clinical Trial

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ABSTRACT

Background: Oral Submucous Fibrosis is a potentially malignant disorder well known for its chronic and resistant nature. The conservative drug treatment that is currently available for this disorder is clearly inadequate. The aim of the study was to evaluate the efficacy of oral lycopene therapy when used in combination with conventional intralesional steroid therapy in the management of oral submucous fibrosis.

Method: Forty five patients with oral submucous fibrosis (grade III and IV) were included under the study and were randomly divided into 3 groups consisting of 15 cases each: Group A (oral lycopene 16 mg/day with biweekly intralesional steroids and hyaluronidase), Group B (oral antioxidant capsules with biweekly intralesional steroids and hyaluronidase) and Group C (biweekly intralesional steroids and hyaluronidase alone). Mouth opening and burning sensation were recorded from baseline to 6 weeks. Cases were followed up to 3 and 6 months.

Results: There was significant increase in mouth opening among all the 3 groups. The results were statistically significant between Group A and C and Group B and C.

Conclusion: Lycopene in combination with intralesional steroids and Hyaluronidase, is highly efficacious in improving the mouth opening and reducing other symptoms in patients with Oral Submucous Fibrosis. No side effects were reported with its usage.

Keywords: *Submucous, Anticarcinogenic, Cyclooxygenase and Lipoxygenase*

INTRODUCTION

Oral submucous fibrosis (OSF) is a potentially malignant disease that is insidious and chronic in nature affecting the entire oral cavity, sometimes extending to the pharynx. It has drawn considerable attention in recent past due to its high malignant potential and chronic debilitating and resistant nature. It is seen predominantly in people of Asian descent especially among Indian population ^[1].

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A variety of etiologic factors including capsaicin, betel nut alkaloids, hypersensitivity, autoimmunity, genetic predisposition and chronic iron and vitamin B-complex deficiency have been suggested by various authors, the most common of which is chewing areca nut. Excessive use of areca nut may cause fibrosis due to increased synthesis of collagen and induce the production of free radicals and reactive oxygen species, which are responsible for high rate of oxidation/ peroxidation of polyunsaturated fatty acids which affect essential constituents of cell membrane and might be involved in tumorigenesis ^[2]. Arecanut chewing is deep rooted in Indian culture and has been used as a mouth freshening agent that has various symbolic roles throughout Indian history ^[3]. The most alarming fact is that this habit is becoming increasingly popular among adolescents.

The ingredients of arecanut induce excessive reactive oxygen species which damages the cell structures, including lipids and membranes, proteins and nucleic acids. Moreover vitamin deficiency, iron deficiency anaemia, and malnutrition can derange the repair of the inflamed oral mucosa, leading to defective healing and the resulting atrophic oral mucosa is more susceptible to the effects of areca nut. Here comes the role of Antioxidant vitamins that stabilize and deactivate the free radicals before they attack cells 2.

One such type of antioxidant is Lycopene. Lycopene is a phytochemical, synthesized by plants (tomatoes) and microorganisms but not by animals. It is a powerful antioxidant and has a singlet-oxygen-quenching ability twice as high as that of beta-carotene and ten times higher than that of alpha-tocopherol 2. It is a potent anticarcinogenic and has demonstrated profound benefits in precancerous lesions like leukoplakia^[4]. It has also been suggested that no single drug has provided complete relief of symptoms of OSF 2. So we decided to adopt a combination of drugs to treat OSF. The aim of the study was to evaluate the efficacy of oral lycopene therapy when used in combination with conventional intralesional steroid therapy in the management of OSF.

MATERIALS AND METHOD

Totally 45 patients with signs and symptoms of OSF were recruited for the study from the Department of Public Health Dentistry, Jaipur Dental College, Jaipur India. The Institute's Ethical Committee approval was obtained. The patients were included under the study only after satisfying the following criteria:

- History of the habit of chewing arecanut or any of its commercial products.
- Burning sensation on eating spicy food.
- Restricted mouth opening with or without palpable vertical fibrous bands on the buccal mucosa with stiffness and blanching and without tongue involvement - Grade III and IV^[5].

Patients with histologically proven OSF turning into malignancy were excluded from the study. Informed consent was obtained from all the patients. They were then explained about the disease condition and its premalignant potential. The patients were then counselled to stop the habit of using arecanut in all its forms. Complete oral prophylaxis was done to

improve the oral hygiene as well as to motivate the patient to stop the habit.

The patients were then randomly divided into three groups (A, B and C) consisting of 15 cases each. Group A patients were given oral Lycopene capsules 16 mg (Lycostar®, Mankind Pharma Ltd., New Delhi, India), one capsule/day along with bi-weekly intralesional injections of Dexamethasone 1.5 ml & Hyaluronidase 1500 IU mixed with lignocaine. Lycostar contains Lycopene 5000 µg along with various micronutrients. Group B patients were given oral antioxidant capsules (Multivitamin A-Z soft capsules, Prime Pharm, Shanghai, China), one capsule/day along with bi-weekly intralesional injections of Dexamethasone 1.5 ml & Hyaluronidase 1500 IU mixed with lignocaine. Group C patients were given bi-weekly intralesional injections of Dexamethasone 1.5 ml & Hyaluronidase 1500 IU with lignocaine alone without any other oral supplements. Patients were evaluated every week during the treatment period of 6 weeks.

The following parameters were recorded during each week:

Burning sensation

It was recorded at baseline before the start of the treatment and at the end of every week for a period of 6 weeks during treatment using Visual Analog Scale (VAS) for pain. It was scored from 0 to 10 purely based on patient's response (Score 0: no pain; Score 10: severe pain).

Mouth opening

Mouth opening was assessed by measuring the interincisal distance from the mesioincisal edge of the maxillary right central incisor to the mesioincisal edge of the mandibular right central incisor using vernier callipers. If either of the teeth were missing, their left side counterpart was used for measurement. Mouth opening was recorded at baseline before the start of the treatment and subsequently at the

end of every week for 6 weeks during treatment period. It was also recorded post treatment at 3 and 6 month follow-up period.

Statistical analysis

Mean and Standard Deviation were estimated for each study group. Normality of the data was tested in each group by using Kolmogorov Smirnov test. Mean

values were compared between different study groups by using Kruskal-Wallis One Way ANOVA followed by Mann-Whitney U-Test after adjusting the p-values for multiple comparison by using Bonferroni Correction method. Mean values were compared between different time points within the same group by using Wilcoxon Signed Rank Sum Test. In the present study, $p < 0.05$ was considered as the level of significance.

RESULTS

Age and sex distribution

All the patients fall within the age range of 18 to 49 years with maximum number of patients in the age group of 21 to 30 years. Eleven patients in group A, nine patients in group B and 7 patients in group C were in this age group (Table 1). All the 45 patients were male.

Table 1: Shows Age Distribution of Patients

Groups	18-20 Y	21-30 Y	31-40 Y	41-50Y
Group A	2	11	1	1
Group B	0	9	5	1
Group C	0	7	7	1

Habits

All the patients included under the study had the habit of chewing arecanut either in the pure form or in the form of gutkha, pan masala or mawa. The most common form of areca nut used was Gutkha (64.4%). 29 out of 45 patients were using it. The median duration of habits was 5 yrs (range: 1 to 15years). The median frequency of chews per day was 5 times (range: 1 to 20 times).

Burning sensation

The mean VAS scores at baseline before start of treatment among patients in group A, B and C were 7.5, 7 and 7.5 respectively. All the patients in Group A, B and C reported complete relief of burning sensation (score 0) within 3 weeks of the start of treatment.

Mouth opening

Change in mouth opening among Group A

The average increase in mouth opening from baseline (before treatment) to week 6 was 4.9 ± 2.5 mm. When the average mouth opening values from week 1 to 6 were compared with the baseline value, the

results were found to be statistically significant ('p' value: < 0.0001 , 0.001 , 0.001 , 0.001 , 0.001 and 0.001 respectively).

Change in mouth opening among Group B

The average increase in mouth opening from baseline (before treatment) to week 6 was 4.3 ± 0.8 mm. The results were statistically significant when the average mouth opening values from week 1 to 6 were compared with the baseline value ('p' value: < 0.0001 , < 0.0001 , 0.001 , < 0.0001 and 0.001 respectively).

Change in mouth opening among Group C

The average increase in mouth opening from baseline (before treatment) to week 6 was 3.4 ± 0.5 mm. When the average mouth opening values from week 1 to 6 were compared with the baseline value, the results were found to be statistically significant ('p' value: < 0.0001 , < 0.0001 , < 0.0001 , < 0.0001 , < 0.0001 and < 0.0001 respectively).

Intergroup comparison in mouth opening

When the average mouth opening values between baseline and week 6 was compared among all the three groups (A, B and C), there was statistically significant change between Group A and Group C, and Group B and Group C ('p' value: < 0.0001). (table 2, Fig.4) There was no change in the mouth opening at 3 and 6 months.

Table 2: Shows intergroup comparison in mouth opening between baseline and week 6

Time points compared	Group	Mean \pm S.D.	Overall p-value	Significant Groups
Week 0 to Week 6	A	4.9 ± 2.5	< 0.0001 (Sig.)	A vs. C
	B	4.3 ± 0.8		B vs. C
	C	3.4 ± 0.5		

Adverse effects

No adverse effects were reported during the treatment period as well as during follow-up.

DISCUSSION

Oral submucous fibrosis is well known for its chronic and resistant nature. The conservative drug treatment that is currently available for OSF is clearly inadequate. No single drug has provided complete relief of symptoms of OSF 2; this has led to the use of combination of drugs to treat the condition.

Lycopene is a major carotenoid found in tomato which has potent anticancer activity in many types of

cancer 6. The antioxidant properties of lycopene are thought to be primarily involved in its preventive effects in chronic diseases. It also has potent benefits in oral potentially malignant lesions like leukoplakia 4. Because of its high number of conjugated dienes, lycopene is one of the most potent antioxidants, with a singlet-oxygen-quenching ability twice as high as that of α -carotene and 10 times higher than that of α -tocopherol 7. The antioxidant potential has been ranked as follows: lycopene > α -tocopherol > α -carotene > β -cryptoxanthin > zeaxanthin = β -carotene > lutein^[8]. OSF is well known for its high rate of malignant transformation which is about 2.3 to 7.6% 2. In this regard, the antioxidant properties of lycopene may be of great benefit by withholding its progression to carcinoma.

In our study, all the patients were males (100%). It clearly demonstrates male predominance of the condition. This was in accordance with the study conducted by Ranganathan et al which recorded a male to female ratio of 9.9:1 among OSF patients^[9]. Maximum number of patients (27 out of 45 patients; 60%) in our study fell under the age group of 21 to 30 years which was similar to the findings of Maher et al who reported that 70% of males with OSF were below 30 years of age^[10]. When considering the habit of chewing arecanut, most of the patients in our study chewed Gutkha (64.4%). OSF was more prevalent among Gutkha chewers than the other forms of arecanut. The study conducted by Bathi et al was also in agreement with this fact^[11].

In OSF grades I and II, the mouth opening of the patients are not affected. The efficacy of lycopene and other antioxidants is similar in early stages of OSF when mouth opening is normal 2. But the difference arises only when restriction in mouth opening sets in. Also Kumar et al suggests that severe cases of OSF are poor responders to lycopene 3. So in our study, we included patients only with grade III and IV OSF. The improvement in mouth opening from baseline (before start of treatment) to week 6 was statistically significant among all the three study groups A, B and C.

When intergroup comparisons were made with regard to mouth opening, there was significant difference between Group A (lycopene with intralesional steroids) and C (intralesional steroids alone) as well as Group B (antioxidants with intralesional steroids) and C (intralesional steroids alone) (p value < 0.0001). But even though Group A (lycopene with intralesional steroids) showed greater

improvement in mouth opening (34.9 ± 5.6) than Group B (antioxidants with intralesional steroids) (32.2 ± 6.7), the results of Group A and B did not differ enough to be statistically significant ($p > 0.05$).

This clearly indicates that lycopene is more efficacious than other antioxidants when used in combination with intralesional steroids to treat OSF. The improvement in mouth opening observed in our study can be attributed to two reasons: 1. Lycopene exerts its anti-inflammatory action by increasing the lymphocyte resistance to stress^[12], inhibition of pivotal pro-inflammatory mediators, such as the reduction of reactive oxygen species, the inhibition of synthesis and release of pro-inflammatory cytokines, changes in the expression of cyclooxygenase and lipoxygenase, modifications of eicosanoid synthesis, and modulation of signal transduction pathways, including that of the inducible nitric oxide synthase^[13]. 2. Lycopene has been shown to inhibit hepatic fibrogenesis in LET rats by Kitade et al^[14]. A similar action may be expected in OSF.

We believe that lycopene when combined with intralesional steroids offer more benefit than when used alone. Our view is also supported by Chole et al 2. But it was contradicting with the findings of Kumar et al who stated that the results were better when lycopene is used alone 3. In our study, the greater improvement in mouth opening when lycopene was combined with intralesional steroids may be attributed to the synergistic effect obtained when both the drugs were used together.

Our study clearly demonstrates that Lycopene in combination with intralesional steroids and Hyaluronidase, is highly efficacious in improving the mouth opening and reducing other symptoms in patients with Oral Submucous Fibrosis. No side effects were reported with its usage; hence it proves to be a completely safe drug when compared with the other treatment options available for oral submucous fibrosis. It can be prescribed either alone as a first-line drug in early stages of the disease or in combination with intralesional steroids in moderate stages of OSF. Further studies with larger sample size should be undertaken to substantiate its efficacy in the management of oral submucous fibrosis and to demonstrate the probable mechanisms through which it exerts its action.

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A Study on Socio-demographic Profile of Sick-neonates Attending Sick New-born Care Unit of a Tertiary Care Hospital of Odisha

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ABSTRACT

Introduction: Nearly 99% of all neonatal deaths occur in low and middle income countries. Of the four million neonatal deaths that occur each year, India reports the highest number, at nearly 1.1 million neonatal deaths. Perinatal mortality and NNM are known to be affected by other contextual factors that influence maternal health, such as socioeconomic status, deprivation, gender inequity, illiteracy, and high fertility rates.

Objective: To study the socio-demographic profile of cases admitted to Sick Neonatal Care Unit.

Materials & Methodology: The information on the study subjects was collected by making regular visits to the Sick Newborn Care Unit & socio-demographic profile of each case was obtained by conducting in depth interviews with the parents /responsible adults who had accompanied the case.

Results & Discussion: Out of 2042 cases 66.89% were males and 33.11% were females. 67.96% of the neonates were in the early neonate period and 32.4% in the late neonatal period. Majority of the cases were from the home district of Ganjam (56%) & rural (80.27%) background. More than half of the mothers (60.33%) were illiterate compared to their male counterpart. 92.5% belong to low socio economic status & 62% belongs to joint or three generation family. 72% belonged to Other Backward caste, 14% to Scheduled caste, 5% to Scheduled Tribe and rest 9% were of general caste.

Keywords: Sick Newborn Care Unit, Early & Late Neonates, Sex, Literate & Illiterate, Joint & Nuclear Family

INTRODUCTION

An estimated 130 million babies are born each year and about 9.2 million people die before reaching their fifth birthday. 4 million of them die in the neonatal period which accounts for 40% of under-five mortality. Globally, neonatal deaths as a proportion of child deaths are increasing. [1] Nearly 99% of all neonatal deaths occur in low and middle income countries. Of the four million neonatal deaths that occur each year,

India reports the highest number, at nearly 1.1 million neonatal deaths. India carries the highest share of neonatal deaths in the world around 25% of total. [2] Within the first 28 days of life, three out of four deaths occur in the first week of life. The risk of a newborn dying is 24 per 1,000 live births in the first week of life, 3 per 1,000 per week during the rest of the first month, and 0.12 per 1,000 per week after the first year of life. As with maternal mortality, 99 percent of neonatal deaths occur in the lower to middle income countries, where the average NNM Rate (NMR) is 33 per 1,000 live births. [3]

Perinatal mortality and NNM are known to be affected by other contextual factors that influence maternal health, such as socioeconomic status, deprivation, gender inequity, illiteracy, and high

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fertility rates. [4,5] Studies have reported that higher maternal education levels are associated with improved perinatal and neonatal survival. [6] Different variables linked with maternal education, such as appropriate birth spacing and health-seeking behavior, particularly for prenatal care, have also been shown to reduce maternal mortality and NNM rates. [7] IMNCI was first piloted in six districts from end of 2002 to 2004. It focusses on preventive, promotive and curative aspects of neonatal and childhood illnesses. Equipping such facilities and enhancing capacity of medical officer to handle such cases create the need of SNCUs at district hospitals, Stabilization Unit at CHCs, and Newborn Corners at all facility offering delivery facilities is thus a key activity. [1]

MATERIALS & METHOD

Study Design: Hospital based observational Study

Study Duration: 2years

Study Area: - Sick Newborn Care Unit (SNCU) of M.K.C.G. Medical College & Hospital.

Study population: All of the patients registered at SNCU of MKCG Medical College & Hospital either referred from O&G /Pediatric Indoor or from other nearby PHC /Private Hospitals from Jan 2011 to June 2012 constituted the study population.

Inclusion criteria- All the sick neonates who needed special care & got admitted to SNCU.

Exclusion criteria-

1. Neonates referred directly from outside or from O&G & Pediatrics department with minor complains like feeding problem or prematurity & preterm babies.
2. Neonates whose mothers were non co-operative & did not give consent.

METHODOLOGY

The information on the study subjects was obtained by making regular visits to the SNCU. The socio-demographic profile of each case was obtained by conducting in depth interviews with the parents / responsible adults who had accompanied the case. All the information of each case was collected over a pre designed & pre tested schedule. The data collected was analyzed using Microsoft XL 2010 software.

Study variables-Age, Sex, Literacy, SES, Type of family, Caste etc.

Statistical Analysis: Use of Proportions, Percentages.

RESULTS

Table -1 shows out of 2042 cases of sick neonates admitted 66.89% were males and 33.11% were females. 67.96% of the neonates admitted during the early neonate period and 32.04% during the late neonatal period. Table-2 (a) revealed that majority of the cases were from the home district of Ganjam (56%) followed by the adjoining and tribal and forested districts of Gajapati (16%) and Kandhamal (6%). A total of 22% cases were reported from the nearby districts of Rayagada, Puri, Cuttack, Khurdha and Srikakulam (AP). Table-2 (b) shows that 80.27% of the total study population were from rural areas. Table-3 revealed that more than half of the mothers (60.33%) were illiterate compared to their male counterpart. Table-4 shows that 92.5% belong to low socio economic status, 4.7% to middle and 2.8% to high SES. Table-5 (a) revealed that more than half (62%) belongs to joint or three generation family and only 38% were from nuclear. Table-5 (b) inferred that 72% belonged to Other Backward class, 14% to Scheduled caste, 5% to Scheduled Tribe and rest 9% were of general caste.

Table 1: Age & Sex wise distribution of Study subjects:

Age	Male		Female		Total	
Early Neonate	1154	56.50%	234	11.46%	1388	67.96%
Late Neonate	212	10.39%	442	21.65%	654	32.04%
Total	1366	66.89%	676	33.11%	2042	100.00%

Table 2 (a): District wise distribution of cases:

District	Number of cases(n=2042)	Percentage (%)
Ganjam	1143	56.00%
Gajapati	326	16.00%
Kandhamal	123	06.00%
Rayagada	184	09.00%
Others	266	13.00%
Total	2042	100.00%

Table 2 (b): Rural & Urban distribution of cases:

Residence	Number of cases(n=2042)	Percentage (%)
Rural	1639	80.27%
Urban	403	19.73%
Total	2042	100.00%

Table 3: Literacy status of parents of sick neonates:

Parental Literacy status	Father	Mother
Illiterate	649 (31.78%)	1232(60.33%)
Primary education	307(15.04%)	265(12.98%)
middle education	433(21.20%)	349(17.09%)
Secondary education	511(25.03%)	158(07.74%)
Higher secondary education	90(04.40%)	22(01.08%)
Professional	52(2.55%)	16(0.78%)
Total	2042(100.00%)	2042(100.00%)

Table 4: Socio Economic status of Study Population:

SES	Number of Cases(n=2042)	Percentage (%)
Low	1888	92.50%
Middle	96	04.70%
High	58	02.80%
Total	2042	100.00%

Table 5 (a): Type of Family:

Type of Family	Number of Cases(n=2042)	Percentage (%)
Nuclear	776	38.00%
Joint	856	41.92%
Three generation family	410	20.08%
Total	2042	100.00%

Table 5 (b): Caste wise distribution:

Caste	Number of Cases(n=2042)	Percentage (%)
SC	286	14.00%
ST	102	05.00%
Gen	184	09.00%
OBC	1470	72.00%
Total	2042	100.00%

DISCUSSION

In the present study we assessed the socio and demographic characters of sick neonates which clearly highlighted the magnitude of problems regarding neonatal health. Of the 66.89% males, majority (56.5%) were early neonates and 10.39% were late neonates whereas out of 33.11% females only 11.46% were early neonates and 21.6% were late neonates. These numbers shows that most of neonates admitted were in their vulnerable early (<7 day) neonatal period and among which males account more than female. Imtiaz Jehan^[8] reported 51.5 % males and 48.5% females in his study on "Neonatal mortality, risk factors and causes." According to National Neonatal Perinatal Database, Human Reproduction Research Centre Network(Report 2002-2003)^[9] Data ,Males constituted 53.2 % of all live births, females 46.8 %.The early neonates constitute 72.3% and late neonate 27.7%.

The attendance of Sick Neonates in a tertiary hospital depends on its catering areas. The unavailability of alternate, effective, reliable health facility and personnel as well as lack of accessibility are important factors which explains the increased proportion of cases coming from these areas in the present study.

Regarding the distribution of cases majority from rural background, Similar finding obtained by Lawn JE et al^[10] who reported that most of the still birth, intrapartum related neonatal death and maternal death burden (99%) occurs in low- and middle-income countries. The rural poor are at particular risk, and also have the lowest coverage of skilled care at birth.

Mother's education level is a key determinant of their children's health. About 60.33% mothers were illiterate. The overall literacy status of parents was 54% which is much less than the national average i.e. 74.04 %.^[11] F. Azordegan, H. Eftekhar^[12] inferred that age at marriage is positively correlated with the level of education. The number of children born alive is negatively correlated with the level of education of mothers.

As the study group contains both rural and urban population here the SES of the study population was assessed by using the Family Formation Pattern & Health Scale, WHO (1976).About 92.5% belongs to low SES and only 2.8% were in high SES. The influence of SES on Neonates was found by Florescu L^[13] in a cross-sectional study to evaluate the development and risk

factors in premature children seeking admission, most premature children (70.1%) had mothers of low socio-economic status. Similarly Ruhul Amin, Nirali M Shah and Stan Becker^[14] revealed that mothers in the highest wealth quintile were significantly more likely to use modern trained providers for antenatal care, birth attendance, post natal care and child health care than those in the poorest quintile (± 2 , $p < 0.01$) leading to less admission to newborn care unit in case of child belongs to high SES.

Regarding type of family & caste most of them have joint family and were of OBC caste. Child rearing is better in joint or three generation family as compared to nuclear family, but some rigid social customs, beliefs dominant in joint families may adversely affects the health of the child. So, family is the key factor in determining the health of mother and child. Abhimanyu Niswade^[15] studied on neonatal morbidity and mortality in tribal and rural communities in Central India and found that large and joint family practices were associated with increased neonatal morbidity. The pregnancy outcomes varied by gestational age of the baby; miscarriages and abortions were higher in tribal than in non-tribal women, and tribal and other backward caste women had higher rates of low-birth weight (LBW) neonates leading to admission than non-tribal women.

CONCLUSION

The present study clearly highlighted the magnitude of the problems regarding neonatal health. Males account for more than half of the study population. This could be because of non-reporting of females at the health institution either due to ignorance or gender inequity prevalent in health seeking behavior by females or stigma attached with admission into hospital. Similarly most of the cases belong to the early neonatal age group (<7 days). This could be due to inappropriate health care facilities at peripheral (PHC, CHC, Private hospitals) level and occurrence of home deliveries by unskilled workers which accounts for more admission of early neonates.

The bulk of the admissions were from the district of Ganjam indicating dependence of the population on this Institute. Ganjam is also the most populous district of the state which could also be reason for majority of cases belonging to this area. However cases from other districts of South Orissa and adjoining areas

of Andhra Pradesh too constituted the study population. This is due to the fact that MKCG Medical College Hospital is the only tertiary level facility available in this part of the State. Majority (80.27%) of the sick neonates admitted were from rural back ground. The higher prevalence of cases were due to the poor knowledge, attitude and behavior of rural people about health care.

Similarly more than half of mothers of sick neonates were illiterate and majority (92.5%) belong to low socio-economic status. All these indicate that sickness in neonates is still more prevalent among the under privileged sections of the society having a definite impact on productivity and economy of the community. This indicates the vulnerability of neonates in low socio economic society.

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Conflict of Interest: Nil

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Study on Hygienic Practices among Food Handlers Working at Food Establishment in Tertiary Care Teaching Hospital at Eluru, Andhra Pradesh

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ABSTRACT

Background: Poor knowledge of hygiene and practices in food service establishments can contribute to outbreaks of food borne illnesses.

Objective: Objective of the present study was to explore the sanitary condition of food establishments and to assess hygienic practices among food handlers in one of the rural teaching hospital at coastal district of Andhra Pradesh.

Material & method: A cross-sectional study was conducted among 230 food handlers of both sexes in rural teaching hospital at coastal district of Andhra Pradesh in May 2013 and data were collected using semi structured questionnaire.

Results: The median age of the food handlers was 42.86 years of the 230 food handlers who responded. None of the participants (100%) had taken basic food safety training. Most of all, knowledge gap in food hygiene and handling practice was observed. There is an immediate need for education and increasing awareness among food handlers regarding safe food handling practices.

Conclusion: This study revealed good sanitary conditions and poor food hygiene practices of handlers. Educational programs targeted at improving the attitude of food handlers and regular inspections have been recommended.

Keywords: Food Handlers, Food Safety, Hygiene, Practices

INTRODUCTION

Food safety is defined by the FAO/WHO as the assurance that when food is consumed in the usual manner does not cause harm to human health and wellbeing¹⁴. Industrialization, urbanization and population growth have promoted people to migrate from rural to urban areas, forcing them to have their meals at any place at an affordable price. In urban areas, there is mushrooming of eating establishments due to increased demand. The high incidence of food

borne illnesses has led to an increase in global concern about food safety¹³. The chances of food contamination largely depend on the health status of food handlers & their hygiene behaviors and practices. A food handler i.e. any person who handles food, regardless whether he actually prepares or serves it, play an important role in the transmission⁸. Often these food handlers are appointed without proper health examination. Although many efforts have been made to improve various hygiene standards and practices, training and education of food handler as well as consumer awareness, food-borne illness still remain a public health dilemma in many countries. The socio economic impact of food borne illness includes loss of productivity, loss of income, loss of trade, loss of food as a result of condemnations, and ultimately loss of tourism³. Food borne diseases are increasing in both developed and developing countries. Diarrheal

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diseases, mostly caused by food borne microbial pathogens, are leading causes of illness and deaths in the developing countries, killing an estimated 1.9 million people annually at the global level¹². Food contamination may occur at any point during its journey through production, processing, distribution, and preparation^{5, 6}. Infections can also be acquired through contaminated unwashed fingers, insects, and circulation of bank notes⁸. There is definitely a need for proper and continuous training in personal and general hygiene, not only for food handlers, but also for management and also periodic medical checkups should be done regularly. The aim of this study was to investigate the food safety knowledge and practices of food handlers and to assess the sanitary conditions of food service establishments in one of the rural teaching hospital at coastal district of Andhra Pradesh.

METHODOLOGY

Study Design: A cross-sectional study was conducted among 230 food handlers of both sexes in rural teaching hospital at coastal district of Andhra Pradesh.

Study Sample: The study was carried out on May 2013 for a period of one month among food handlers working in food establishments located in the study area. A food handler is any person who handles food, regardless of whether he actually prepares or serves it (Isara AR, 2009)⁸. Of the 300 total food handlers working in these food establishments, 230 food handlers (76.67%) participated in the study. Remaining ones who refused to participate were excluded from the study.

Study Method: The permission from Head of institution and clearance from Ethics Committee was

obtained before starting the study. All workers employed in hostel mess and hospital canteen who engaged in food preparation, serving and cleaning are included in this study. The consent was obtained after explaining the purpose of this study and data was collected on pre-designed proforma by face to face interview. The proforma contains data regarding socio-demographic information and questions related to knowledge and practices regarding food, food hygiene and personal hygiene. Data collectors and supervisor were oriented about the purpose of the study, the components of the questionnaire and data quality management.

Data collection and analysis: Data collection tool was a semi structured questionnaire consisting of open and close ended questions. All the data obtained was entered into Microsoft Excel and analyzed. Descriptive statistics, such as frequency distribution and percentages were employed for the analysis. Chi square test was used as a test of significance. *Asian Jo*

RESULTS

Characteristics of the food handlers: The socio-demographic data of the food handlers is presented in Table 1. All the respondents interviewed were full time employees in food establishments in one of the rural teaching hospital at coastal district of Andhra Pradesh. The median age of the food handlers was 42.86 years of the 230 food handlers who responded. None of the participants (100%) had taken basic food safety training. Majority of food handlers were females 178(77.4%) and from rural areas 105(45.66%). 160(69.56%) were helpers, while 38(16.53%) were cooks. 124 (53.91%) participants were illiterate, while 32(13.91%) were educated up to secondary school.

Table 1: Socio-demographic profile of food handlers and food hygiene practice scores

Demographic Characteristics (N=230)		Food hygiene practice score		p value
		Good	poor	
Gender				
Male	52 (22.6%)	20	32	X ² =2.8169. P =0.093278
Female	178 (77.4%)	92	86	
Age (years)				
≤ 20	6 (2.6%)	3	3	X ² = 0.7055. P= 0.400934.
21-30	84(36.52%)	40	44	
31 -40	30(13.05%)	16	14	
>40	110 (47.82%)	48	62	
Residence				
Rural	105 (45.65%)	47	58	P<0.01
Slum	86(37.39%)	38	48	
Urban	38(16.52%)	27	12	

Table 1: Socio-demographic profile of food handlers and food hygiene practice scores (Contd.)

Demographic Characteristics (N=230)		Food hygiene practice score		p value
		Good	poor	
Occupation				
Cook	38 (16.53%)	10	28	P<0.010
Helper	160 (69.56%)	86	74	
Waiter	32(13.91%)	16	16	
Educational Attainment				
Illiterate	124(53.91%)	58	66	X ² =0.3976. P = 0.528324
Primary school	70(30.43%)	34	36	
Secondary school	2(13.91%)	18	14	
College/University	4(1.7%)	2	2	

Sanitary conditions of the food establishments

All the respondents reported that the kitchen surface area was cleaned with detergents (100%) twice daily after the completion of work. There was proper liquid waste disposal system and solid waste collection receptacle with a lid. Availability of continuous piped water supply, availability of flush type toilet and absence of domestic animals at the food establishment premises was satisfactory.

Food hygiene practices of food handlers: It has been observed that they had poor practice where they handled raw materials without washing their hands 80(34.78%), wore hand jewelries 16(6.96%) and fondled their bodies while preparing food 24(10.44%). Means of hand wash, hand drying, frequency of hand wash, protective devices, wearing hand jewelries during food preparation, body touch while food processing, addictions, frequency of nail cutting were the variables selected for characterization of the food handler as good and poor practices and compared with their demographic variables for statistical association. Majority of the participants 144(62.60%) were having clean nails and were cutting their nails satisfactorily i.e. at least once a week. 162(70.43 %) were washing hands with soap and water after using the toilet. 186(80.87%) of the food handlers were free from any of the common addictions. None were using overhead cap, aprons, mask and gloves. As shown in table 1 there was statistically significant difference between rural and urban food handlers with regard to hygiene practices (p = <0.01) and also there was association between occupation and their hygiene practices(P<0.010). On the other hand, there was no association between the demographic variables like education, age in regard to food hygiene practices.

Table 2: Habits & personal hygiene practices of food handlers in food establishment

Personal hygiene practices	Frequency	Percentages
Habits and addictions		
Smokers	12	5.22
Consuming alcohol	4	1.74
Chewing tobacco	12	5.22
Betel chewing	0	0
Mixed /double habits	12	5.22
No addiction	186	80.87
Frequency of nail cut		
2 times in a week	4	1.7
1time in a week	142	61.7
1time in 2 week	80	34.7
No	4	1.7
Washing of hand after coming from toilet		
With soap	162	70.43
With water	32	13.91
No	36	15.65
Means of hand drying		
Tissue	0	0
Cloth	226	98.26
No	4	1.74
No. of time working area is cleaned		
1 time	0	0
2 time	230	100
3 time	0	0
Cleansing material		
Soap / detergent	230	100
Only water	0	0

DISCUSSION

This study revealed good sanitary conditions and poor hygiene practices among food handlers at food establishments in rural teaching hospital at coastal

district of Andhra Pradesh. The most frequently identified factors contributing to the outbreaks are contaminated raw foods/ingredients, and poor personal hygiene by persons who handle foods (*Report of the FDA retail food programs, 2000*)¹⁰. The study reveals that maximum number 140 (60.86%) of food handlers were above 30 of age which is quiet opposite to *Ud giri Rekha S, Masali KA (2007)*¹² where they found 73.2% of respondents to be below 30 years of age. It is also seen that a majority 178 (77.4%) of food handlers were females in the present study similar to *Isara AR and Isah EC (2009)*⁸ where they found 65.1% were females. Maximum number 160 (69.56%) were helpers and majority 105(45.65%) of food handlers were from rural areas while 86 (37.39%) were from the slums. 124(53.91%) food handlers were found illiterate in the present which differed markedly from the study by *Isara AR and Isah EC (2009)*⁸, wherein they found 98% of the respondents were having formal education. Study by *Ud giri, et al (2007)*¹² showed that 44.58% had no habits, 25.30% had mixed habits, 16.87% chewed tobacco and 07.23% smoked. These findings bit similar to the present study, where 12(5.22%) were smokers, 4 (1.74%) consumed alcohol daily, 12(5.22%) were in the habit of chewing tobacco, 12(5.22%) were having mixed habits and remaining 186(80.87%) of the food handlers were free from any of the addictions. But in the present study food handler's practice towards personal hygiene and sanitary food handling is found unsatisfactory. Only few Food handlers had practices of hand washing after touching dirty materials and different body parts between handling of food items. These reflected that food handlers lack awareness about food contamination with poor hygienic practices. Present study showed that none had undergone a pre-employment medical examination which is consistent with study done by *Abera et. Al*¹.

In our study liquid and solid waste disposal systems was good (100%) moreover domestic animals were not found in food establishment which is opposite to study *J Food Prot, 2007*⁴ where 50% of the establishments have a proper liquid and 33.6% have a proper solid waste collection receptacle with a lid. Domestic animals were found in 9.9% of the establishments. There was statistically significant association between the demographic status and the sanitary practices of the food establishments and this result is in agreement with other results of studies conducted in Ethiopia¹⁵. Although most of the handlers responded positively for the food safety related questions in reality they did not practice them and this has also been reported in other studies where food

handlers did not usually translate their knowledge into practice^{7,2}. A study in the USA indicated that improper food handling practices contribute to 97% of food borne illness in food service establishments and at home ^{7,9} and food safety training has been shown to have a positive impact on practices of handlers⁴. Therefore, training and motivation should be provided to the food handlers working in these establishments.

Limitations

One of the limitations of this work is that laboratory investigations of food handlers were not done. Although the sample size seems to be smaller, it could be generally concluded from this study that there exist gross insanitary practices in food hygiene among the study units. Besides, enumeration of bacteria and other enteric pathogens were not included in the study.

CONCLUSION

This study revealed poor hygienic practices by food handlers coupled with poor knowledge in food establishments can contribute to outbreaks of food borne illnesses. Periodic medical examination along with necessary treatment such as de-worming should be done. Regular training and daily inspection in hygiene and sanitation for all employees working in food establishments is an essential step towards ensuring food safety.

Future studies should focus on enumeration of bacteria from food utensils, food handlers, bacteriological examination of the water used for the washing.

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Conflict of Interest: None

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Prevalence of Anemia in Rural School Going Children- a Cross Sectional Study

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ABSTRACT

Prevalence of Anaemia in Rural School Going Children- A Cross Sectional Study

Adolescent girls face a greater risk of nutritional problems than adolescent boys, including anaemia and underweight. In addition, over half of girls aged 15-19 (56 per cent) are anaemic. Anaemia during adolescence influences women's entire life cycle since anaemic girls will have lower pre pregnancy iron stores. As pregnancy is too short a period to build the iron stores required to meet the needs of the growing fetus, women who enter pregnancy as anaemic are at an increased risk of giving birth to children with a low birth weight (below 2,500 grams), delivering pre-term new-borns, and/or dying while giving birth. Additionally, children born to anaemic women are more likely to die before the age of one year and be sick, undernourished and anaemic, thus perpetuating the intergenerational cycle of maternal and child under nutrition. Hence the objective of the study was to find out prevalence of anaemia in high school going adolescent girls. A Cross sectional study was carried out at rural high schools of Handignur village, Belgaum, Karnataka over a period of 6 months on 569 adolescent high school girls. Cyanmethemoglobin method was used to diagnose anaemia. Data obtained were tabulated and analyses in terms of objectives of the study using descriptive and inferential statistics.

The findings of the study revealed that prevalence of anaemia was 94.5% in which 56.8% had mild anaemia, 36.4% had moderate anaemia and 1.4% had severe anaemia which is found high among the adolescent girls.

Keywords: Adolescent girls, Anaemia, School Going Children

INTRODUCTION

Adolescence is a period of transition from childhood to adulthood. It is characterised by rapid physical, biological and hormonal changes resulting in psycho-social, behavioural and sexual maturation. Adolescence is a period of rapid growth: up to 45 per cent of skeletal growth takes place and 15 to 25 per cent of adult height is achieved during adolescence. During the growth spurt of adolescence, up to 37 per cent of total bone mass may be accumulated. The

physical and physiological changes that occur in adolescent girls place a great demand on their nutritional requirements and make them more vulnerable to nutritional deficiencies. Specifically, the increase in the lean body mass, the expansion of the total blood volume and the onset of menstruation translate into a significant increase of girls' iron requirements making them more susceptible to anaemia¹.

Anaemia during adolescence affects the growth and development of girls, diminishes their Concentration in daily tasks, limits their learning ability, increases their vulnerability to dropping out of school, causes loss of appetite resulting in reduced food intake and irregular menstrual cycles, and reduces physical fitness and future work productivity.

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India has the largest population of adolescents (243 million) followed by China (207 million) and United States (44 million). The world is home to 1.2 billion individuals aged 10-19 years. Although the legal age for marriage is 18, the majority of Indian women marry as adolescents. Recent data show that 30 per cent of girls aged 15-19 are currently married or in union, compared to only 5 per cent of boys of the same age¹.

India has highest prevalence of anaemia among women i.e. 60-70% (Haemoglobin <12 gms/dl). Anaemia among adolescent girls reduces work productivity, an impaired physical capability which in turn leads to poor performance in the school².

Iron deficiency anaemia is the most prevalent nutritional disorder worldwide, especially in developing countries and more than half of the population in India is anaemic. It occurs when iron absorption cannot compensate iron requirements and losses; the main cause of iron deficiency is the low iron bioavailability of the diet. The consequences of iron deficiency are many which have long term serious impact, affecting not only individuals' health but also the development of countries.³

Despite of many nutritional programme launched for improvement in the field of health and nutrition, significant proportion of young people like adolescent girls in developing countries suffer from nutritional anaemia due to various reasons like irregular supply chain, poor compliance, poverty, heavy menstrual blood loss. National Anaemia Prophylaxis Programme has not made an appreciable dent in prevention of anaemia⁴.

There are very few studies carried out in this part of Karnataka, hence it was felt the need to know prevalence of anaemia and develop teaching material which will help them to incorporate healthy dietary pattern for prevention of anaemia and its associated disorders.

MATERIAL AND METHOD

Study was carried out at rural high schools of Handignur village, Belgaum, Karnataka. It was cross sectional study and the study was carried out for 6 months (Nov to April 2009). Approval for the study was obtained from Institutional and KLE University's Ethics Committee in the month of November dated 24-11-2008. Consent was obtained from each enrolled adolescent girl. Enrolment of adolescent girl was started in Nov 2009 after ruling out general medical

conditions and substance use. Purposive sampling technique was used to recruit study samples. 569 high school going adolescent girls were recruited in the study. With the help of predesigned, pretested proforma; preliminary data regarding socio demographic profile of adolescent girl was noted. Laboratory investigation included test for haemoglobin which is being carried out at the laboratory of JNMC. Haemoglobin estimation was carried out by Cyanmethemoglobin method by qualified laboratory technician. Follow-up was done at school which included general examination. Haemoglobin value was noted and studied in detail.

OBSERVATION AND RESULTS:

For qualitative data, Pearson's chi-square test was applied to test the relationship of categorized independent and dependent variables. For quantitative data, Mean and Standard Deviation were calculated. A 'p' value of <0.05 is deemed statistically significant (Sig.), SPSS 16.0 was used to enter and code data.

The current study enrolled 569 adolescent girls studying in highschools of Handignur village. Out of 569, 31 had normal haemoglobin value.

Table I: Frequency and percentage distribution of adolescent girls as per their age

n=569

Age	Number	Percentage (%)
12-13yrs	218	39.2%
14-15yrs	331	59.1%
16-17yrs	20	1.7%

Table I depicts that majority of the adolescent girls were in the age group of 14-15yrs (59.1%) and 20(1.7%) were in the age group of 16-17yrs.

Table 2: Frequency and percentage distribution of adolescent girls as per severity of Anaemia

n=569

Type of anaemia	Number	Percentage (%)
Normal	31	5.4%
Mild	324	56.8%
Moderate	207	36.4%
Severe	08	1.4%

$\chi^2_3 = 0.860$ $p = .835$

Table 2 depicts that the majority of the adolescent girls 324(56.8%) had mild anaemia, 207(36.4%) had moderate anaemia and 8(1.4%) had severe anaemia where as 5.4% had normal haemoglobin.

Table 3: Association between Prevalence of Anaemia and socio-demographic variables

N=569

Educational status of mother					
	Normal Hb	Anaemia	Total	X ²	P
Illiterate	14	171(92.4)	185	3.379	.337
Primary edu	11	204(94.9)	215		
Secondary edu	05	107(95.5)	112		
Higher Secedu	01	56(98.2)	57		
Educational status of Father					
Illiterate	02	35 (94.6)	37	.296	.961
Primary edu	11	179 (94.2)	190		
Secondary edu	11	179 (94.2)	190		
Higher Secedu	07	145 (95.4)	152		
Religion					
Muslim	1	30(96.8)	31	.417	.812
Hindu	24	418(94.6)	442		
Other	6	90(93.8)	96		
Menarcho status					
	Normal Hb	Anaemia			.098
Attended	29	530 (94.8)			
Not attended	02	08 (80)			
Family type					
Nuclear family	08	133(94.3)			1
Joint family	29	381(92.9)			
Extended family	01	17(94.4)			

Table 3 depicts that most of the adolescent girls were anaemic whose mothers had primary education 204(94.9%) out of 215 mothers, whereas most of the adolescent girls were anaemic whose fathers had Secondary education 179 (94.2%) out of 190, Most of the adolescent girls 418 (94.6%) out of 442 were anaemic who were Hindu by religion. Majority of adolescent girls were anaemic 530 (94.8%) out of 569 who had attended menarcho. About family type, most of the adolescent girls were anaemic 381(92.9%) out of 569 who belong to joint family. Statistically significant association was not found with religion, family type and educational status of mother, father and prevalence of anaemia. But there was statistically significant association between prevalence of anaemia and menarcho status.

Table 4: Mean Haemoglobin level of adolescent girls

Hb Estimation	Mean	SD	p value
Baseline	9.45	±1.06	.344

Table 4 shows that mean haemoglobin level of all adolescent girls was 9.45 whereas SD±1.06

DISCUSSION

The prevalence of anaemia is disproportionately high in developing countries, due to poverty, inadequate diet, certain diseases, pregnancy and lactation, and poor access to health services. Young people are particularly susceptible because of their rapid growth and associated high iron requirements.⁵ In our study prevalence of anaemia was 94.5% in which 56.8% had mild anaemia, 36.4% had moderate anaemia and 1.4% had severe anaemia which is found high among the adolescent girls. Study conducted by R. Gawarika, S. Gawarika, and A.K. Mishra showed that the overall percent prevalence of anaemia among the adolescent girls of weaker economic group was 96.5% which almost coincides with our findings of the study⁶. Findings of the present study are not in accordance with Kapoor *et al.*¹⁰ (60%), Singh *et al.*¹¹ (56%), Rana *et al.*¹² (60%) and Seshadri *et al.*¹³ (63%) which shows low prevalence of anemia in adolescent girls^{7, 8,9,10}. These differences in the prevalence of anemia may be due to gender equality, education and improvement in maternal and child

health. A very high prevalence of anemia in this study could be due to lower socio-economic status and nutritional deficiency. Various studies^{11, 12} have reported significant association of sociodemographic parameters like age, religion, socio-economic status, diet, literacy status of parents with anemia. However in the present study these sociodemographic parameters have not shown any statistically significant association with anemia ($p > 0.05$). But statistically significant association was found between prevalence of anemia and menarche status. In this study most of the adolescent girls were in the age group of 14-15 yrs (59.1%). About family type, most of the adolescent girls were anaemic 381 (92.9%) out of 569 who belong to joint family. But there was statistically significant association between prevalence of anaemia and menarche status. Findings of the present study are in accordance with Sanjeev M Chaudhary et al¹³ where there is no association with religion, family type, and prevalence of anaemia. In the present study almost 95% of the girls were anaemic. Their status of anaemia is likely to worsen because anaemia during adolescence influences women's entire life cycle especially during antenatal, intranatal and postnatal period.

Hence, investing in preventing anaemia during adolescence is critical for adolescent girls themselves as well as for the survival, growth and development of their children later in life. The limitations of the study were the study did not carry out the assessment of psychological and behavioural problems, and detailed information on dietary intake was not collected.

CONCLUSION

In conclusion, the present study revealed anaemia to be a major health problem among the adolescent girls in rural areas. The prevalence of anaemia was more among girls who had attained menarche and age more than 14 years. There was a higher prevalence of mild anaemia as compared to moderate and severe anaemia. Their health status has impact on their reproductive functioning – pregnancy outcomes, birth weight, pregnancy wastage. Health education programme in order to create an awareness and Iron supplementation programmes based on the research findings specially meant for adolescent girls need to be introduced for both school going and non-school going girls to ensure that no adolescent girl is anaemic.

Acknowledgement: We express our thanks to participants and the authorities who provided permission to conduct the study.

Conflict of Interest: The effect of nutritional deficiency is visible in the adolescent age, particularly in girls. Hence the present study intends to find out Prevalence of Anaemia in Rural School Going Children. Adolescence is a very crucial period where major physical, cognitive and psychological growth and development take place. As rural adolescent girls get married at an early age, leads to early pregnancy. If they are taken care at this period, there will be drastic reduction in maternal mortality and intern we will be able to achieve MDG 4 and 5.

Source of Funding: Self-funding

Ethical Clearance: Ethical clearance was taken from Chairman of Ethical Clearance Committee of KLE University and Principal, Prof. Sudha A Raddi, Vice Principal and Secretary, Prof. Milka Madhale, KLEU'S Institute of Nursing Sciences, Belgaum.

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A Cross Sectional Study to Estimate Overweight & Obesity & its Contributing Factors in Adolescent Govt School Children in Chrompet, Chennai

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ABSTRACT

Background: India is following a trend of other developed & developing country that are steadily becoming more obese. Unhealthy, processed food has become much more accessible following India's continued integration in global food markets. Childhood obesity is associated with a higher chance of premature death and disability in adulthood. Conditions such as type 2 Diabetes mellitus, Hypertension & Hypercholesterolemia, which were noted primarily in adults, are becoming more among children with the increase in prevalence of obesity

Objectives: To find out the factors contributing to overweight & obesity.

Materials & method: The study was a cross sectional, school based study among 10-18 years of children in an urban area of Kancheepuram district, South Chennai. The study subjects are children of both sexes 10-18 from government schools. From the 3 government schools population of 4916 children out of which 1229 school children are selected through "population proportionate probability" sampling technique (PPS 25%).

Results: The prevalence of overweight in boys is 15.6% and it is 6.9% among girls. The prevalence of obesity among boys is 3.7% and it is very low as 0.3% in girls. The difference in proportions of overweight and obesity between boys and girls are statistically highly significant ($P < 0.001$).

Conclusion: The study revealed that Physical Activity Level (PAL) and gender has a tremendous effect on overweight or obesity. Based on the finding of this study it is recommended that Sedentary lifestyle should be discouraged, increase physical activity like playing outdoor games, walking, cycling should be encouraged in children, development of Play grounds should be done both in Schools and in community, Health education should be given to parents, teachers & children regarding dietary habit & sedentary life style.

Keywords: Adolescents, Obesity, PAL

INTRODUCTION

India is following a trend of other developed & developing country that are steadily becoming more obese. Unhealthy, processed food has become much

more accessible following India's continued integration in global food markets. Childhood obesity is associated with a higher chance of premature death and disability in adulthood. Conditions such as type 2 Diabetes mellitus, Hypertension & Hypercholesterolemia, which were noted primarily in adults, are becoming more among children with the increase in prevalence of obesity⁽¹⁾ and other outcomes like dyslipidemia, left ventricular hypertrophy, atherosclerosis, metabolic syndrome, sleep apnea & non-alcoholic fatty liver disease, cancers (5) as well as psychological effects such as stigmatization, discrimination, depression & emotional trauma². Childhood obesity also affects self

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esteem which has negative consequences on the cognitive & social development^{3,4}. Conditions like Type 2 Diabetes mellitus, hypertension & hypercholesterolemia noted primarily in adults, now its becoming common among children also⁶. Schools may be an important setting for obesity preventive interventions & also adolescents is characterized by rapid growth & maturation during which both girls & boys become autonomous & develop food habits & lifestyle manners. In this context, the study was conducted with the objectives to describe the prevalence of overweight & obesity in adolescent school children & factors contributing to overweight & obesity.

AIMS & OBJECTIVES

- 1) To estimate the prevalence of overweight & obesity in adolescent school children.
- 2) To find out the factors contributing to overweight & obesity.

MATERIAL & METHODOLOGY

The study was a cross sectional, school based study among 10-18 years of children in an urban area of Kancheepuram district, South Chennai. The study subjects are children of both sexes 10-18 yrs from government schools. There is total 3 govt school in this region with a population of 4916 children out of which 1229 school children are selected through "population proportionate probability" sampling technique (PPS 25%). Since the presence of several sections & classes, students has been selected proportionately (25%) from each section for study. After proportionating from each section first number 'n' has been picked the very first of ten rupees note then every 4th of the student has been selected. After obtaining the consent & permission from IRB, chief educational officer of

Kancheepuram district & school authorities research study has begun in schools with measuring of an anthropometric measurement of children & adopted a prepared questionnaires to collect the data on socio-economic status, physical activity & dietary behavior.

Questionnaire had been prepared based on the major risk factors, behavioral factors, physical inactivity & junk food consumption. Questionnaire designed, structured & tested through pilot study and later applied in study and gathered some through interview method & some filled information by parents. Physical activity level (PAL) gathered through set of question & questionnaire which has been set by National institute of Nutrition. Based on anthropometric measurement data BMI has been calculated & BMI cut off points used based on Cole et al⁷. Dietary habits data had been collected through FFQ (Food Frequency Questionnaire) 1week. All collected data compiles in Microsoft excel sheet. Data management & computations of descriptive statistics & prevalence were performed using SPSS version 16.0

STUDY PERIOD

During a period of 1ST january 2008 to 31st December 2009.

RESULTS

A total of 1229 children of 6th to 12th Standard participated in this study. The age ranged from 10 – 18 years. Of them 620 were boys (50.44%) and 609 were girls (49.55%). The prevalence of overweight in boys is 15.6% and it is 6.9% among girls. The prevalence of obesity among boys is 3.7% and it is very low as 0.3% in girls (Table 1). The difference in proportions of overweight and obesity between boys and girls are statistically highly significant (P<0.001).

Table 1: Socio-demographic & personal habits wise distribution of Overweight & obesity among adolescents.

		Number Examined	Grading of Obesity				x ² -Value	P-Value
			Over Weight		Obesity			
			N	Prev %	N	Prev %		
Gender	Male	620	97	15.6	23	3.7	39.09	<0.001
	Female	609	42	6.9	2	0.3		
Age in years	11	96	3	3.1	0	0.0	7.46	0.006
	12	117	15	12.8	6	5.1		
	13	145	23	15.9	3	2.1		
	14	179	9	5.0	2	1.1		
	15	175	11	6.3	4	2.3		
	16	234	29	12.4	0	0.0		
	17	283	49	17.3	10	3.5		

Table 1: Socio-demographic & personal habits wise distribution of Overweight & obesity among adolescents.
(Contd.)

		Number Examined	Grading of Obesity				x ² -Value	P-Value
			Over Weight		Obesity			
			N	Prev %	N	Prev %		
Socio Economic Status	2	132	26	19.7	4	3.0	9.70	0.002
	3	1014	105	10.4	21	2.1		
	4	83	8	9.6	0	0.0		
PAL category	Vigorous	754	6	0.8	0	0.0	265.7	<0.001
	Sedentary	475	133	28.0	25	5.3		
Junk food consumption	Once a week	30	4	13.3	2	6.7	1.17	0.280
	>once a week	1197	135	11.3	23	1.9		
Milk products & fruit juices	Once a week	36	4	11.1	4	11.1	2.25	0.112
	>once a week	1192	135	11.3	21	1.8		
Carbonated drinks	Once a week	68	4	5.9	2	2.9	1.30	0.253
	>once a week	1155	135	11.7	23	2.0		

The prevalence of overweight in socio economic status II is 19.7% and it is decreases to 10.4% and 9.4% in socio economic status III and socio economic status IV respectively. The similar trend is followed in the prevalence of obesity among different socio economic

status. That is the as the socio economic status increase from II to IV the prevalence of overweight and obesity decreases. The prevalence of overweight and obesity among different socio economic status is statistically significant (P=0.002).

Table 2: Physical activity and obesity distribution

Obesity	PAL CATEGORY				Total	
	VIGOROUS		SEDENTARY		N	%
	N	%	N	%		
Normal	748	99.2	317	66.7	1065	86.7
Over weight/ Obese	6	.8	158	33.3	164	13.3
Total	754	100.0	475	100.0	1229	100.0

X²= 265.65, df = 1, p<0.01.

It is observed that the prevalence of overweight among vigorous PAL is less than 1% and it is as high as 28% in the sedentary PAL group. Similarly the obesity is nil and 5.3% in vigorous and sedentary PAL

groups respectively. These results statically prove that physical activity level (PAL) is strongly associated with the overweight and obesity (P<0.001).(Table 2).

Table 3: Multiple Logistic Regression analysis

		Adjusted Odds Ratio		95% CI for AOR	P-Value
		LL	UL		
Gender	Female	1.00	-	-	-
	Male	3.01	1.99	4.57	<0.001
Age	1.17	1.06	1.30	0.003	
Socio Economic Status	4	1.00	-	-	-
	2	2.91	1.10	7.72	0.032
	3	1.38	0.59	3.24	0.460

Table 3: Multiple Logistic Regression analysis (Contd.)

		Adjusted Odds Ratio		95% CI for AOR	P-Value
		LL	UL		
PAL category	Vigorous	1.00	-	-	-
	Sedentary	72.0	29.1	178.1	<0.001
Type of diet	Vegetarian	1.00	-	-	-
	Mixed	0.15	0.02	1.38	0.094
Junk food consumption	Once a week	1.00	-	-	-
	>once a week	0.55	0.15	1.95	0.353
Milk products & fruit juices	Once a week	1.00	-	-	-
	>once a week	0.77	0.29	2.03	0.597
Carbonated drinks	Once a week	1.00	-	-	-
	>once a week	1.40	0.52	3.76	0.500

The prevalence of overweight is 13.3% among those who consumes junk food once a week but it is only 11.3% among those who consumes junk food more than once a week. The prevalence of obesity is 6.7% and 1.9% among once a week and more than once week consuming junk food respectively. The results show that one who consumes junk food less frequently will tend to become overweight or obese. This difference is not statistically significant ($P = 0.280$).

Socio economic status is also inversely associated with overweight or obesity. When compared to SES IV the SES III have 2.91 times higher chance of becoming overweight and/or obese which is statistically significant ($P=0.032$). Whereas the SES 3 category when compared to SES IV has 1.38 times higher chance of becoming overweight or obese but it not statistically significant ($P=0.460$).

The other variables like type of food, junk food consumption, milk product and fruit juice consumption and carbonated drinks consumption does not have any higher risk of becoming overweight or obese. The Odds ratios are presented in the (Table 3).

DISCUSSION

The prevalence of Overweight i.e. 15.6% for boys & 6.9% for girls is higher in this Study while compare to studies done in Andhra PradeThe prevalence of Overweight i.e. 15.6% for boys & 6.9% for girls is higher in this Study while compare to studies done in Andhra Pradesh, Karnataka, Punjab where as the prevalence of overweight in my studies is lower while compare to study done in Chennai & Ahmadabad. Whereas prevalence of Obesity is lower in this study 3.7% and 0.3% while compare to study

done in Guntur 8.4 for girls and 6.9% for boys (Andhra Pradesh) ⁽⁸⁾. South Karnataka 9.9% ⁽⁹⁾, Punjab 9.91% boys and 11.99% girls were overweight ⁽¹⁰⁾ and nearly equal to study done in Ahmadabad 14.3% among boys and 9.2% among girls ⁽¹¹⁾ & Hyderabad 6.1% among boys and 8.2% among girls ⁽¹²⁾.

The relatively low prevalence of obesity among my study children may be surprising, but the relatively high prevalence of overweight is alarming. Overweight children often become overweight adults and overweight in adulthood is a health risk⁽¹³⁾

CONCLUSION

The multiple logistic regression analysis predicted that gender & physical activity level were the best predictors of obesity among adolescents.

Physical Activity Level (PAL) has a tremendous effect on overweight or obesity. The sedentary PAL group has as high as 29 times of higher chance of becoming overweight or obese when compared to Vigorous PAL activity group. This is statistically highly significant ($P<0.001$).

The major research areas relating to non communicable diseases includes lifestyle modification to reduce the rising morbidity due to Hypertension & CVS diseases, documenting the health problems associated with lifestyle changes & increased longevity⁽¹⁴⁾.

RECOMMENDATIONS

Based on the finding of this study it is recommended that Sedentary lifestyle should be discouraged, increase physical activity like playing

outdoor games, walking, cycling should be encouraged in children, development of Play grounds should be done both in Schools and in community, Health education should be given to parents, teachers & children regarding dietary habit & sedentary life style.

Hence an Ounce of prevention is worth a Pound of cure

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Conflict of Interest: None.

Source of Funding: None.

Ethical Clearance: Taken from "Institutional review board" (IRB) & accepted

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Assessment of Information Needs among Patient with Myocardial Infarction in Tertiary Care Hospital in Mangalore

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ABSTRACT

Myocardial infarction (MI) is a life threatening condition characterized by the formation of localized necrotic areas within the myocardium. The "patients' need" is a dynamic complex concept that changes with time and disease progression, while it is also dependent on the spiritual cultivation and cultural traditions of the patients. Patient education has been considered as an integral component of care for patient after myocardial infarction. Cardiac education and cardiac rehabilitation aim to improve patients' long-term survival and recovery, post myocardial infarction (MI), through education on risk factor management. Nurses play an important role to reemphasize information related to myocardial infarction such as life style, medications, diet, psychological concerns, activities, stress management and symptoms.

Objective of the study: To explore the information needs of the patient with myocardial infarction and to find out the association of information need with selected demographic variables.

Method: A descriptive study was used. The sample consisted of 25 myocardial infarction patient's selected using consecutive sampling technique. A rating scale was used to assess the information needs of myocardial infarction patients admitted in hospital. The data was collected and compiled for data analysis.

Result: The findings of the study showed that majority (68%) of subjects had high information need, and 32% had moderate information need and the mean percentage (87.25%) of information needs was highest in the area of physical activity and least (36.26%) in the area of dietary information. The findings showed that the computed chi-square value between the information needs and the selected demographic variables of myocardial infarction patient for education $\chi^2=6.995$ ($P \leq 0.05$) was significant at 0.05 level of significance.

Interpretation and Conclusion: Findings of the study showed that majority of the patients with myocardial infarction had high need for information. There was association of information needs with the selected demographic variable such as education level.

Keywords: Information Needs, Myocardial Infarction

INTRODUCTION

Cardiovascular disease is responsible for approximately 10% of disability-adjusted life years in low- and middle-income countries and 18% in high

income countries. Disability-adjusted life years indicate the total burden of a disease, not only a negative result- death. Coronary heart disease is now the leading cause of mortality worldwide and accounts for the death of 3.8 million men and 3.4 million women each year. In developing countries, coronary artery diseases including myocardial infarction have been recognized as a major public health problem.¹ Myocardial infarction (MI) is a life threatening condition characterized by the formation of localized necrotic areas within the myocardium.²

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Survivors of myocardial infarction are required to cope with and adapt to life altering experiences in order to improve their long-term recovery and life quality.¹

According to World Health Organization (WHO) 12.2% of worldwide deaths were from myocardial infarction with it being the leading cause of death in high or middle income countries. Worldwide more than 3 million people have ST elevation MI (STEMIs) and 4 million have non ST elevation MI (NSTEMIs) a year. In India, myocardial infarction had become the leading cause of death by 2004 accounting for 1.46 million deaths (14% of total deaths) and deaths due to myocardial infarction were expected to double during 1985–2015.³

Nowadays, it has become evident that the care of hospitalized coronary patients is not only limited to the treatment of the disease and the prevention of complications but also involves assessment of their needs for the provision of high quality of care.⁴ Patient education has been considered as an integral component of care for patient after myocardial infarction.⁵ Cardiac education and cardiac rehabilitation aim to improve patients' long-term survival and recovery, post myocardial infarction (MI), through education on risk factor management.⁶ Nurses play an important role to reemphasize information related to myocardial infarction such as life style, medications, diet, psychological concerns, activities, stress management and symptoms. All these are crucial so that patient can manage the post discharge period safely and make informed decisions about potential lifestyle changes.⁵ In a study by Moser et al. , when patient needs post-MI were examined, they found that the priority was getting accurate information about the process of the disease and emotional support. It is known that patients' living conditions and habits have an effect on the etiology of MI. In another study by Meischke et al. Illustrates patients whom were followed for 4-8 weeks post MI have difficulties from not having a regulated daily life and from bad habits.⁷

Following an acute MI, the patient requires information and knowledge related to their conditions to reduce anxiety and aid recovery. With information related to MI, patient and family members are able to make suitable changes in their lifestyle. Such undertaking is easier to be made if a patient understands the basic rationale for changes and the benefits.⁸ The study will help in assessing the learning needs of patients with myocardial infarction.

AIMS AND OBJECTIVES

1. To explore the information needs of the patient with myocardial infarction.
2. To find out the association of information need with selected demographic variables.

MATERIALS AND METHOD

The study was conducted in A.J Hospital and Research Centre, an 800 bedded multispecialty (NABH accredited) hospital in Mangalore. The study was carried out using descriptive design and was conducted on 25 patients with myocardial infarction, who were selected using consecutive sampling technique.

MEASUREMENTS

Demographic Proforma and rating scale to assess the information needs of myocardial patients.

A proforma for selected personal information was used to collect sample characteristics which include age, religion, education, occupation, any related diseases and when was diagnosed to have MI.

Rating scale to assess the information needs of myocardial patients have 45 items under areas like anatomy and physiology, psychological factors, lifestyle factors, risk factors, medication information, dietary information, physical activity, symptom management, surgical management and miscellaneous, in which all 45 items were with responses of "not important", "slightly important" "important" and "very important" and all responses had the scoring 1, 2, 3, and 4 respectively.

The data was collected by distributing the self administered rating scale and the data collected was further tabulated, analyzed, graphs and charts were obtained then concluded with the results.

RESULTS

Description of Demographic Variables

Majority of patients 13(52%) were more than the age of 55yrs and most of subjects 9(36%) were Christians and Muslims. Highest percentage of subjects 9 (36%) had diploma education level and most of them 9 (36%) are self employed and unemployed. Majority of patients 9 (36%) were having hypertension. Highest percentage 15(60%) of sample have been

diagnosed to have MI in < 1 year and least percentage 10(40%) have been diagnosed to have MI 1-3 years.

Table 1: Frequency and percentage distribution of subjects according to their demographic variables

N=25

Variables	Frequency (f)	Percentage(%)
Age (in years)		
25-35	0	0
36-45	3	12
46-55	9	36
>55	13	52
Religion		
Hindu	7	28
Christian	9	36
Muslim	9	36
Any other, specify	0	0
Education		
Pre-university	5	20
Diploma	9	36
Graduate	5	20
Post graduate	6	24
Occupation		
Private employee	4	16
Government employee	5	20
Self employed	8	32
Unemployed	8	32
Any related diseases		
Diabetes mellitus	7	28
Hypertension	9	36
Hyperlipidemia	9	36
Any other specify	0	0
When was diagnosed to have MI		
< 1 year	15	60
1-3 years	10	40
3-5 Years	0	0
>5 years	0	0

Description of information needs of myocardial patients

Table 2: Frequency and percentage distribution of patients according to their scores.

N=25

Information need	Frequency(f)	Percentage(%)
low (0-45)	0	0
Moderate (46-90)	8	32
high (91-135)	17	68

Data in table 2 show that majority (68%) of subjects had high information need, and 32% had moderate information need.

Area-wise analysis of the information needs of myocardial infarction patient

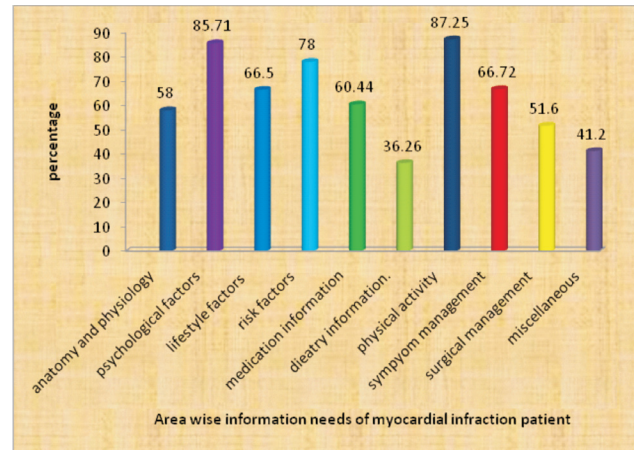


Fig. 1. Cylindrical diagram showing area-wise mean percentage of information needs of myocardial infarction patients

Data in Figure 1 show that the mean percentage (87.25%) of information needs was highest in the area of physical activity and least (36.26%) in the area of dietary information.

Association between information needs of patients with selected demographic variables.

The findings showed that the computed chi-square value between the information needs and the selected demographic variables of myocardial infarction patient for education $\chi^2=6.995$ (P d" 0.05) was significant at 0.05 level of significance. Hence null hypothesis is rejected and research hypothesis is accepted. But there was no significant association between age, religion, occupation, any related diseases and when was diagnosed to have MI with information needs among the myocardial infarction patient. Hence the null hypothesis is accepted for these variables and research hypothesis is rejected at 0.05 level of significance.

DISCUSSION

In the present study, highest percentages (52%) of myocardial infarction patients were in the age group of > 50 years. Majority of subjects 9(36%) were Christians and Muslims and the least were Hindus 7 (25%). Highest percentage of subjects 9 (36%) had diploma education level and least had pre-university education level 5 (20%). Majority of the participants 9 (36%) are self employed and unemployed and least are private employee 4 (16%). Majority of patients 9

(36%) were having hypertension. Highest percentage 15(60%) of sample have been diagnosed to have MI in < 1 year and least percentage 10(40%) have been diagnosed to have MI 1-3 years. These findings were consistent with the study that was conducted to assess the perception of myocardial infarction patient about the information needs (n= 40) at a public sector tertiary hospital in Johannesburg. The study findings revealed that majority of study subjects (45%) were in the age group of 60-75. majority of 80.00% were Christian .Of the patient total sample size (n= 40), the highest number (47.50%, n= 19) were retired, followed by 25% (n= 10) who were unemployed.¹

The findings of the present study showed that majority (68%) of subjects had high information need, and 32% had moderate information need and the mean percentage (87.25%) of information needs was highest in the area of physical activity and least (36.26%) in the area of dietary information. These findings of the study were similar to a study that was conducted to explore the information needs of patients who have received treatment for a myocardial infarction from an acute hospital in UK. Patients indicated how important it was to know about each of 40 information items like causes of MI, medication, complication, and resuming of physical activities and items related to medications, complications and physical activities were rated highly. Responses to an open question revealed that driving, returning to work and sources of support were issues of concern.⁹

The findings of the present study showed that the computed chi-square value between the information needs and the selected demographic variables of myocardial infarction patient for education $\chi^2=6.995$ (P d'' 0.05) was significant at 0.05 level of significance. The findings also showed that there was no significant association between age, religion, occupation, any related diseases and when was diagnosed to have MI with information needs among the myocardial infarction patient. Hence the null hypothesis is accepted for these variables and research hypothesis is rejected at 0.05 level of significance. These findings were consistent with a study that was conducted to assess the perception of myocardial infarction patient about the information needs (n= 40) at a public sector tertiary hospital in Johannesburg. There was no significant association of information needs with demographic variables.¹

CONCLUSION

Acute myocardial infarction is particularly tragic as it often strikes down the victim in their productive years of life, removing the breadwinner from families. When non-fatal, it often results in severe disability and consequent impoverishment for entire families. In the coronary care setting, it is always a challenge to meet the educational needs of patients and families because of the life-threatening nature of critical illness. Patient and family education is a vital component of nursing care. However, the period after discharge is stressful with evidence suggesting that a significant portion of patients experience continuing anxiety. Providing information for myocardial infarction patients is an important nursing function and is part of the role of health care professionals delivering cardiac rehabilitation. It is essential to acknowledge and incorporate the self-perceived needs of patients into the information they perceive.¹⁰

Based on the findings of the study the following conclusions have been drawn

Highest percentage (52%) of myocardial infarction patients were in the age group of > 50 year. Majority of subjects 9(36%) were Christians and Muslims and the least were Hindus 7 (25%). Highest percentage of subjects 9 (36%) had diploma education level and least had pre-university education level 5 (20%). Majority of the participants 9 (36%) are self employed and unemployed and least are private employee 4 (16%). Majority of patients 9 (36%) were having hypertension. Highest percentage 15(60%) of sample have been diagnosed to have MI in < 1 year and least percentage 10(40%) have been diagnosed to have MI 1-3 years. The findings of the study showed that majority (68%) of subjects had high information need, and 32% had moderate information need and the mean percentage (87.25%) of information needs was highest in the area of physical activity and least (36.26%) in the area of dietary information. The findings showed that the computed chi-square value between the information needs and the selected demographic variables of myocardial infarction patient for education $\chi^2=6.995$ (P d'' 0.05) was significant at 0.05 level of significance. The findings also showed that there was no significant association between age, religion, occupation, any related diseases and when was diagnosed to have MI with information needs among the myocardial infarction patient.

Source of Funding: Nil.

Conflict of Interest: Nil

Ethical Clearance: Ethical clearance has been obtained from ethical committee

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Effect of Intrathecal Dexmedetomidine on the Characteristics of Bupivacaine Spinal Block in Orthopaedic Surgeries

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ABSTRACT

Background: The aim of this study was to evaluate the onset and duration of sensory and motor block, hemodynamic effect, postoperative analgesia, and adverse effects of dexmedetomidine given intrathecally with hyperbaric 0.5% bupivacaine.

Material and method: Sixty patients undergoing elective lower limb orthopaedic surgery under spinal anesthesia were selected. Inclusion criteria were American Society of Anaesthesiologists (ASA) physical status I or II, either sex, age 20-60 years, presenting for lower limb orthopaedic surgery. The study population was randomly divided into 2 groups with 30 patients in each group. Patients allotted to Group D received 0.5% hyperbaric bupivacaine 15mg + dexmedetomidine 12.5µg and Group B received 0.5% hyperbaric bupivacaine 15mg + normal saline.

Results: Onset to sensory block was significantly shorter in group D (2.60±0.56min) than in group B(4.17±0.65min). Block regression was significantly slower with addition of intrathecal dexmedetomidine(group D) as compared to group B. The time to reach Bromage 3 motor block was significantly shorter in group D (5.0±0.9min) than in group B(7.9±0.7min).

Conclusion: Intrathecal dexmedetomidine significantly prolonged sensory and motor block with stable hemodynamic condition and good patient satisfaction.

Keywords: Bupivacaine, Dexmedetomidine, Intrathecal, Spinal Anesthesia

INTRODUCTION

Spinal anesthesia is commonly employed for orthopaedic surgeries. Various adjuncts have been used to prolong the analgesic effect of bupivacaine. Intrathecal α_2 -agonists are used as adjuvant drugs to local anesthetics. They potentiate the effect of local anesthetics and allow a decrease in the required doses. Dexmedetomidine is a highly selective α_2 -adrenoreceptor agonist recently introduced to

anesthesia. It produces dose-dependent sedation, anxiolysis, and analgesia (involving spinal and supraspinal sites) without respiratory depression. α_2 -agonists are known to reduce anesthetic requirements, and because of their sympatholytic properties, afford hemodynamic stability during the intraoperative period^(1,2,3,4,5) Small doses of dexmedetomidine(3µg) used in combination with bupivacaine, in humans, for spinal anaesthesia has been shown to produce a shorter onset of motor block and a prolongation in duration of motor and sensory block with preserved hemodynamic stability and lack of sedation.⁶ The objective of this study was to evaluate the onset and duration of sensory and motor block, hemodynamic effect, postoperative analgesia, and adverse effects of dexmedetomidine given intrathecally with hyperbaric 0.5% bupivacaine.

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MATERIAL AND METHOD

The study was conducted at Bapuji hospital attached to JJM Medical College, Davangere after approval of ethical committee of the institution. Sixty patients undergoing elective lower limb orthopaedic surgery under spinal anaesthesia were selected. Written informed consent was taken from all the patients. Inclusion criteria were American Society of Anesthesiologists (ASA) physical status I or II, either sex, age 20–60 years, presenting for lower limb orthopaedic surgery. Exclusion criteria included patients using adrenergic receptor blockers, labile hypertension, heart disease and patients with absolute contraindications for spinal anaesthesia.

The patients were preloaded with lactated ringer's solution 10 mL/kg. They were monitored with automated non-invasive blood pressure, pulse oximetry, and electrocardiogram. Under aseptic precautions lumbar puncture was performed at L₃L₄ interspace using a 23G spinal needle with patient in sitting position. The study population was randomly divided into 2 groups with 30 patients in each group. Patients allotted to Group D received 0.5% hyperbaric bupivacaine 15mg + dexmedetomidine 12.5µg and Group B received 0.5% hyperbaric bupivacaine 15mg + normal saline. Patients were placed in supine position immediately and given supplemental oxygen 5L/min. Pulse rate, blood pressure, respiratory rate, SPO₂ were monitored and recorded every 2 minutes for first 15 minutes of surgery and then every 15 minutes until the end of surgery. The sensory block was assessed by pin prick using hypodermic needle and the time of onset, highest level of sensory blockade,

time for two segment regression of sensory level and duration of sensory block was noted. The Motor block was assessed by modified bromage scale : Bromage 0, the patient is able to move the hip, knee and ankle; Bromage 1, the patient is unable to move the hip and knee but able to move the ankle; Bromage 2, the patient is unable to move the hip and knee but able to move the ankle; Bromage 3, the patient is unable to move the hip, knee and ankle.

Time of onset, degree of motor blockade and duration of motor blockade was recorded. Postoperatively, the pain score was recorded by using visual analog pain scale (VAS) between 0 and 10 (0 = no pain, 10 = most severe pain), initially every 1 h for 2 hr, then every 2 hr for the next 8 hr and then after every 4 hr till 24 hr. Side effects and complications like hypotension, bradycardia, nausea, vomiting, shivering were recorded throughout the study duration.

Statistical analysis :Qualitative data will be analyzed by chi-square test and quantitative data will be analyzed by student 't' test.

OBSERVATION AND RESULTS

Sixty patients were included in the present study. Thirty patients allotted to Group D received 0.5% hyperbaric bupivacaine 15mg + dexmedetomidine 12.5µg and thirty patients in Group B received 0.5% hyperbaric bupivacaine 15mg + normal saline. The groups were comparable with respect to age, weight, height and ASA physical status. The demographic data did not differ significantly between the two groups.(Table 1)

Table 1: Demography

	Group D	Group B	P value
Age(years)	43.5±11.9	43.7±11.7	0.96
Sex(male/female)	20/10	16/14	0.29
ASA I: ASA II	20:10	21:9	0.78

The characteristics of sensory block are summarized in Table 2. Onset to sensory block was significantly shorter in group D(2.60±0.56min) than in group B(4.17±0.65min). Block regression was significantly slower with addition of intrathecal

dexmedetomidine(group D) as compared to group B. The time to reach Bromage 3 motor block was significantly shorter in group D(5.0±0.9min) than in group B(7.9±0.7min).

Table 2: Characteristics of block

	Group D(min)	Group B(min)	P value
Onset of sensory block	2.60±0.56	4.17±0.65	<0.001
Onset to Bromage 3	5.0±0.9	7.9±0.7	<0.001
Time to two segment regression	123.3±6.3	81.0±7.6	<0.001
Sensory regression to S1 segment	439.2±36.0	178.0±10.6	<0.001

The complications are summarized in Table 3. Hypotension was observed in 10% in group D compared to 43.3% in group B. Nausea and vomiting

did not differ significantly between the two groups. Episodes of shivering and bradycardia was significantly lower in group D compared to group B.

Table 3: Side effects

	Group Dn (%)	Group Bn (%)	P value
Hypotension	3(10.0)	13(43.3)	0.004
Nausea	0	0	-
Vomiting	0	2(6.7)	0.15
Shivering	2(6.7)	9(30.0)	0.02
Bradycardia	1(3.3)	11(36.7)	0.001

DISCUSSION

Dexmedetomidine is a new generation highly selective α_2 -adrenergic receptor agonist that is associated with sedative and analgesic sparing effects, reduced delirium and agitation, perioperative sympatholysis, cardiovascular stabilizing effects and preservation of respiratory function. α_2 -adrenergic receptor agonists produce clinical effects after binding to G-protein coupled α_2 AR of which there are three subtypes (α_2A , α_2B , α_2C) with each having different physiological functions and pharmacological activities. Locus ceruleus of brain stem is the principal site for the sedative action and spinal cord is the principal site for analgesic action both acting through α_2 AR^(1,2,3,4) It is thought that intrathecal dexmedetomidine produces its analgesic effect by inhibiting the release of C fiber transmitters and by hyperpolarization of post-synaptic dorsal horn neurons⁷. The prolongation of motor effect might be caused by direct impairment of excitatory amino acid release from spinal interneurons.⁸

Animal studies conducted in rats, rabbits, dogs and sheep have used intrathecal dexmedetomidine at a dose range of 2.5-100 μ g without any neurological deficits^(9,10,11). Fukushima et al⁽¹²⁾ administered 2 μ g/kg dexmedetomidine epidurally for postoperative analgesia in humans without any reports of neurological deficits. Maroof et al⁽¹³⁾ used dexmedetomidine epidurally at approximately 1.5 μ g/kg to decrease the incidence of postoperative shivering

without any reports of neurological deficit. Kalso et al⁽⁶⁾ reported that dexmedetomidine affinity to α_2 -adrenoceptor agonists is 10 times than that of clonidine. Gupta et al¹⁴ has shown that the addition of 5 μ g dexmedetomidine with hyperbaric bupivacaine significantly prolongs both sensory and motor block. Al-Ghanem et al¹⁵ had studied the effect of addition of 5 μ g dexmedetomidine or 25 μ g fentanyl intrathecal to 10 mg isobaric bupivacaine in vaginal hysterectomy and concluded that 5 μ g dexmedetomidine produces more prolonged motor and sensory block as compared with 25 μ g fentanyl. Eid et al¹⁶ showed that intrathecal dexmedetomidine in doses of 10 μ g and 15 μ g significantly prolonged the anesthetic and analgesic effects of spinal hyperbaric bupivacaine in a dose-dependent manner. Kanazi et al¹⁷ found in their study, that supplementation of bupivacaine(12mg) spinal block with low dose dexmedetomidine(3 μ g) produces significantly longer sensory and motor block than bupivacaine alone. Al Mustafa et al¹⁸ reported that dexmedetomidine has a dose dependent effect on sensory and motor block when used as adjuvant to bupivacaine.

CONCLUSION

Our results showed that the combination of 15mg of intrathecal bupivacaine with 12.5 μ g of dexmedetomidine significantly prolonged sensory and motor block with stable hemodynamic condition and good patient satisfaction. Patients in the group that received dexmedetomidine had reduced pain scores

and a longer analgesic duration than those who received bupivacaine alone.

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Management of Diabetic Macular Edema with Intravitreal Bevacizumab: a Prospective Study

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ABSTRACT

Introduction: Diabetic macular edema (DME) is a manifestation of diabetic retinopathy that produces loss of central vision. Newer management modalities are being tried globally for diabetic macular edema. In the recent years, off-label anti-VEGFs especially bevacizumab in conjunct to grid laser is becoming popular.

Aim/Objective: To evaluate the efficacy of intravitreal bevacizumab on diabetic macular edema

Method: In this prospective study, 36 eyes from 48 patients were diagnosed as diabetic macular edema. The eyes were subjected to complete ocular examination. 1.25mg/0.05ml of bevacizumab was given and evaluated for central macular thickness at 1month and 3 months intervals. Grid laser was carried out, once the macular thickness reduced to satisfactory levels. If required, 2nd dose of bevacizumab was given.

Results: Of the 36 eyes, 72% maintained normal macular thickness at the end of 3 months, 19% of the eyes required 2nd dose of bevacizumab. 28% did not show satisfactory results for which further intervention was done at the end of 3 months.

Conclusion: Intravitreal injection of 1.25mg bevacizumab was well tolerated by our study group and a Combined Intravitreal bevacizumab and grid laser showed better anatomical and functional improvement in most of our study subjects. However, for long term safety and efficacy, many more long term studies are required.

Keywords: *Bevacizumab, Diabetic Macular Edema, Grid Laser, Intravitreal Injection*

INTRODUCTION

Diabetic Retinopathy is a major cause of blindness in many parts of the world. Diabetic Macular Edema (DME) is a manifestation of diabetic retinopathy which leads to loss of central vision. Diabetic macular edema is seen more commonly in type 2 diabetes. Incidence of DME is directly proportional to the duration of diabetic retinopathy. Etiology of DME is multifactorial and incidence increases with type and duration of diabetes. The main mechanism seems to be breach in the blood-retina-barrier (BRB) which involves dilated capillaries, retinal micro aneurysms, and loss of pericytes, with eventual impairment of the blood-retinal barrier (BRB) ⁽¹⁾. Breakdown of the BRB results in fluid leakage into the extracellular space, which

disrupts macular structure and function on a cellular level ^(2,3). In diabetic patients, hydrostatic pressure is usually increased because of systemic hypertension and retinal ischemia leading to exudation of fluid. This is further exacerbated as increased hydrostatic pressure leads to dilatation and tortuosity of retinal arterioles, capillaries, and venules. This increases vessel wall tension and further disrupting the BRB according to La Place's Law ⁽⁴⁾. The exact pathogenesis of DME is not completely understood but is believed to involve angiogenesis, inflammation, and oxidative stress ⁽⁵⁾. Hyperglycemia is reported to lead to capillary endothelial damage and alterations in leukocyte function ⁽⁶⁾. Adding on to this is the activation of oxidative stress agents, such as advanced glycation end products and the protein kinase C (PKC) pathway due

to hyperglycemia⁽⁷⁾. Various inflammatory mediators like vascular endothelial growth factor (VEGF)⁽⁸⁾, placental growth factor (PGF)⁽⁹⁾, and hepatocyte growth factor (HGF)⁽¹⁰⁾ appear to play a role in causing macular edema in a diabetic eye.

If left untreated, 25–30% of patients affected by diabetic macular edema (DME) experience a 15- letter decrease in visual acuity (VA) score within 3 years⁽¹¹⁾. Macular edema within 1 disk diameter of the fovea is present in 9% of the diabetic population⁽¹²⁾. Intensive control of systemic factors, including blood sugar, blood pressure, and serum lipids, has been reported to reduce complications of diabetic retinopathy in patients with type 1⁽¹³⁾ and type 2⁽¹⁴⁾ diabetes.

Multi factorial pathogenicity calls for a combination of approaches as any single line of management often leads to incomplete outcomes. The available therapies to manage DME are macular laser photocoagulation, corticosteroids and anti-VEGF drugs.

PATIENTS AND METHOD

36 eyes from 48 patients diagnosed as Diabetic Macular Edema were included in this study.

Inclusion criteria

1. Retinal thickening involving center of macula due to diabetes
2. OCT reading of thickness $\geq 275\mu\text{m}$

Exclusion criteria

1. Macular edema due to any other cause
2. Previous h/o macular laser

3. Macular edema with serous detachment due to increased HbA1C.

All patients underwent vision testing (distant/near), 90D examination, OCT (Fast macular scan) at first visit and subsequent follow ups. Patients diagnosed to have DME $\geq 275\mu\text{m}$ on OCT received 1st dose of bevacizumab. Patients were examined 1week, 1month and 3months after initial injection. At each visit, vision, IOP, OCT were repeated. Complications, if any were noted.

Procedure: Informed written consent of the patient was obtained before the procedure.

With all aseptic precautions, 1.25mg of 0.05ml bevacizumab was injected through parsplana, inferotemporally, 3.5-4mm from limbus. Post injection, patients were advised to instill antibiotic and antiglaucoma medications for 1 week. After 48hrs of injection, patients were called to assess regarding IOP status and any intraocular reactions. Review was done after 1month and OCT was repeated to know the macular thickness. If significant reduction in macular thickness was found, then grid laser was done. Otherwise, second dose of avastin was repeated. Those patients who underwent grid laser, were evaluated after 3 months and those who received second dose of bevacizumab were evaluated after 1 month.

RESULTS

36 eyes with DME of various characters were studied. Of the 36 eyes, 18 had diffuse macular edema, 10 had focal macular edema, 8 eyes had clinically significant macular edema with cystoids macular edema.

The details of the results are tabulated in table-1

Table 1: Table showing follow up results of avastin and adjunct laser therapy.

No of eyes	ME characters	Avastin 1 st dose	Grid laser (to improved eyes).	Avastin 2 nd dose	Improvement seen after 3m	No improvement after 3m
18	Diffuse DME	18	13(72%)	5(28%)	12(66%)	6(33%)
10	FME	10	10(100%)	-	8(80%)	2(20%)
8	CME+CSME	8	6(75%)	2(25%)	6(75%)	2(25%)
36		36	29(81%)	7(19%)	26(72%)	10(28%)

DME-Diabetic macular edema, FME- Focal macular edema, CME- Cystoid macular edema, CSME- Clinically significant macular edema.

All the 36 eyes were given 1st dose of bevacizumab and were evaluated after 1 month. Out of 18 eyes with diffuse DME, 13 of them showed improvement after 1 month while for the remaining 5 eyes 2nd dose of bevacizumab had to be given. 6 of the 18 eyes didn't show improvement even after 3 months. 2 of them had ME with serous detachment due to increased HbA1C level, 1 eye had vitreo macular traction and 3 eyes had recurrence. Those 10 eyes with focal macular edema, 2 eyes showed recurrence. Of the 8 eyes with CME+CSME, 2 eyes which didn't show improvement even after 3 months due to taut posterior hyaloid face and mild traction of macula. These 2 eyes underwent pars plana vitrectomy with membrane peel +C3F8 and later showed normal foveal contour and improvement in BCVA. Hence we found a total of 26 (72%) eyes improving at the end of 3m follow up and only 5 (14%) eyes with recurrence.

DISCUSSION

Before the advent of Anti-VEGFs for macular edema, corticosteroids used to be the mainstay of treatment. But the steroids resulted in raised IOP, cataract, secondary infections leading to endophthalmitis and steroid responders with uncontrollable intra ocular pressure⁽¹⁵⁻¹⁷⁾. To combat these side effects, there was a constant debate over the best therapeutic agent.

It is seen that a multitude of proinflammatory cytokines are involved in the development and progression of DME. VEGF has been linked to leakage of retinal vessels which leads to retinal edema⁽¹⁸⁾. This was the rationale for testing anti-VEGF drugs for the treatment of DME. Thus these agents are slowly replacing steroids in the management of diabetic macular edema. Even with these agents raised IOP and infections were noted. But these effects do not appear to be as strong as that associated with intravitreal corticosteroids⁽¹⁹⁾. In most published series, the rate of endophthalmitis following treatment with intravitreal anti-VEGF injections is about only 0.03% per injection⁽²⁰⁻²²⁾. In our study none of the cases ended up with endophthalmitis (0%).

In this study after the first dose of bevacizumab, grid laser was done to all the eyes showing some improvement. Studies show that monotherapy with grid laser or with anti-VEGFs do not yield significant results. The synergistic effect of laser and anti-VEGF treatment can be explained by several mechanisms. Decreased foveal thickness/edema after the first dose

of avastin facilitates laser treatment and reduces the need for high laser energy. Furthermore, more marked and prolonged reduction in macular thickness is achieved. Bevacizumab downregulates VEGF and reduce capillary permeability. However, macular hypoxia which is an underlying problem is not addressed. As a result of which there will be rapid recurrence of macular edema a few weeks after injection when VEGF levels again increase in the vitreous. Grid laser photocoagulation decreases oxygen consumption by destroying photoreceptors. Hence, combining anti-VEGF with laser photocoagulation gives better results than either alone⁽²³⁾. This observation is consistent with our study also.

The Diabetic Retinopathy Clinical Research Network conducted a phase 2, prospective, randomized, multicenter clinical trial to determine the safety and possible benefits of this agent. They concluded that intravitreal bevacizumab can reduce diabetic macular edema in some eyes, but the study was not designed to determine whether the treatment was beneficial⁽²⁴⁾. A phase 3 trial would be needed for that purpose. There are isolated reports of macular ischemia being initiated or aggravated by the use of bevacizumab which is a pan VEGF inhibitor⁽²⁵⁾. But in our study no such complication was encountered. Though we encountered a recurrence rate of 13.8% (5 eyes), beneficial outcomes seemed to take the upper hand. Overall there was no improvement rate of 28% (10 eyes) at the end of 3m with both laser and intravitreal bevacizumab. In our study the macular thickness reduced from $375 \pm 30 \mu\text{m}$ to $220 \pm 20 \mu\text{m}$ with 1st dose of avastin and grid laser. At the end of six months, it stabilized to $220 \pm 30 \mu\text{m}$. BCVA at baseline improved 3 lines in Snellens chart. Similar results were documented by K Atul⁽²⁶⁾.

CONCLUSION

In conclusion, the conventional treatment with triamcinolone acetonide for diabetic macular edema is slowly being replaced by lasers and newer anti-VEGFs. Our study though had limitations like small study group and short follow up period, showed good improvement results with intravitreal bevacizumab with laser. The results were better in cases of focal macular edema and cystoid macular edema compared to diffuse macular edema. Thus we conclude that a combination of intravitreal injection of bevacizumab and laser is more effective in the management of diabetic macular edema.

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Ethical Clearance: Ethical committee clearance has been obtained to carry out this study.

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A Study of Sputum Conversion Rates Affecting the Treatment Outcome in Newly Diagnosed Smear Positive Cases under DOTS in Amritsar City

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ABSTRACT

Introduction: Sputum smear microscopy which is reliable, inexpensive, easily accessible and rapid method where in the bacilli is demonstrated in the sputum specimen of a patient suffering from PTB. Sputum conversion rate is a cardinal index of treatment success. The present study is an attempt to know about the sputum conversion rates at the end of IP and Extended IP and how they affect the treatment outcome in new smear positive patients under DOTS.

Materials and method: The study was conducted on new smear positive patients registered under DOTS in two Treatment Units (TUs) present in Amritsar city. Sputum conversion rates at the end of IP and Extended IP were calculated. Data management and analysis was done by using Microsoft excel and SPSS version 17.00.

Results: Out of 250 patients, 149 (59.6%) were males and 101(40.4%) were females. 75.8% of the cases among males and 87.2% among females were in the age group of 15-45 years. Male preponderance, with male to female ratio of 1.5:1 was seen. Sputum conversion rates at the end of IP and Extended IP were 80.8% and 92% respectively.

Conclusion: On statistical analysis, it was observed that favourable outcome was significantly associated with sputum conversion at the end of IP (OR= 2.43, p = 0.032) and at the end of Extended IP (OR = 5.23, p = 0.007).

Keywords: Tuberculosis, Sputum Conversion Rates, Treatment Outcome, DOTS

INTRODUCTION

Tuberculosis (TB) is one of the re-emerging diseases of public health importance, especially with the pandemic of HIV.¹ India is the highest tuberculosis burden country globally, accounting for 1/5th of the global incidence and 2/3rd of the cases in the south East Asia.²

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Under the Revised National Tuberculosis Control Programme (RNTCP), the mainstay of diagnosing and monitoring response to treatment in patients with pulmonary tuberculosis (PTB) is smear microscopy which is reliable, inexpensive, easily accessible and rapid method where in the bacilli are demonstrated in the sputum specimen of a patient suffering from PTB.³ This is unlike that we have in developed world the availability of other instrument in adequate quantity in detecting mycobacterium tuberculosis like Gene Xpert MTB/RIF assay, fluorescent microscopy, loop mediated isothermal amplification assay, line probe assays and culture and sensitivity test but the use of Gene Xpert in this part of the world is limited to cases of suspected MDR-TB where the patients had taken both category 1 and 2.⁴ Despite great advances in

molecular diagnosis, sputum smear examination for Mycobacterium tuberculosis (MTB) remain the gold standard for PTB diagnosis.

After initiation of anti-tuberculosis (anti-TB) treatment, sputum smears are regularly checked during the treatment period and serve as important indicators of treatment response. Sputum conversion rate is a cardinal index of treatment success⁵ and the best indicator that the intensive phase of chemotherapy has been regular and effective. A positive sputum smear at the end of the intensive phase may indicate poor supervision of the initial phase of therapy, poor patient adherence, poor quality of anti-TB drugs, use of anti-TB drugs at doses below the recommended range, slow resolution due to extensive cavitation and a heavy initial bacillary load, presence of co-morbid conditions that interfere either with adherence or with response, presence of drug-resistant M. tuberculosis that is not responding to first-line treatment and the evidence of non-viable bacteria that remain visible by microscopic examination.⁶ According to guidelines, after 2 months of chemotherapy more than 80% of new pulmonary smear positive cases should be smear negative, and after 3 months the rate should increase to more than 90%.⁷

MATERIALS AND METHOD

The study was conducted on new smear positive patients registered under DOTS in two Treatment Units (TUs) present in Amritsar city. One TU is located in the Chest and TB Hospital, Amritsar and the other is located in the Civil Hospital, Amritsar. A pre designed and pretested proforma was administered to the subject after taking his or her consent. Approval of college ethical committee was granted at the time of submission of the plan of the study.

Sampling Technique: Based on the quarterly reports of both the TUs and by the expected incidence of new smear positive (NSP) cases in the northern zone of India which is 95/lac population/yr, a quota of 250 cases was affixed (As population covered under two TUs is approximately 11 lac, the expected NSP cases in a year comes around 1045 and expected cases in a quarterly cohort is around 250).

Study Sample: The study sample consisted of 250 new smear positive (NSP) cases that were enrolled from December 1, 2009 to February 28, 2010. The study

period was extended till the projected number achieved.

Inclusion Criteria: New smear positive patients of >15 years of age were included in the study.

Exclusion Criteria: Patients with extra pulmonary tuberculosis and smear negative tuberculosis patients were excluded.

For calculating the sputum conversion rate, the number of smear- positive patients who had their sputum converted to smear-negative at the end of intensive phase was divided by the number of smear-positive patients started on treatment, and the ratio was multiplied by 100 for obtaining percentage.

Sputum conversion rate =

No. of sputum smear-positive converted to Smear-negative at the end of Intensive phase*

—————x 100

Total no. sputum smear-positive patients initiated on treatment

*For new sputum smear-positive patients sputum conversion is reported at the end of Intensive phase (at the end of 2 months of IP). For those new sputum smear-positive patients who remain smear positive at the end of 2 months of IP, sputum conversion is again reported at the end of Extended IP (at the end of 3 months of IP).⁸

The treatment outcome was cross-checked by interviewing the patient. The possible outcomes of the new smear positive patients under DOTS can be: Cured, Treatment Completed, Died, Failure, Defaulted and Transferred Out.⁸

Data management and analysis was done by using Microsoft excel and SPSS version 17.00. Mantel Hanzel Odds Ratio (OR) and 95% CI were calculated for dichotomous variables.

RESULTS

The present study was carried out on 250 newly diagnosed smear positive pulmonary tuberculosis cases registered under two TUs present in Amritsar city. Their sputum conversion rates influencing the treatment outcome were ascertained. The total sample consisted of 149 (59.6%) males and 101 (40.4%) females.

Table 1: Distribution of cases according to sex and age

Age Group (Years)	Male (n=149)		Female (n=101)		Total (n=250)	
	No.	%	No.	%	No.	%
15 – 29	82	(55.0)	64	(63.4)	146	(58.4)
30 – 44	31	(20.8)	24	(23.8)	55	(22.0)
45 – 59	25	(16.8)	11	(10.9)	36	(14.4)
>= 60	11	(7.4)	2	(1.9)	13	(5.2)

Table-1 shows the sex and age wise distribution of cases. 58.4% were in the age group of 15-29 years. Out of 149 males about three-fourth of the cases were less than 45 years i.e. 55% in the 15-29 years and 20.8% in the 30-44 years age group. Among 101 females, 87.2% were in the age group of 15-44 years.

Table II: Distribution of cases according to sputum conversion rates at the end of IP and at the end of 3 months (Extended IP)

Sputum status	At the end of IP n=250		At the end of 3 months (i.e. Extended IP) n= 250	
	No.	Percentage	No.	Percentage
Negative	202	80.8	230	92.0
Positive	42	16.8	10	4.0
Not known	6	2.4	10	4.0

Above table shows the sputum conversion rates at the end of IP and at the end of 3 months. 80.8% cases showed negative sputum results at the end of IP while 16.8% remained sputum positive which entered into Extended IP. Among the 6 cases (2.4%) cases in which the sputum status was not known, 2 died before 2 months and 4 didn't come for follow up sputum examination.

At the end of 3 months (Extended IP), sputum conversion rate was 92% while 4% were still positive. Among the 10 cases in which sputum status was not known, there were 5 deaths and 5 cases did not come for follow up sputum examination.

Table III: Distribution of cases in relation to sputum conversion at the end of IP with the outcome

Outcome	Sputum status at the end of IP (2 mths)				Total n=244 [^]		Significance*
	Negative (n=202)		Positive (n= 42)		No.	Percentage	
	No.	Percentage	No.	Percentage			
Cured	178	88.1	32	76.2	210	86.1	OR=2.43, 95% CI=1.06-5.59 p=0.032
Treatment completed	1	0.5	0	0.0	1	0.4	
Failure	9	4.6	4	9.5	13	5.3	
Defaulted	6	3.0	2	4.8	8	3.3	
Transferred out	4	1.9	0	0.0	4	1.6	
Died	4	1.9	4	9.5	8	3.3	

* For statistical analysis, outcomes were divided in two categories:

Favourable Outcome (F.O.) - include cured and treatment completed

Unfavourable Outcome (U.O.) – include failure, defaulted, transferred out and died.

[^]6 patients- not available (outcome: 2 died and 4 defaulted)

A perusal of above table shows that at the end of intensive phase, the cases with negative sputum status had cure rate of 88.1% while those with positive sputum status had cure rate of 76.2%. Failure rate and

death rate was also more i.e. 9.5% in cases who remained sputum positive while it was 4.5% and 1.9% respectively in those with sputum conversion to negative status. Default rate was also more in patients

with positive sputum status at the end of IP. Favourable outcome of those having negative sputum status at the end of IP was found to be significantly higher than those with positive sputum status (p=0.032).

Table IV: Showing distribution of cases in relation to sputum conversion at the end of Extended IP with the outcome

Outcome	Sputum status at the end of Extended IP (3 mths)				Total ^n=240		Significance*
	Negative		Positive		No.	Percentage	
	No.	Percentage	No.	Percentage			
Cured	204	88.8	6	60.0	210	86.1	OR=5.23 95% CI=1.38-19.77 p=0.007
Treatment completed	1	0.44	0	0.0	1	0.4	
Failure	11	4.8	1	10.0	12	5.3	
Defaulted	6	2.6	2	20.0	8	3.3	
Transferred out	4	1.7	0	0.0	4	1.6	
Died	4	1.7	1	10.0	5	3.3	

*According to F.O. and U.O.

^10 patients- not available (outcome: 5 died, 1 failure and 4 defaulted)

Above table illustrates that cure rate was just 60% in cases which showed positive sputum status at the end of extended IP whereas it was 88.8% in those with negative sputum status. Failure, defaulter and death rates were also higher in cases which remained positive even after extended IP. This shows that sputum conversion rate at the end of extended IP was significantly associated with the outcome.

DISCUSSION

The age wise distribution showed that 94.8% cases are from 15-59 years age group and only 5.2% are 60 years or above. According to RNTCP status report 2011, TB primarily affects people in their most productive years of life. Almost 70% of TB patients are aged between the ages of 15-54 years of age and more than 50% of the female cases occur before 34 years of age.⁹ In our study also 63.4% of the females are in the 15-29 years age group. In the present study it was observed that out of the total 250 cases, 59.6% were males and 40.4% were females i.e. male to female ratio of 1.5:1 approximately. Male preponderance was also supported by the studies conducted by Chadha and Bhagi (2000) and Acharya and Majra (2007) showing male to female ratio of 2:1 and 3:1 respectively.^{10,11}

It was observed in the present study that sputum conversion rate was 80.8% at the end of the intensive phase (IP) and 92.0% at the end of extended IP (3 months). 42 (16.8%) cases were found positive at the end of IP and entered in the Extended IP phase while 10 cases (4.0%) were still positive at the end of 3 months.

The conversion of sputum smear is the best indicator that the intensive phase of chemotherapy has been regular and effective. After 2 months of chemotherapy more than 80% of new pulmonary smear positive cases should be smear negative, and after 3 months the rate should increase to more than 90%. In the present study, sputum conversion rate is 80.8% and 92% at 2 months and 3 months respectively. This shows the performance of RNTCP in Amritsar is good as per guidelines of TB control.

A study at a tertiary health facility in Orissa reported the sputum conversion rate at the end of IP to be 82.6%.¹²

Another study carried out by Verma *et al* (2005) in the chest and TB hospital, Amritsar showed the similar results with sputum conversion rates of 81% at the end of IP for Cat I patients.¹³

Chadha and Bhagi (2000) in their study carried out in one of the chest clinics run by the Municipal Corporation of Delhi showed that sputum conversion rate after 2 months' treatment in IP of DOTS was 92.6% for Cat I patients which is much higher than this study¹⁰. The difference from the present study could be due to the wider area covered by the TUs as compared to smaller catchment area of the study under reference.

The sputum conversion rates at the end of 3 months in the present study are consistent with the RNTCP status report 2011 showing 90% three month sputum conversion rate of NSP cases in Amritsar from the 4th quarter 2009 to 3rd quarter 2010⁹.

Table II shows that sputum conversion rate at the end of IP was significantly associated with the outcome ($p = 0.032$). Cure rate was 76.2% in positive cases while it was 88.1% in those cases which became negative after 2 months of IP treatment. Failure, defaulter and death rates were also higher in positive cases as compared to negative after 2 months treatment.

Lienhardt *et al* (1998) in their study on factors determining the outcome of treatment of adult smear positive tuberculosis cases in Gambia reported that the absence of sputum smear conversion after 2 months of chemotherapy was associated with defaulting later during the treatment¹⁴.

Table III reveals that cure rate was significantly higher ($p = 0.007$) in cases with negative sputum conversion at the end of 3 months or Extended IP (88.8%) than those who were still positive (60%).

According to the training modules prepared by the stop TB Department, WHO for management of tuberculosis training for district TB coordinators, it is mentioned that sputum conversion is a good early predictor of treatment success (defined as the sum of the proportion of new smear positive TB cases who were cured plus the proportion that completed treatment). The sputum conversion is thus an important indicator to monitor at the district level.¹⁵

CONCLUSION: Sputum conversion is the prime indicator of the effectiveness of DOTS during the intensive phase (IP). The present study shows the sputum conversion rates of 80.8% at the end of intensive phase and 92% at the end of Extended IP (three months IP). It is an early and sensitive indicator of the quality of programme implementation. A low conversion rate indicates a need for intensive supervision, and a high conversion rate indicates that the area could be used as a field demonstration area.

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Conflict of Interest: None.

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Ethical Clearance: Approval of college ethical committee was granted at the time of submission of the plan of the study.

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Curcumin - a Solid Gold in Medicine and Dentistry

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ABSTRACT

Turmeric (*Curcuma longa*) is extensively used as a spice, food preservative and colouring material in India, China and South East Asia. It has been used in traditional medicine as a household remedy for various diseases, including biliary disorders, anorexia, cough, diabetic wounds, hepatic disorders, rheumatism and sinusitis. For the last few decades, extensive work has been done to establish the biological activities and pharmacological actions of turmeric and its extracts. Curcumin (diferuloylmethane), the main yellow bioactive component of turmeric has been shown to have a wide spectrum of biological actions. These include its antiinflammatory, antioxidant, anticarcinogenic, antimutagenic, anticoagulant, antifertility, antidiabetic, antibacterial, antifungal, antiprotozoal, antiviral, antifibrotic, antivenom, antiulcer, hypotensive and hypocholesteremic activities.

Keywords: *Curcumin, OSMF, Tumor*

INTRODUCTION

Turmeric is a spice derived from the dried ground rhizomes of *Curcuma longa*, which is a member of the ginger family (Zingiberaceae). Rhizomes are horizontal underground stems that send out shoots as well as root. The bright yellow color of turmeric comes mainly from fat-soluble, polyphenolic pigments known as curcuminoids. Curcumin, the principal curcuminoid found in turmeric, is generally considered as its most active constituent. Other curcuminoids found in turmeric include demethoxycurcumin and bisdemethoxycurcumin. It is used as a spice in Indian, Southeast Asian, and Middle Eastern cuisines. In India it is used for medicinal purposes for centuries. Curcumin extracts are also used as food coloring agents.¹

The health benefits of curcumin are extremely well known, stretching back to ancient times. It has been widely used in medicine to treat digestive and liver problems, skin diseases, biliary disorders, anorexia, cough, hepatic disorders, bloody urine, hemorrhage, toothache, rheumatism, sinusitis, bruises and wounds.

In October, 2010, it was reported that curcumin, when combined with the drug cisplatin, "enhances chemotherapy's suppression of head and neck cancer cell growth." The study, conducted by researchers Eric Srivatsan and Marilene Wong, who have investigated curcumin's anti-cancer properties for six years, builds on previous research demonstrating curcumin's ability to suppress growth of other cancer. Curcumin and turmeric are being studied for their effectiveness against a wide range of other conditions, ranging from arthritis to Alzheimer's disease, according to Medline Plus.^{1,2}

CHEMISTRY OF CURCUMIN

Curcumin incorporates several functional groups. The aromatic ring systems, which are polyphenols are connected by two α,β -unsaturated carbonyl groups. The diketones form stable enols or are easily deprotonated and form enolates, while the α,β -unsaturated carbonyl is a good Michael acceptor and undergoes nucleophilic addition. The structure was first identified in 1910 by J. Mi³ob³edzka, Stanis³awKostanecki and Wiktor Lampe.^{1,2}

BIOAVAILABILITY OF CURCUMIN:

The reasons for reduced bioavailability of any agent within the body are low intrinsic activity, poor absorption, high rate of metabolism, inactivity of metabolic products and/or rapid elimination and clearance from the body. Studies to date have suggested a strong intrinsic activity and, hence, efficacy of curcumin as a therapeutic agent for various ailments.

However, studies over the past three decades related to absorption, distribution, metabolism and excretion of curcumin have revealed poor absorption and rapid metabolism of curcumin that severely curtails its bioavailability. However, the clinical application of curcumin in cancer treatment is considerably limited due to its serious poor delivery characteristics. In order to increase the hydrophilicity and drug delivery capability, it is encapsulated into copolymer. They were much more soluble in water than not only free curcumin but also other biodegradable polymer-encapsulated curcumin nanoparticles.^{3,4}

BIOLOGICAL ACTIVITIES OF CURCUMIN

Antioxidant Activity: Curcumin is an effective scavenger of reactive oxygen species and reactive nitrogen species in vitro. However, it is not clear whether curcumin acts directly as an antioxidant in vivo. Due to its limited oral bioavailability in humans, plasma and tissue curcumin concentrations are likely to be much lower than that of other fat-soluble antioxidants, such as alpha-tocopherol. However, the finding that oral curcumin supplementation (3.6g/day) for seven days decreased the number of oxidative DNA adducts in malignant colorectal tissue, suggests that curcumin taken orally may reach sufficient concentrations in the gastrointestinal tract to inhibit oxidative DNA damage. In addition to direct antioxidant activity, curcumin may function indirectly as an antioxidant by inhibiting the activity of inflammatory enzymes or by enhancing the synthesis of glutathione, an important intracellular antioxidant.^{5,6}

ANTI-INFLAMMATORY ACTIVITY

Curcumin has been found to inhibit PLA₂, COX-2, and 5-LOX activities in cultured cells. Although curcumin inhibited the catalytic activity of 5-LOX directly, it inhibited PLA₂ by preventing its phosphorylation and COX-2 mainly by inhibiting its

transcription. Nuclear factor-kappa B (NF-κB) is a transcription factor that binds DNA and enhances the transcription of the COX-2 gene as well as other proinflammatory genes, such as inducible nitric oxide synthase (iNOS). In inflammatory cells, such as macrophages, iNOS catalyzes the synthesis of nitric oxide, which can react with superoxide to form peroxynitrite, a reactive nitrogen species that can damage proteins and DNA. Curcumin has been found to inhibit NF-κB-dependent gene transcription, and the induction of COX-2 and iNOS in cell culture and animal studies.^{7,8}

INDUCTIONS OF CELL CYCLE ARREST AND APOPTOSIS

After a cell divides, it passes through a sequence of stages collectively known as the cell cycle before it can divide again. Following DNA damage, the cell cycle can be transiently arrested to allow for DNA repair or, if the damage cannot be repaired, for activation of pathways leading to cell death (apoptosis). Defective cell-cycle regulation may result in the propagation of mutations that contribute to the development of cancer. The mechanisms by which curcumin induces apoptosis are varied but may include inhibitory effects on several cell-signaling pathways. However, not all studies have found that curcumin induces apoptosis in cancer cells.⁵

EFFECTS ON AUTOPHAGIC CELL DEATH

Autophagy is considered Type II programmed cell death (apoptosis is type I and necrosis is type III) and, thus has come under interest as a potential process that may be exploited in the development of anti-cancer chemotherapeutics. Curcumin has been shown to be a potent inhibitor of p53. Curcumin down-regulates the expression of p53 as well as the survival genes *egr-1*, *c-myc*, and *bcl-XL* in B cells.⁹

INHIBITION OF TUMOR INVASION AND ANGIOGENESIS

Cancerous cells invade normal tissue with the aid of enzymes called matrix metalloproteinases. Curcumin has been found to inhibit the activity of several matrix metalloproteinases in cell culture studies. To fuel their rapid growth, invasive tumors must also develop new blood vessels by a process known as angiogenesis. Curcumin has been found to inhibit angiogenesis in cultured vascular endothelial cells and in an animal model.¹⁰

DISEASE PREVENTION & TREATMENT

Cancer:

The ability of curcumin to induce apoptosis in cultured cancer cells by several different mechanisms has generated scientific interest in the potential for curcumin to prevent some types of cancer. Oral curcumin administration has been found to inhibit the development of chemically-induced cancer in animal models of oral, stomach, liver, and colon cancer. A phase I clinical trial in Taiwan examined the effects of oral curcumin supplementation up to 8 g/day for three months in patients with precancerous lesions of the mouth (oral leukoplakia), cervix (high grade cervical intraepithelial neoplasia), skin (squamous carcinoma in situ), or stomach (intestinal metaplasia). Histologic improvement on biopsy was intraepithelial neoplasia, two out of six patients with squamous carcinoma in situ, and one out of six patients with intestinal metaplasia. However, cancer developed in one out of seven patients with oral leukoplakia and one out of four patients with cervical intraepithelial neoplasia by the end of the treatment period. In experiments on tumors, Curcumin was shown to "directly and irreversibly" affect the growth of new cancers. It appears to suppress the onset of tumors as well as their growth and metastasis. In their words, Curcumin is, "an exciting compound because it can be taken orally and may not have any side effects for cancer patients."

The ability of curcumin to induce apoptosis in a variety of cancer cell lines and its low toxicity has led to scientific interest in its potential for cancer therapy. To date, most of the controlled clinical trials of curcumin supplementation in cancer patients have been Phase I trials. Another study in patients with advanced colorectal cancer found that doses up to 3.6g/day for four months were well-tolerated, although the systemic bioavailability of oral curcumin was low.¹¹

INFLAMMATORY DISEASES

Although the anti-inflammatory activity of curcumin has been demonstrated in cell culture and animal studies, few controlled clinical trials have examined the efficacy of curcumin in the treatment of inflammatory conditions. A preliminary intervention trial that compared curcumin with a nonsteroidal anti-inflammatory drug (NSAID) in 18 rheumatoid arthritis patients found that improvements in morning stiffness, walking time, and joint swelling after two weeks of

curcumin supplementation (1,200mg/day) were comparable to those experienced after two weeks of phenylbutazone (NSAID) therapy (300mg/day).^{11,12}

DENTAL APPLICATION OF TURMERIC

Dental problems: Turmeric can be used in following ways to offer relief from dental problems

- Rinsing the mouth with turmeric water (boil 5 g of turmeric powder, two cloves, and two dried leaves of guava in 200 g water) gives instant relief.
- Massaging the aching teeth with roasted, ground turmeric eliminates pain and swelling.
- Applying the powder of burnt turmeric pieces and bishop's weed seed on teeth and cleaning them makes the gums and teeth strong.
- Applying a paste made from 1 tsp of turmeric with ½ tsp of salt and ½ tsp of mustard oil provides relief from gingivitis and periodontitis. Rub the teeth and gums with this paste twice daily.¹³

Dental-Plaque Detection System

Caries or periodontal diseases are thought to be infectious diseases caused by microbes present in dental plaques and it is known that the removal of dental plaques is highly important for the health of oral cavities. However, dental plaques are not easy to identify by the naked eye and it is difficult to confirm their attachment site and extent precisely. Accordingly, microbial dental plaques are generally stained with dental-plaque staining agents, which contain dyes, to reveal their locations in order to uncover the attached dental plaques. The dental-plaque detection system includes a dental-plaque staining agent, which contains at least one selected from the yellow pigment of beni-koji, turmeric extracts and curcumin; and a light-emitting apparatus, which outputs light having a wavelength within a range of 250 to 500 nm to an object in the oral cavity where the dental-plaque staining agent is attached. A yellow pigment of beni-koji and turmeric are known as staining agents and also used for other purposes.¹³

Pit and Fissure Sealant

It has been found that tinted pit and fissure sealant is useful for applying to tooth surfaces for the prevention or reduction of dental caries. This sealant can be produced from a composition comprising a polymerizable resin system containing acrylic

monomer and at least one colorant selected from the group consisting of Annatto extract, turmeric extract, and β -Apo-8-Carotenal.¹³

Curcumin as a treatment modality in recurrent aphthous stomatitis

Many clinical trials have shown that in patients who used conventional antiseptic gel, the ulcers healed only after the period of time as in previous attacks. They experienced no early reduction in pain or frequency of recurrence. The 10 patients who used curcumin oil reported that ulcers started healing earlier than in previous attacks; there was also early reduction in pain. A follow up for one year has shown no recurrence in these patients.¹³

A study was done in patients between 18 and 65 years old were included if they presented with 1–5 aphthous ulcers of less than 24 h duration. Twenty-eight patients were randomly allocated to curcumin gel containing (2% curcumin) and 29 patients were allocated to placebo gel for a two week, double-blind, placebo-controlled study. The patients used the medication using a swap twice per day. After enrolment, the size of ulcers were measured by the investigator, and pain was evaluated by the patients based on Perceived Pain Rating Scale before drug application (day 0) and at days 4, 7, and 14. Patients overall satisfaction were assessed at the end of treatment. The results showed that curcumin gel significantly reduced pain intensity and size of aphthous ulcer compare to placebo. Significant group differences appeared at the end of the trial regarding overall satisfaction of the patients.¹⁴

CURCUMIN IN THE TREATMENT OF OSMF

The in-vivo studies were carried out in two phases using 18 mice with the permission of ethical committee under the supervision and help of staff, Department of Pathology, M.R. Medical College, Gulbarga. In first phase oral sub mucous fibrosis was induced in mice using marketed Gutkha preparation and formulating into a mucoadhesive gel form and applying to mice oral mucosa with the help of cotton bud for a period of 6 months. In second phase, treatment was carried out following the above method using curcumin formulation. The tissue samples collected for 1, 3 & 6 months induction period & 1, 3 & 6 months of treatment period on 6 months oral sub mucous fibrosis induced mice. Histopathological observations reported that there was considerable induction of oral sub

mucous fibrosis and excellent treatment results on curcumin usage. The results of the present study of mucoadhesive semi-solid drug design for the treatment of oral sub mucous fibrosis will be useful for drug industry for the benefit of patients suffering from oral sub mucous fibrosis.¹³

ROLE OF CURCUMIN AS A SUBGINGIVAL IRRIGANT

Curcumin 1% as subgingival irrigant resulted in significant reduction in bleeding on probing and redness, when compared with chlorhexidine and saline group as an adjunctive therapy in periodontitis patients. Better results obtained by curcumin irrigation can be attributed to its anti-inflammatory, anti-oxidant properties in resolving inflammation at an earlier stage than chlorhexidine, which act as an anti-bacterial only. Curcumin, by virtue of its anti-inflammatory property, reduces inflammatory mediators and causes shrinkage by reducing inflammatory oedema and vascular engorgement of connective tissues. It also promotes migration of fibroblasts in the wound bed and results in reduction of vascularization by bringing about fibrosis of connective tissue. It enhances wound healing by causing an increase in fibronectin and transforming growth factor α transcription. It has also been shown that curcumin incorporated in collagen which acts as supportive matrix for slow release, increases wound reduction and enhances cellular proliferation.¹³

Influence of Curcumin on Human Gingival Fibroblasts

Several studies have also revealed apoptosis of human primary gingival fibroblasts (hPGF) cells at lower dose like 1, 10 and 25 μ M of curcumin but at higher doses like 50, 60, 75 and 100 μ M, was statistically significant high apoptosis was noted. They have also found that the effect of curcumin treated normal human fibroblasts and microvascular endothelial cells (hMVEC) using MTT assay and observed that lower doses of curcumin stimulated the proliferation of normal human fibroblasts and hMVED, whereas higher doses inhibited it. According to other authors curcumin treated hPGF cells exhibited maximum and significant apoptosis at 75 μ M and showed a decrease in cell population and shrinkage of cell size and morphologic alterations in basal cell carcinoma cells after treatment with 50 μ M curcumin & found cell shrinkage, disappearance of microvilli and appearance of membrane lebbing.¹⁵

POTENTIAL RISKS AND SIDE EFFECTS

Extensive in vivo toxicity studies have been performed with turmeric Oleoresin (85% curcumin) which led to it being placed on the FDA's GRAS (generally recognized as safe) list. Kawanishiet al. (2005) remarked that curcumin, like many antioxidants, can be a "double-edged sword" where, in the test tube, anticancer and antioxidant effects may be seen in addition to pro-oxidant effects. Carcinogenic effects are inferred from interference with the p53 tumor suppressor pathway, an important factor in human colon cancer. Carcinogenic and LD50 tests in mice and rats, however, have failed to establish a clear relationship between tumorigenesis and administration of curcumin in turmeric oleoresin at above 98% concentrations. Other in vitro and in vivo studies suggest that curcumin may cause carcinogenic effects under specific conditions. Clinical studies in humans with high doses (2–12g) of curcumin have shown few side effects, with some subjects reporting mild nausea or diarrhea. More recently, curcumin was found to alter iron metabolism by chelating iron and suppressing the protein hepcidin, potentially causing iron deficiency in susceptible patients. Further studies seem to be necessary to establish the benefit/risk profile of curcumin.¹³

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Cervical Cancer Screening in India - is there an Upper Age Limit for Screening

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ABSTRACT

Background: In countries with an organized cancer cervix screening programme routine screening ends at age 65.

Objective: To analyze the need for screening in women beyond 65 years in India.

Materials and Method: After obtaining the ethical clearance this retrospective study was done from June 2009 to December 2010. After obtaining informed written consent, all women attending the cervical cancer detection unit and peripheral camps between June 2009 and December 2010 who were not screened in the past for Cancer cervix were screened by Visual Inspection of cervix with Acetic acid and Lugol's Iodine or Pap smear. The screen positive patients were subjected to Colposcopy and biopsy if necessary.

Results: Out of 9562 patients screened, 190 (1.98%) were over the age of 65. Of these 190, 36 were screen positive. Of the 36 women who were subjected to Colposcopy and biopsy, there was invasive Carcinoma Cervix in four of them and CIN III in three women, CIN I in two women and Polyp in five women.

Conclusion: In an unscreened population it may not be possible to set an upper age limit for screening.

Keywords: Cancer Screening in Elderly, HSIL, Pap smear

INTRODUCTION

Cervical cancer is the most common cancer in women in India followed by breast cancer. Every year 500,000 women globally are diagnosed with cervical cancer with 280,000 deaths annually. Cervical cancer is a significant public health concern in India, with an estimated 134,420 incident cases and 72,825 deaths in 2008^{1,2}. Death and disability from cervical cancer are high in LMICS (Low and Middle Income Countries) including India which account for 80% of global cervical cancer cases.² The incidence of cervical cancer in India in elderly (>65 years) in 2008 was 72.9 (age specific rate)¹.

Due to India's rapidly growing ageing population, the overall incidence and mortality of cervical cancer

in India is projected to increase by 78% by the year 2030¹, signifying the importance in addressing this avoidable health problem.

Compared to women in US, women in India are five times more likely to develop and seven times more likely to die from cervical cancer simply because they face multiple socially determined barriers in accessing basic screening and treatment services^{2,3,4}.

In countries with well-organized screening programmes, rates of cervical cancer incidence and mortality have declined significantly over the past several decades^{5,6,7}. This is mainly by the detection and treatment of pre-invasive disease.

However in many developing countries cancer is not recognized as a public health priority and screening

programmes are mostly opportunistic. The incidence of cervical cancer remains unchanged, and in several cases continues to increase^{8,9,10,11,12}.

In countries with organized screening programmes, routine screening ends at age 65. This is because the incidence of invasive cancer and CIN III is low after 65 years and cytology screening is less effective in older women. However in India where there is no organized screening program and less than 5% of the population is screened there is still a debate on the appropriate age to stop screening. There is no reason to exclude women aged over 65 years from screening for cancer of the cervix¹³.

Evidence from the US suggests that screening previously poorly screened women over age 65 still results in a reduction of the subsequent rate of cancer as well as diagnosis of invasive cancer at earlier stages with improvement in survival rates. For women with a negative Pap test at age 60 years and older, the likelihood of having a new diagnosis of CIN 3+ on repeat screening is less than 1 in 1000 (in some studies, as few as 2-6 in 10,000). Among women older than 65 years, cervical cancer mortality for black women is more than 150% higher than that of white women¹⁴. Cervical cancer mortality, usually occurring among unscreened women increased with age, with the maximum mortality for white women between ages of 45 and 70 years and for black women in their 70s^{15,16}.

Although it may be possible to withdraw well-screened women with negative cervical smears from the screening programme at 50 years, there is insufficient robust evidence to warrant this at present. So recommended screening is at three yearly intervals between 25 and 49 years and five yearly intervals between 50 years and 64 years¹⁷.

The US Preventive Service Task Force found limited evidence for the benefits of continued screening in previously well screened women older than 65 years

In the US, after Medicare began coverage for Pap smear in women age 65 and older, increased screening has resulted in more diagnoses of carcinoma in situ and reduction in cervical cancer¹⁸.

Non participants in Pap smear screening had a 2.7 to 4 times a greater risk of cervical cancer than women screened at least once before¹⁹.

With this as a background we conducted a retrospective study on the need and effectiveness of screening women more than 65 years of age.

AIMS AND OBJECTIVES

To analyze the need for screening women beyond 65 years in India.

MATERIALS & METHOD

After obtaining the ethical clearance, this retrospective study was done from June 2009 to December 2010. Women who were not previously screened for Cancer cervix were screened in both hospital as well as peripheral camps using either Pap smear or Visual inspection of cervix with Acetic acid (VIA) and Lugol's iodine (VILI) after obtaining written informed consent. Five percent acetic acid was either sprayed or applied gently to the cervix with a cotton swab. After one minute the cervix was inspected to identify acetowhite areas. Lugol's iodine was subsequently applied and the cervix visualized for iodine negative areas.

Those patients who were screen positive for VIA or VILI or those with abnormal Pap smear were subjected to Colposcopy.

The Colposcope used was floor stand Colposcope Model C-100 F manufactured by M/s. Ecleris Argentina. Magnification was possible from 4x to 25x. The cervix was visualized both under low power and high power after applying acetic acid and Lugol's Iodine.. Colposcopy directed biopsy was taken using a Tischler- Morgan punch biopsy forceps. Biopsy reports were based on Bethesda classification and reported as CIN I, II or III²⁰.

RESULTS AND OBSERVATION

Total number of women who were screened for cervical cancer was 9562. None of these women were screened in the past. The number of screen positive were 2287 and the number of colposcopies done was

1592. Of the screened women 190 (1.98%) were beyond 65 years and the test was positive in 36 (18.94%) of them.

Mandelblatt J et al., in his prospective study on urban low income population in New York (average age 74) who were previously inadequately screened (> 5 years since last Pap smear in 75%) or had no previous screening (25%) found an incidence of 15.9 per 1000 abnormal Pap smear results (95% CI, 8.5 – 23.3)²¹.

Table 1 : Age of screen positive women

Age Group	Number of Women
65 – 70 Years	22
71-75 Years	10
More than 75 years	4

Table 2: Symptoms at presentation

Symptoms	Number of Women
Leucorrhoea	6
Post menopausal bleeding	11
Prolapse	1
Mass per abdomen	2
Asymptomatic	16

Table 3: Screen positives (n = 36)

Visual inspection of cervix with acetic acid and lugol's iodine	PAP SMEAR
31	5

Table 4: Age and abnormal PAP smear results

AGE GROUP	LSIL	HSIL
65-70 years	1	1
71-75 years	1	1
>75 years	1	-

Wong QC et al.,²² in his study observed that abnormal Pap smears were 13.4 per1000 in women between 76-80 years and 85.7 per 1000 in women > 86 years Overall the rate of abnormal Pap smears was 31.5 per 1000 for all patients > age 65 years.

Insinga RP et al., in his study identified 2 cases of High Grade CIN out of 5488 routine cervical smears in women aged > 60 years²³.

Table 5: Colposcopic findings of women with postmenopausal bleeding

Lesion	Number of Women
Growth on cervix	2
High grade lesion	2
Polyp	5
Senile vaginitis	2

Table 6: Colposcopic & Histopathology correlation

Colposcopy Findings	Number of Women	Histopathology Diagnosis
Invasive Cancer	3	4
CIN 2,3	4	3
CIN 1	4	2
Polyp	5	5
Normal	20	-

Pradhan B et al.,²⁴ in his study observed invasive Cancer Cervix in 1 patient between the ages of 61 – 70 years, 1 mild dysplasia and 1 severe dysplasia in patients > 71 years of age.

Low grade (LSIL) was diagnosed in 137 women of whom two were beyond 65 years. High grade (HSIL) was found in 36 women and three were found in women beyond 65 years.

The 36 women above the age 65 were analyzed subsequently. 22 women were of the age group 65 -70, 10 women were of the age group 71-75 and four women were above 75 years. The oldest woman was 81 years. (Shown in Table 1)

Six women presented with symptom of leucorrhoea, eleven with postmenopausal bleeding, one with prolapse, two with mass abdomen and sixteen women were asymptomatic. (Shown in Table 2)

Speculum examination revealed growth over the cervix in three women, unhealthy cervix in two women, endocervical polyp in five women and the remaining twenty six women had a normal appearing cervix.

Four cases of invasive carcinoma were seen between 65 to 70 years. One woman had Stage Ib carcinoma cervix and two stage II and other had stage III carcinoma cervix.

Colposcopy was satisfactory in twelve and unsatisfactory in twenty four women.

Among 11 women presenting with postmenopausal bleeding, nine of them had pathological lesions. Two women had growth on cervix, two had high grade lesion by Colposcopy, five had polyps and two had senile vaginitis. (Shown in Table 5)

Six women complained of leucorrhoea and one was found to have cancer cervix, two had high grade lesion by colposcopy and the remaining three were normal.

When analysing the four women with HSIL, three of them were between 67 to 70 years and the oldest was 81 years. However two of these women had normal cervixes on speculum examination and the remaining two had an unhealthy cervix on visual examination.

The final colposcopic findings are shown in Table 6.

DISCUSSION

All women in the OPD were screened with Pap smear and women attending peripheral camps were screened with VIA/ VILI irrespective of age if they were not previously screened.

This study showed that the number of women over 65 years was 190 (1.98%) out of 9562 women screened. 36 (18.94%) of these women were found to be screen positive of which 31 were positive with VIA/VILI and 5 had abnormal Pap smears. Colgan TJ et al.²⁵ analyzed the results of Pap smear screening among older women in the retrospective review from the population-based registry of the Ontario Screening Program for almost 700,000 women screened during the first 6 months in 2000. In this population, over 60% of women aged 50 years with High-grade lesion or carcinoma had a history of either no Pap smear or a previously abnormal test result in the past 4 years. Both VIA/ VILI are reported to correctly identify a greater number of precancerous cervical lesions in low resource settings compared to cytology based screening^{26,27}. Apparent increase in screen positivity may be due to the age related atrophic changes in the vagina and cervix.

All screen positive women underwent Colposcopy. The colposcopic examination was technically difficult as hypoestrogenism causes considerable changes in the vagina and the cervix. The changes seen in postmenopausal women are

1. Atrophy of the epithelium which becomes fragile and easily traumatized.
2. The cervix becomes small, narrow and flush with the vault with a stenosed os .
3. The squamocolumnar junction tends to retract into the cervical canal resulting in a type III transformation zone.

4. Subepithelial capillaries are more apparent under the thin epithelium..
5. Acetowhite areas are not prominent due to the thin epithelium.
6. Iodine uptake is patchy as the glycogen in the atrophic epithelium is reduced or absent.

Twenty four out of thirty six patients had an unsatisfactory colposcopy (Type III transformation zone). Six patients had leucorrhoea and eleven patients had postmenopausal bleeding which prompted them to come for screening. .

The final diagnosis in this group was as follows:

Invasive cancer of cervix in four patients which was diagnosed by colposcopy and confirmed by biopsy.

CIN III in three patients and CIN I in two patients which was confirmed by colposcopic directed biopsy.

Five patients with endocervical polyp were treated by polypectomy. All were reported as benign endocervical polyp.

All women with CIN III were treated with LLETZ.

In the absence of an organized screening program for cancer cervix, older women need not be exempt from screening. As this study showed screening older women could pick up patients with CIN3 as well as cancer cervix in earlier stages. Screening can be stopped at age 65 only in a well screened population. Screening should continue beyond the age of 65 years especially if the patient has not had negative results in the past.

Hence screening and colposcopy was instrumental in diagnosing invasive cancer of the cervix at an earlier stage in four patients and preventing invasive cancer in three patients with CIN III who were treated.

CONCLUSION

In spite of 30 years of effort there has been little impact on the morbidity and mortality of cervical cancer in India. In the absence of organized cancer screening programmes , older women need not be exempt from screening. This study has shown that high grade disease can be diagnosed even after 65 years of age. Evidence from the NHS program in the UK had

shown that women diagnosed with cervical cancer after age 50 had not participated adequately in the screening program. Hence screening previously poorly screened older women would still result in a reduction of subsequent rate of invasive cancer.

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Role of Bevacizumab Adjunct to Pan Retinal Photocoagulation for the Management of Proliferative Diabetic Retinopathy

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ABSTRACT

Introduction: Anti-VEGF drugs are being used for the regression of neovascularization seen in Diabetic retinopathy. An adjunct use of Pan Retinal Photocoagulation is found to improve the regression of new vessels.

Aim/Objective/Purpose: To evaluate the short term effects of intravitreal injection of bevacizumab with Pan Retinal Photocoagulation in the management of Proliferative Diabetic Retinopathy

Design: Single centre, Interventional, (nonrandomized,) prospective cohort study.

Method: The patients diagnosed with Proliferative diabetic retinopathy by complete eye examination were subjected to Pan retinal photocoagulation and intravitreal injection of bevacizumab (6.2mcg). Each patient was followed up after 48hrs, 1 month and 6 months (if needed). Any adverse effect in the post injection period was also thoroughly investigated.

Results: A total of 114 eyes diagnosed with Proliferative diabetic retinopathy were studied. Of these, 19(16.66%) eyes had persistent NV post PRP, 31(27.19%) eyes had new vessels elsewhere (NVE) alone. Of which 95% and 100% respectively showed complete regression of new vessels post injection. Those with new vessels at the disc (NVD) + NVE were 15 (13.15%) eyes of which 80% showed improvement. New vessels (NV) with clinically significant macular edema (CSME) were 26(22.80%) eyes, in which there was a significant 100% improvement and finally in 23(20.17%) eyes with PDR high risk characters improvement was noticed only in 65%. No significant side effect of the drug was seen in any of the eyes.

Conclusion: Intravitreal injection of bevacizumab adjunct to Pan retinal photocoagulation has better outcomes in the management of proliferative diabetic retinopathy.

Keywords: *Bevacizumab, Proliferative Diabetic Retinopathy, Intravitreal Injection, Anti-VEGF, Neovascularization*

INTRODUCTION

Diabetic retinopathy is a common and specific microvascular complication of diabetes, and remains the leading cause of preventable blindness in working-aged people. It is seen that in one third of patients with Diabetes, life threatening vascular complications which include stroke, coronary heart disease, and heart failure⁽¹⁾. Dietary habits and sedentary life style is

found to play a big role in the increasing incidences of diabetes mellitus (DM). In the year 2010, more than 285 million people suffered from DM. The World Health Organization has estimated that by the year 2030 there will be 370 million persons affected with DM in the world, and every one of them will be at risk of developing diabetic retinopathy (DR)⁽²⁾. Other studies predict that the rate of incidence may shoot up to 439 million⁽³⁾.

It was Michaelson who speculated on the presence of a Factor X that was capable of inducing retinal angiogenesis or neovascularization 60 years ago⁽³⁾. Vascular endothelial growth factor (VEGF) was later on found to be Michaelson's factor X and the main molecular mediator in diabetic retinopathy. The metabolic derangement due to chronic hyperglycemia leads progressive retinal ischemia which results in severe hypoxia and hypoxia is found to induce VEGF gene transcription. VEGF has been shown to be an endothelial cell-specific mitogen and an angiogenic inducer in a variety of in vitro and in vivo models⁽⁴⁾. Recent work has found elevated levels of VEGF in ocular fluids of patients with PDR⁽⁵⁻¹⁰⁾. Anti VEGF treatment has shown promising results in controlling further progression and complications due to neovascularization on retina and neovascularization elsewhere⁽¹¹⁻¹⁵⁾. Several anti-VEGF agents like Pegaptanib, Ranibizumab, or Aflibercept^(16,17,18) are currently available and approved by FDA, USA. All these drugs are being used in the management of DME and PDR. As they are expensive, their usage is limited. But when compared, bevasizumab seems to be more cost effective than the other three drugs. Bevasizumab (Avastin, Genentech Inc., San Francisco, CA) is a full length humanized antibody that binds to all subtypes of VEGF⁽¹⁹⁾. Recent studies have shown that intravitreal injection of bevacizumab reduces the occurrence of macular edema secondary to central retinal vein occlusion, vascular permeability, fibrovascular proliferation in RN secondary to PDR, and choroidal neovascularization (CNV) secondary to age related macular degeneration (AMD)^(12, 14, 15, 20-23). Recently, it has been reported that intravitreal injection of bevacizumab is useful for early vitreous hemorrhage in PDR as it decreases the risk of new hemorrhages and minimizes the indications for vitrectomy⁽¹⁴⁾. In addition, Chen and Park⁽²⁴⁾ and Avery et al.⁽²³⁾ have suggested that preoperative intravitreal bevacizumab facilitates vitrectomy in severe PDR cases by reducing the risk of intra operative bleeding.

PATIENTS AND METHOD

The present study is a prospective, consecutive case series of eyes with PDR treated with off-label intravitreal bevacizumab between April 2012- Jan 2013 at Drishti eye hospital, Davangere.

A total of 114 eyes from 142 patients suffering from diabetic retinopathy due to long standing Diabetes (minimum of 5yrs) were evaluated. Majority of the patients (137 – 96.4%) had type II diabetes mellitus whereas only few (5- 3.52%) of them had type I diabetes mellitus. The inclusion criteria for the study were 1) High risk PDR 2) Post PRP bleed 3) as an adjunct to PRP. Each patient was extensively examined for complete eye examination (BCVA, Slit-Lamp examination, IOP, Stereoscopic biomicroscopy of retina with 90 D lens and OCT- Ocular coherence tomography (Fast macular scan) for clinically diagnosed maculopathy, FFA – Fundus Fluorescein Angiography at baseline and each visit.

Patients were examined at 48 hrs post injection period to check for IOP and any intraocular reactions to the drug and another follow up after 1 month and 6 months of injection. During each visit, the patients are evaluated for improvement in visual acuity and regression of neovascularization.

Written informed consent from the patient was obtained before the procedure. Antibiotic drops were instilled 1 hr prior to the procedure with 15 min interval between the drops. Following which a local anesthetic 4% Xylocaine was instilled. With all aseptic precautions 1.25 mg of 0.05 ml of bevacizumab was injected into pars plana area 3.5-4mm from limbus. Care was taken to prevent extravasation of drug by applying a sterile cotton bud over the site of injection. Patients were advised to put antibiotic and antiglaucoma medications for 1 wk. 48 hrs following the injection, patients were called for post injection examination to look for signs of raised IOP and for any intraocular reactions. If post injection follow up was uneventful the patient was advised for next follow up visit after 1 month.

RESULTS

Of the total 114 eyes diagnosed as PDR, 19(16.66%) eyes had persistent NV post PRP, 31(27.19%) eyes had new vessels elsewhere (NVE) alone, those with new vessels at the disc (NVD) + NVE were 15(13.15%) eyes, new vessels (NV) with clinically significant macular edema (CSME) were 26(22.80%) eyes, PDR with high risk characters were 23(20.17%) eyes. The details of results are summarized in table-1

Table-1: Table showing the follow up results of avastin treatment in various types of PDR.

No of eyes	PDR Characters	Avastin-1 st dose	Avastin 2 nd dose	Post inj status- Complete NV regression	Adjunct PRP done	Surgical intervention (Vitrectomy)	Side effects noted
31	NVE	31	3(10%)	31	31	Nil	5(16%)
15	NVD+NVE	15	7(47%)	12(80%)	15	3(20%)	-
23	High risk PDR	23	Nil	15(65%)	23	8(35%)	-
19	Post PRP-PDR	19	5(26%)	18(95%)	Nil	1(5.2%)	-
26	PDR+CSME	26	Nil	21(81%)	26	Nil	5(19%)
Total-114							

PDR-Proliferative Diabetic Retinopathy , PRP –Pan Retinal Photocoagulation , NV – Neovascularization, NVE – Neovascularization Elsewhere , NVD- Neovascularization on Disc , CSME – Clinically Significant Macular Edema

DISCUSSION

Micro-vascular pathology with capillary closure in the retina leads to hypoxia of tissue which in turn leads to release of vasoproliferative factors which stimulate new blood vessel formation to provide better oxygenation of retinal tissue. These new vessels growing on the retina are called neovascularization elsewhere (NVE) and those on the optic disc are called neovascularization of the disc (NVD). These new vessels can bleed and produce haemorrhage into the vitreous. Pan retinal photocoagulation has been the mainstay for the treatment of PDR, and its suppressive effect on retinal neovascularization has been well documented^(25,26,27,28). However, substantial regression of new vessels may take weeks after PRP and in up to one-third of cases, new vessels continue to grow despite initial PRP^(26,28). Newer trials are also exploring the higher dosage regimens of intravitreal anti- VEGF drugs. Issues regarding the ideal regimen, total duration of treatment, role of combination therapy, and safety concerns with long-term VEGF inhibition deserve further investigations⁽²⁹⁾. In our study, out of 114 eyes, only 11(9.64%) had to be intervened with surgery. The rest 88(77%) eyes showed complete regression of vessels. This is consistent with the report put forth by Avery et al⁽²³⁾ where they also reported rapid and complete regression of retinal neovascularization . 95 eyes received adjunct PRP and showed very good improvement. Similar observation was made by Tonello et al⁽³⁰⁾. Of the 23 eyes in high risk PDR group, only 15 (62.21%) showed complete regression with only avastin whereas for the remaining 8 eyes vitrectomy had to be carried out. A total of 10 eyes in our study group showed ischaemic maculopathy and persistent macular edema which were known to be due the background diabetic condition and not due to avastin per se. But there are many studies^(31,32,33,34) where complications like sterile uveitis, branch vein occlusion, cerebral and myocardial

infarction attributing to thromboembolic effect of the drug. In the eyes where NVE (31, 100%) and PDR+CSME (26,100%) were seen 100% regression was noticed with avastin and adjunct PRP. Thus the adjuvant use of intravitreal bevacizumab injection with PRP gives better results than PRP alone⁽³⁰⁾.

CONCLUSION

Bevacizumab, a humanized monoclonal antibody has broken the barrier of its usage only to metastatic colorectal cancer for which it was developed. It finds its application to neovascularization anywhere and everywhere in the eye. Many short term study results have shown the drug is well tolerated and the rate of complications is negligible. To add, it also shows a consistent biological effect even with a very low dose (6.2mcg). Thus in our study also intravitreal injection of bevacizumab with adjunct PRP resulted in marked regression of neovascularization and prevented further complications. It is advised to observe for a possible therapeutic effect in the fellow eye and systemic complications in all the patients undergoing treatment with intravitreal bevacizumab. Small sample size and short term follow up are the major limitations of present study. Hence long term follow up studies in future are required to establish the role of this wonderful anti-VEGF drug for the management of diabetic retinopathy.

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Ethical Committee Clearance: Ethical Committee clearance has been obtained to carry out this study.

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High Risk Behaviors of Injecting Drug Users (IDUs) in Chandigarh

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ABSTRACT

Background: Studies indicate that epidemics of HIV can spread rapidly among injecting drug users (IDUs). A rising trend of HIV has been observed among IDUs in Chandigarh.

Method: A cross-sectional study was carried out among adult IDUs identified for targeted interventions by State AIDS Control Society. A random sample of 115 IDUs was selected; however, data could be collected from 92. A semi-structured interview schedule was used for data collection.

Results: All respondents were males. About half of the respondents (49%) had shared injecting needles in the past, but 17.4% (95% CI 10.3-26.7) had done so during the last month. Fifty-three percent of IDUs had sexual intercourse with Female Sex Workers (FSWs), and 12% had sex with another man. Out of the 91.3% sexually active respondents, 27.3% had never used condom while having sex with FSWs. Sex with non-regular partner was significantly higher (87.5%) among those who shared injecting needles than those who did not share needles (50.7%) (p 0.03).

Conclusions: IDUs had not only unsafe injecting practices but their sexual practices were also mostly unsafe. Therefore, HIV prevention programs should also emphasize safe sexual behaviors along with safe injection practices.

Keywords: Risk, HIV, Injecting Drug Use, Sexuality, Behavior

INTRODUCTION

In India, 2.27 million persons have been infected by HIV.¹ Sexual route of transmission has been a major driver of the epidemic, although Injecting Drug Use (IDU) has also caused concentrated epidemics in different parts of the country.² HIV outbreaks among IDUs have also seeded wider sexual outbreaks into general population.³

There are about 2,00,000 injecting drug users in India.⁴ The prevalence of HIV in IDU population has been reported to be 9.86% in 2008.⁵ In order to contain HIV epidemic among IDUs, National AIDS Control

Program has started several outreach projects. Despite these efforts provision of health services to this group remains inadequate. In Chandigarh needle sharing was common (70%), and 35% had multiple sex partners and only 9% used condom.⁶ This study was conducted to understand the trend of injection and sex behavior of IDUs.

Materials and Methods

This cross-sectional study was conducted in Chandigarh among adult IDUs identified by Chandigarh State AIDS Control Society (SACS). The prevalence of needle sharing has been reported to be 30.3% and 41.9% among IDUs in Haryana and Punjab respectively.⁷ Hence sample size of 92 was estimated with prevalence of 36%, allowable error of 10% at 95% Confidence Interval (CI). Non-response rate was assumed to be 25%. Thus, a random sample of 115 was selected from 1255 IDUs. Only 4 females were there in the sampling frame. Sampled IDUs were contacted

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through the Out Reach Workers/Peer Educators to seek their informed consent. Twelve respondents did not agree to participate, and 11 could not be contacted, hence, 92 respondents were included in the study.

A semi-structured interview schedule, which had questions from Behavioral Surveillance Survey (BSS) and Integrated Behavioral and Biological Assessment (IBBA), was used.^{7,8} Respondents were interviewed when not under the influence of drugs in private at a place which they considered comfortable.

Those who have injected illicit drugs in the last three months were considered to be IDUs. Men who had sex with other men in the last six months were categorized as Men having Sex with Men (MSM). Spouse or live-in partners were defined as regular sex partners. A sex-partner to whom the respondent was not married or never had live-in relationship and did not pay for sex was categorized as non-regular sex partner. Those who have sold sex for money and gifts in last one month were defined as sex workers.

Quantitative and categorical variables were summarized using mean, standard deviation and proportions respectively. Association between socio-demographic factors and risk behavior were computed using odds ratio (OR) and 95% Confidence Interval.

RESULTS

All respondents were males. Mean age was 29.5 years (Table 1). Majority (86%) were literate. More than half (54.3%) belonged to urban area, and 54.3% were unmarried. Majority (76%) belonged to joint family. Median family income was Rs.10,000/ month.

About 65% of the IDUs perceived at risk of getting infected with HIV/AIDS. More than 90% were aware about the modes of spread and prevention methods. Forty three percent thought that mosquito bite and 26% opined that sharing meals can transmit HIV.

Drug use history has been presented in Table 2. Mean age for initiation of injecting drug use was 22 years. Average duration of drug use was about 7 years. Nearly 90% were injecting at least once a day. Main reasons for injecting drugs were: "it imparts more pleasure as informed by friends" (38%) followed by "amusement" (27.2%). Most of them (84%) had tried to quite. The main reason for not quitting was "addiction" (49%) followed by "peer pressure" (41.7%).

Needle sharing behavior is shown in Table 3. Around 49% (95% CI: 38.3-59.6) had shared needles in the past. Seventeen per cent (95% CI: 10.31-26.7) had shared needles in last one month. Around 49% of the respondents used the pre-used needle without cleaning. Only 59.8% of IDUs had obtained syringe and needles from NGO workers.

Table 1: Socio demographic profile of injecting drug users in Chandigarh, 2011

Socio demographic characteristics	Numbers (%)
Age groups (years)	
<20	3 (3.3)
20-24	22 (23.9)
25-29	29 (31.5)
30-34	16 (17.4)
35-39	12 (13.0)
40 +	10 (10.9)
Educational level	
Illiterate	13 (14.1)
Up to primary	6 (6.5)
Up to Secondary	45 (48.9)
Up to Graduation	23 (25.0)
Graduate and above	5 (5.4)
Occupation	
Unemployed/Retired	11 (12.0)
Manual Laborer/Rickshaw Puller	19 (20.7)
Businessman	32 (34.8)
Drivers	7 (7.6)
Service in Govt./Pvt. Sector	23 (25.0)
Place of residence	
Urban	50 (54.3)
Rural	30 (32.6)
Slum	12 (13.0)
Marital status	
Unmarried	50 (54.3)
Currently Married	37 (40.2)
Divorced/Widow/Widower	5 (5.4)
Duration of stay in Chandigarh (years)	
1-10	16 (17.4)
11-20	34 (37.0)
21-30	32 (34.8)
>30	10 (10.9)
Staying with	
Alone	4 (4.3)
With spouse/parents only	14 (15.2)
With relatives/Co-workers	4 (4.3)
In a joint family	70 (76.1)
Monthly family income (Rs)	
< 7,500	32 (34.8)
7,500 – 15,000	38 (41.3)
>15,000	22 (23.9)

Table 2: Drug use history of the injecting drug users in Chandigarh, 2011

Drug use	Numbers (%)
Age of initiation (years)	
10-14	5 (5.4)
15-19	24 (26.1)
20-24	40 (43.5)
24-29	13 (14.1)
30 +	10 (10.9)
Duration of drug use (years)	
1-5	42 (45.6)
6-10	34 (37.0)
>10	16 (17.4)
Frequency of injecting drugs	
Once in a week or less	3 (3.3)
2-3 times in a week	6 (6.5)
About once in a day	29 (31.5)
2-3 times in a day	40 (43.5)
4 or more times in a day	14 (15.2)
Place of taking drugs	
Inside bushes/forest	50 (54.3)
In own house	24 (26.1)
In public places	13 (14.1)
In an abandoned building	5 (5.4)
Reason of drug initiation	
Imparts more pleasure	35 (38.0)
For amusement	25 (27.2)
Death of family members	6 (6.5)
Family dispute	5 (5.4)
Forced by friends	5 (5.4)
Relief of pain and pressure	5 (5.4)
Others	11 (12.0)
Ever tried to stop taking drugs	77 (83.7)
Reason for not quitting drugs (N=91)*	
Drug addiction	45 (49.5)
Peer pressure	38 (41.7)
Amusement	4 (4.4)
Others	4 (4.4)

* No response=1

Table 3: Needle sharing behavior of injecting drug users of Chandigarh, 2011

Needle sharing behavior	Numbers (%)
Ever shared needles (N=92)	45 (48.9)
Shared needles in last 1 month (N=92)	16 (17.4)
Number of times shared needles in last one month (N=16)	
Below 5 times	7 (43.7)
5-10 times	4 (25.0)
More than 10 times	5 (31.3)

Table 3: Needle sharing behavior of injecting drug users of Chandigarh, 2011 (Contd.)

Number of partners with whom needle was shared in last one month (N=16)	
With 1 person	3 (18.8)
With 2-4 persons	8 (50.0)
With 5-9 persons	2 (12.5)
10 and above	3 (18.7)
Ever drawing drug from a common container in last one month(N=87)*	55 (63.2)
Number of times using the same needle before its disposal(N=91)**	
Only once	38 (41.7)
2-3 times	43 (47.2)
4-5 times	8 (8.8)
More than 5 times	2 (2.2)
Ever cleaned the pre-used needles before its use in last 1 month (N=92)	45 (48.9)
Methods of cleaning pre-used needles before its use (N=45)	
Drug Solution	14 (31.1)
Urine	11 (24.4)
Cold water	10 (22.2)
Hot water/ Boiling	10 (22.2)
Ever gave/sold/lent the needles after its use (N=92)	41 (44.5)
Source of getting new needles and syringes (N=92)	
NGO worker	55 (59.8)
Chemist/pharmacist	32 (34.8)
Hospital	3 (3.3)
Health worker	1 (1.1)
Other drug users	1 (1.1)

*No response=5 **No response=1

Table 4: Sexual behavior of injecting drug users in Chandigarh, 2011 (N=84)*

Sexual behavior	Numbers (%)
Age of initiation of sexual intercourse (years) (N=84)	
10- 14	5 (5.9)
15- 19	48 (57.1)
20- 24	26 (30.9)
25+	5 (5.9)
First sexual partner (N=84)	
Girl friend	47 (56.0)
Female sex worker	19 (22.6)
Spouse/live-in partner	8 (9.5)
Others	10 (11.9)
Ever had sex with non-regular partners in last six months (N=84)	49 (58.3)

Table 4: Sexual behavior of injecting drug users in Chandigarh, 2011 (N=84)* (Contd.)

Sexual behavior	Numbers (%)
No. of sexual acts with non-regular partners in last six months (N=49)*	
Less than 15 times	31 (63.3)
15-30 times	10 (20.4)
More than 30 times	8 (16.3)
Ever had sex with Female Sex Worker (FSW) (N=84)	49 (58.3)
Number of sexual acts with FSW in last six months(N=49)	
Never	15 (30.6)
Up to 5 times	16 (32.7)
6-10 times	9 (18.4)
More than 10 times	9 (18.4)
Ever had sex with other men (N=83)**	11 (13.3)
Number of sexual partners in last 6 months (N=82)***	
More than one partner	51 (62.2)
One partner	21 (22.8)
No partner	10 (12.2)
Partner of last sexual act (N=81)[§]	
Spouse/Live-in partner	34 (42.0)
Girl friend	24 (29.6)
FSW	12 (15.0)
Others	11 (13.4)
Ever used condom (N=84)	70 (83.3)
Used condom in last sexual act (N=70)	31 (44.3)

*8 IDUs never had sex in their life time, # Don't know=1, **No response=1, \$ No response=3 ***No response=2

Sexual behavior of the IDUs is presented in Table 4. The mean age of first sexual intercourse was 19 years. Around 58% had sex with non-regular partners during the last 6 months. Around 69% (34/49) of them had sexual intercourse with FSWs. Thirteen percent (11/83) of the IDUs reported MSM activity. About 83% (70/84) of the respondents had ever used condom. Around 44% (31/84) of the respondents had used condom in last sexual act.

Among those who had last sexual act with their non-regular partners, 67.6% (23/34) did not use condom. Of the respondents who had their last sexual act with the FSWs, 33.3% (4/12) did not use condom. The main reason of not using condom was: "condom reduces pleasure" (43.6%) followed by "unavailability at that moment" (20.5%) and "partner dislike" (15.4%). NGO peer educators or outreach workers were the main source (48.6%) of getting condom followed by drug store or chemist (24.3%), sexual partners (7.14%) and dispensary/clinic (7.14%).

The odds of 'not using condom' was higher among those who had low family income (< Rs.7500) as compared to those who had high family income (> Rs.15000) (OR 4.6, 95% CI 1.34-15.72, *P* 0.02). The needle sharing behavior was more common among those who had first sexual intercourse before 18 years than those who had it later (OR 5.88, 95% CI 1.84-18.84, *P* 0.003). Sex with non-regular partner was higher (87.5%) among those who shared needles than those who did not share needles (50.7%) (*P* 0.03).

DISCUSSION

Injecting drug users of Chandigarh not only had unsafe injecting practices but they also had risky sex behavior. We found that multi-partner sex was more common among those who shared injecting needles than those who did not share needles. The national behavioral surveillance survey (BSS) conducted in 2006 did not report association of unsafe injection with unsafe sex but reported these behaviors separately.⁷

Sharing of contaminated injecting equipment is the primary mode of HIV transmission in many countries throughout Europe and Asia. A report in 2008 showed that only 43% of IDUs from Chandigarh & Panchkula had ever shared needles.⁹ Our result showed that 48.9% of IDUs had ever shared needles, but needle sharing in last one month was less (17%) in comparison to a recent study in Chennai.¹⁰

A multi-centre rapid assessment of injecting drug use in India showed that most IDUs used same needle and syringe repeatedly.¹¹ This is in line with our results which show that around 58% of the IDUs used the needle for at least 2-3 times before its disposal. Safe needle disposal is also a potential area for reducing harm. Disposing of syringes and needles is a challenge in India. Garbage scavengers are at risk for needle stick injuries and potential acquisition of blood borne infections.¹⁰

A good number of IDUs were found to either sell/lend/give their needles after their use to others. A study conducted by Population Council, New Delhi showed similar result of lending needles by IDUs in Delhi and Imphal.¹² Although present study shows that around 60% of the IDUs get needle/syringes from the NGOs, still there is a need to enhance this.

Though most of IDUs show significant level of knowledge regarding prevention of HIV but some misconceptions still remain regarding transmission by

mosquito bite, sharing meals etc. A multi-centre study in India showed extremely high needle sharing among IDUs despite having some knowledge about the adverse consequences such as HIV/AIDS infection.¹¹

Among sexually active IDUs, more than half had ever had sex with FSWs. Not surprisingly, BSS-2006 and studies in Delhi also showed similar trend of sexual intercourse with commercial partners in last one year among the IDUs of Punjab and Delhi.^{7,13} MSM behavior of the IDUs of Chandigarh is no different from Delhi.¹²

Although a good proportion of IDUs had ever used condom but condom use tended to be lower with the regular partners as compared to the non-regular or commercial partners. This trend has been seen in many studies.¹⁰ Reduction of pleasure in condom use was found to be the most common reason for non-use of condom. A case study of female IDUs also revealed reduction of pleasure for not using condom which is in accordance with low levels of risk perception among the wives of the IDUs reported by a study in 2005.¹³

Current study highlighted sexual intercourse with multiple partners among more than half of IDUs in Chandigarh having a mean of 6 partners in last six months. Similar trend is noticed among 38% of IDUs in Delhi having 2-5 female sex partners and slightly over than 10% of IDUs had more than 6 female partners in last 12 months.¹²

One of the major limitations of the study is that it did not cover the IDUs who were not identified by the NGOs implementing the targeted interventions. The possibility of IDUs who were not enrolled by NGOs is low, because the number of enrolled IDUs matched with the number of IDUs reported by a mapping study done by an independent agency. Female IDUs did not appear in the study sample as there were only 4 of them in the sampling frame, hence, further studies are needed to explore risk behavior among females.

To conclude, in Chandigarh, about half of IDUs had shared injecting needles in the past but only 17.4% shared needles in last one month. Around 58% of IDUs also have high risk sex behavior as they did not use condom in last sexual act. Greater efforts should be directed for promotion of safe injection and condom use among IDUs.

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Effect of Grape Products on Oral Health- a Review

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ABSTRACT

Oral diseases, including dental caries, periodontal disease, and tooth loss, affect the majority of the population and can affect a person's overall health. Raisins contain polyphenols, flavonoids, and high levels of iron that may benefit human health. However, their oral health benefits are less well understood. We hypothesized that raisins contain antimicrobial phytochemicals capable of suppressing oral pathogens associated with caries or periodontal diseases and thus benefit oral health. Compared with commercial bran flakes or raisin bran cereal, a lower plaque pH drop was noted in children who consumed a raisin and bran flake mixture when no sugar was added ($P < 0.05$). Grape seed extract, high in proanthocyanidins, positively affected the in vitro demineralization and/or remineralization processes of artificial root caries lesions, suggesting its potential as a promising natural agent for noninvasive root caries therapy.

Keywords: Dental Caries, Grape Seed Extract, Proanthocyanides

INTRODUCTION

Oral diseases and conditions, including dental caries, periodontal disease, orofacial disorders, and tooth loss, affect more persons than any other disease in the United States. Millions of Americans suffer from these diseases and conditions of the oral cavity that result in pain and suffering; difficulty in speaking, chewing, and/or swallowing; and in extreme cases, death¹. Next to the common cold, dental diseases are the major cause of lost work or school days and have had a negative impact on economic productivity and the learning ability of American children². Oral diseases and/or disorders can affect a person's overall health³. Recent research has shown that oral bacteria may contribute to increased risk of heart attacks, strokes, and lung disease and may be associated with premature childbirth in some women.^{4,5}

Dental caries is a multi-factorial infectious disease that depends on diet and nutrition, microbial infection,

and host response. Although the introduction of fluoride has resulted in the reduction of dental caries, the latter is still the most common infectious disease in humans and is especially prevalent in children and people with xerostomia (dry mouth)⁶. In adults, the incidence of root caries was found to increase dramatically with age. The mutans group of streptococci (MS), found prominently in dental plaque, have been strongly implicated as one of the etiologic agents of dental caries in both humans and experimental animals⁷. The most prominent virulence factors of MS include their acidogenicity, aciduricity, and their ability to synthesize adherent glucans from dietary sucrose via glucosyltransferases, facilitating dental plaque formation and its adherence to tooth surfaces⁸.

Periodontal disease is a group of chronic inflammatory diseases caused by specific anaerobic Gram-negative bacteria that activate immunoinflammatory mechanisms within the local periodontal tissues, leading to the destruction of collagen and bone supporting the teeth.⁹ Periodontitis occurs at greatly different rates in different participants. The chronic forms of the disease are widespread among the population, whereas the aggressive, destructive form of the disease affects <10% of the population, resulting in serious tooth loss before old age.¹⁰

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Dental plaque has been implicated as the prime etiologic factor in dental caries, gingivitis, and periodontal disease^{11,12,13}. It is a complex bacterial biofilm community for which the composition is governed by factors such as cell adherence, coaggregation, and growth and survival in the environment¹⁴. To date, mechanical plaque elimination with assorted devices remains the primary and most widely accepted means of maintaining good oral hygiene and controlling plaque-mediated diseases^{15,16}.

The author has developed methodologies in her laboratory for the screening, fractionation, and identification of oral antimicrobials from these sources using an interdisciplinary research approach involving dentistry, oral microbiology, and natural products chemistry¹⁷⁻²³.

Raisins and oral health

Raisins are dried grapes, fruits of *Vitisvinifera* L. (Vitaceae)²⁴. Today, most raisins are produced from Thompson seedless grapes, which were introduced to California in 1862 by William Thompson.²³ This variety is classified as a raisin-type grape that produces a green, seedless fruit. While dominating raisin production, it is also widely used for fresh consumption and for making juice concentrate and wine as well^{24,25}. Several other raisin grape varieties are used for raisins production, including Muscat, Black Corinth, and Sultana. The US per capita annual consumption of raisins is $\leq 3.26\text{ kg}$.²⁵

As a popular snack food, raisins contain polyphenols, flavonoids, iron, minerals, potassium, calcium, and certain B vitamins that may benefit overall human health. Raisins are cholesterol and fat free, rich in antioxidants, and a good source of fiber.²⁶ Raisins consist of $\leq 60\%$ sugars by weight and their sweetness is contributed by mainly glucose and fructose, while no sucrose is detected.²⁷ As described previously, sucrose, the main dietary sugar, serves as a substrate for the synthesis of adherent glucans in human dental plaque, the etiologic agent of tooth decay and gum disease.²⁸ The various phytochemicals reported in raisins include triterpenes²⁹, fatty acids^{30,31}, flavonoids³², amino acids, ³³hydroxycinnamic acids, and 5-hydroxy-2-furaldehyde.³⁴

Identification of antimicrobial compounds in raisins against oral pathogens

Through bioassay-guided fractionation of hexane- and ethyl acetate-soluble partitions of *V. vinifera*,

antimicrobial compounds were isolated and identified. All of the compounds were previously reported from species in the family Vitaceae. The substances, oleanolic acid,³⁵ oleanolic aldehyde,³⁶ linoleic acid³⁷, linolenic acid, betulin³⁸, betulinic acid³⁹, 5-(hydroxymethyl)-2-furfural⁴⁰, rutin⁴¹, β -sitosterol⁴², and β -sitosterol glucoside⁴³, were identified by comparing their physical and spectroscopic data with those of published values.

Earlier in vitro studies have shown that oleanolic acid¹ inhibited insoluble glucan synthesis of mutans streptococci in the oral cavity^{44,45,46}.

Raisins and their effect on in vivo dental plaque acidogenicity in children

However, the frequency of consumption of cariogenic carbohydrates plays a much larger role in caries progression than the amount of food particles trapped on the surfaces of teeth.⁴⁷

Raisins have been shown to possess a moderate to high cariogenic potential in laboratory rats.⁴⁸ Dental plaque pH studies in humans categorized raisins as acidogenic^{49,50,51}. Some health professionals believe that sweet and sticky foods such as raisins are more cariogenic because they are difficult to clear off the tooth surfaces⁵². Oral clearance properties vary markedly among individuals and depend on factors such as salivary flow, metabolism by microorganisms, and degradation by plaque and salivary enzymes⁵³. Kashket et al.⁵⁴ found no correlation between stickiness and retention of foods on teeth.

The sweetness of raisins makes them a popular additive to snack foods and cereals, among which raisin bran cereal is a good example. Studies have shown that bran flakes were acidogenic and contributed to high levels of total carbohydrate in saliva^{55,56}. Utreja et al.⁵⁷ investigated the effects of raisins and raisin bran cereal on in vivo plaque acidogenicity in young children.

Sugar profiles of bran flakes, raisins, cRB, and eRB were determined by GC (Covance Laboratories) as described by Mason and Slover.⁵⁸

In vivo plaque pH was measured with a touch microelectrode (NMPH3 Dental Beetrode, World Precision Instruments) and a glass reference electrode (DRIREF-5, World Precision Instruments)⁵⁹.

In addition, the combination of starch from the bran flakes might also have added to the rapid drop in

plaque pH over most of the testing period after consumption of cRB. Ribeiro et al.⁶⁰ have reported that starch in combination with sucrose, as in many processed foods today, can be highly acidogenic.

Grape seed extract and dental health

Root caries is especially prevalent among the elderly population due to gingival recession and the exposure of susceptible root surface⁶¹. Approximately 8% of the population are expected to acquire one or more new root caries lesions yearly in North America⁶². During root caries development, the dentin mineral is dissolved by acid produced from oral bacterial biofilm and the demineralized dentin matrix is further degraded, allowing bacteria to infiltrate the intertubular area.⁶³ Dentin is a complex mineralized tissue composed of <70% mineral, 20% organic component, and 10% fluid⁶⁴. The organic matrix of dentin consists of <90% fibrillar type I collagen, while the remaining 10% is composed of noncollagenous proteins such as phosphoproteins and proteoglycans.⁶⁵

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Health Care Resource Utilization, Out Pocket Expenditure and Skin Morbidity among Migrant Male Migratory Construction Labourers: an Illustrative Study

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ABSTRACT

A construction worker directly participates in the physical construction and builds up nation's infrastructure. They are exposed to various occupational and environmental hazards, thus, compromising the health status of the workers. They handle various chemicals and products causing sensitization and irritation leading to various dermatological problems. Hence, there is need to provide proper healthcare coverage and facilities for the migratory construction workers.

Aim: To investigate on health care resource utilization, out pocket expenditure and to estimate the prevalence of skin morbidity among migratory construction workers.

Method and Material: Mixed method of study design was used with qualitative and quantitative perspective. Migratory male workers living in labour shed area and migratory settlements participated in the study, with work experience for minimum 3 months and age above 18 years were interviewed by using standard modified questionnaire and dermatological morbidity which was confirmed by physician. Total 175 migratory workers were interviewed for qualitative study and 25 workers participated in qualitative aspect of study were focused group discussion was conducted. Sampling techniques used were purposive sampling and focused group discussion.

Result and conclusion: Total 200 male migrating construction workers participated in study, average age of the workers was 28 years and average monthly income of these workers was 7000 Rupees. Most of them were farmers in their native states and majority of them were unskilled and semiskilled. Prevalence of skin morbidity was 38.9%. None of them had health insurance, health care service utilization was low; out pocket expenditure on health was approximately 1000-1200 Rupees in three months. Workers were concern about lack of savings, no insurance coverage and lack of social security schemes.

Keywords: Male Migrant Workers, Health Care Resource Utilization, out Pocket Expenditure and Skin Morbidity

INTRODUCTION

India generates enormous work force which contributes to major world economy; Indian-origin international migrant workers are with work force of nearly 4 million and they are credited for building

finest architectures in world's history.^{1,2,3} Thus these construction workers contribute to physical infrastructure in national as well as international platform.^{1,2} On the other hand domestic migrant workers have been estimated to be about 4.2 million, where unorganized sector share of worker is increasing dramatically.³ Both central and state government is struggling to generate actual data base of work force in unorganized sectors India's Ministry of Labour is struggling to combat with issues related to migrant, home or bondage labourers and child labour.⁴ In Indian economy the entire NDP contributed by unorganized sector is assumed to be in the informal sector involving workers majorly in agriculture, fishing, mining and

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construction.¹ These workers are either unskilled or semiskilled workers. India migrant labourers have been separated into two broad spectrums - one that migrates to temporarily work overseas and another that migrates domestically on a seasonal and work available basis.⁵ After farmers, construction workers share the larger proportion of workforce in the country. These workers range from full-time to part-time workers, temporary or permanent workers mainly workers on contract and sub-contract basis.^{6,7}

Migrant workers are vulnerable population and working in the construction industries is dangerous as well as tedious job compromising their health status.⁸ Being away from the family, lack of social support, lack of basic amenities, poor pay scale adversely affects their life style.^{9,10} They handle various material and products of cements, resins, adhesives, plasticizer which causes sensitization and irritation to skin leading to various dermatological conditions among the construction workers.^{11,12,13} The commonest hazards among construction workers, due to exposure to cement at construction sites leading to occupational dermatitis and cement burns.^{14,15} Workers exposed to hazardous work environment causes skin problems like dry and fissured skin, frictional callosities, and infective skin conditions.^{11,16,17}

Karnataka state is in phase of rapid urbanization and urban expansion thus construction industries are blooming here and there is tremendous increase in construction work.⁵ Maximum workers are migrated from different states of the country on contract basis. Unorganized sector workers are increasing dramatically in Karnataka.⁵ It is estimated that majority of workers in unorganized sector are working in construction industries in Karnataka. In Manipal construction work is in rapid phase, with increase in population of migrant workers. Since Manipal being the hub of best health care centres, Kasturba Medical College and hospital provided one of the finest health facilities to people of south India, Kasturba Medical Hospital has various health insurance schemes such as Manipal Aarogya card, Yasheshwani health insurance scheme, ESI, Medicare, Vajpayee Aarogya schemes which available to all. These inter-state migrant being the most vulnerable group fails to receive most of health services in the state. Thus there is need to address this issues to achieve good health to among these migrant workers in the state.

METHODS AND MATERIAL

Mixed method study was designed as per research objectives. Both Quantitative and qualitative aspects were used with deductive and inductive approaches, respectively. The duration for study was restricted from November 2012-March 2013. Migrant construction workers from different labour sheds area and migratory settlement in Manipal participated in the study and confidentiality of data was assured to individual workers. Participants were selected by using purposive sampling technique for the quantitative aspect of the study. Nordic Occupational Skin questionnaire (*Cronbach alpha* coefficient=0.9348, internal reliability of tool) was used as study tool for data collection for skin morbidity, pilot testing was done to assess the validity of questionnaire in local setting and questionnaire were modified as per the study. Total 175 male migratory workers participated in the study. Questionnaires were interviewer administered which includes socio-demographic profile, occupational history, and skin morbidity. Data was analysed by using SPSS 15.0 and descriptive statistics are reported in tables.

For qualitative aspect of the study 25 male construction workers participated in focused group discussion. They were divided into 5 workers in each group. Discussion was done to assess health care service utilization, knowledge regarding local health care facilities, out pocket expenditure on health, health insurance, need for health insurance, and willingness to payment for insurance premium. In each group discussion all the workers were given freedom to speak and give suggestion for improvement on health services for them. Questions were asked with aim to understand their perspective regarding health insurance, health care services utilization both in companies and government health facilities. Sample size was restricted to 25 to prevent saturation of response and prevent respondent fatigue. After gathering relevant information from each focused group discussion, their responses was analysed in depth and reported in result.

RESULT & DISCUSSION

Workers from different labour shed areas participated in study where. Mixed method of study was design to illustrate on average income and expenditure on health as well as their income spent to support their family. Total 175 workers participated

in the study for quantitative study and 25 workers participated in focused group discussion. The mean age of all male migratory workers was 27.1+9.22 years with the range 18 to 66 years. In similar study among the construction workers in Baroda and Ahmedabad the mean age of male construction workers were reported as 26.48±11.15 years.¹¹ Socio economic & demographical characteristics such as age, monthly wages, native place, occupation in native state, marital status, educational status and occupation described Table 1. Maximum workers (76%) belong to age group between 18-30 years. Another study conducted in North-eastern parts of Kolkata on socio economic status on workers in construction industries found mean age of the workers were 32.0± 10.9 years and majority of workers (38%) were between 20-29 years.¹⁸ It was found that 106 (60.6%) of the workers had monthly income ranging between. 5000-10000 Rupees. Majority of workers migrated from West Bengal 50.2% followed by Bihar 13.1% , Jharkhand 12.5%, U.P 8.5% and 24.2% were from different states of India. Most of the workers were seasonal labourers and had agriculture (46.9%) as their main occupation in their

native state. Most of the migrant workers were unskilled (35.6%) and semiskilled (34.2%). Majority of the workers 56% were married and most of them were illiterate 44.6%. Cross sectional study conducted in Kolkata reported 21% workers to be illiterate. Workers were living in small tin walled rooms with asbestos roofing with no windows.

Table 2 elaborates on skin morbidities in the workers, 38.9% of workers were suffering from skin problems on further examination it was found that majority of them were suffering multiple skin lesions. Most of the workers were having 54.4% infectious skin diseases (Scabies), 17.6% contact dermatitis, 14.7% frictional callosities, dry fissured skin condition. Skin morbidity was found to be high among the workers. Cross sectional study done on skin morbidity among the construction Vadodara revealed that prevalence of skin morbidity was 20.3% of which 38.3% workers had dermatitis¹⁷. Infective dermatitis and non-infective dermatitis was 89.72% and 53.74% reported by study done in Mangalore among the construction workers ¹².

Table 1: Socio-economic and demographic profile of migrant construction workers n=175

Parameters	Sub-Categories	Number of migrant workers (%)
Age	18-30 years	133 (76.0)
	30-42 years	30 (17.1)
	42-54 years	8 (4.6)
	54-66 years	4 (2.3)
Income (Monthly in rupees)	Less than 5000	50 (28.6)
	5000-10,000	106 (60.6)
	More than 10,000	19 (10.9)
Native State	West Bengal	88 (50.2)
	Bihar	23 (13.1)
	Jharkhand	22 (12.5)
	Uttar Pradesh	15 (8.5)
	*Other States	27 (24.2)
Occupation in Native state	Agriculture	82 (46.9)
	Construction	37 (21.1)
	Student	56 (32)
Current Occupation	Skilled	53 (30.2)
	Semiskilled	60 (34.2)
	Unskilled	62 (35.6)
Marital Status	Single	77 (44)
	Married	98 (56)
Education status	Illiterate	78 (44.6)
	(No formal education)	
	Primary	49 (28)
	Secondary	48 (27.4)

(*Madhya Pradesh, Assam, Andhra Pradesh, Tamil Nadu, Maharashtra) Kappuswamy SES Scale

Table 2: Skin morbidity among male construction workers (n=175)

Parameters	Sub categories	Frequency (%) of workers
Skin Morbidity	Yes	68 (38.9)
	No	107 (61.1)
Skin Lesions	Infectious skin diseases	37 (54.4)
	Contact dermatitis	12 (17.6)
	Frictional callosity	10 (14.7)
	Dry and fissured skin	4 (5.9)
	Multiple skin lesions	5 (7.4)

Most of the workers belong to upper lower and lower socio-economic strata as per modified Kappaswamy scale 2012, thus expenditure on health is low and placed last in their priority list to meet the need for daily bread which is prime importance to them. On further discussing detail about, health care facilities utilization and knowledge regarding local health care services in Karnataka state. Most of the workers were unaware of the health services provided to them by the company as well as local government health facilities. Many of the workers were unaware of timing of the doctor's visit to labour shed and migratory settlements. On further asking the reason they mentioned that as they migrated recently thus they lack information on health services and few of them also mentioned that they are healthy thus there is no need for them to know until it is necessary. Their health service utilization was also low, they do not go for any general health check-up to doctors, only onsite injuries or accident they visit company's doctor. In cases like Malaria, Cough and cold and other minor illness they go to private clinics. Workers lack knowledge regarding location of PHC, CHC as well as Kasturba Medical Hospital in Manipal. They prefer private doctors as they believe that in local health care centre language will be the main barrier and they will not be able to explain their symptoms to them, thus going to private is better option for them, as most of them said that physician with private practice will understand their problem they will speak national language. Almost all the worker said that private health care service is better than government service and they have more trust on private health services, though none of them ever visited any primary or community health care centre in Karnataka.

All the workers mentioned that each visit to private clinics cost them near about 150- 200 Rupees, whereas in case of Malaria they have spent up to 2000-3000 Rupees on medication and treatment. Majority workers have mentioned that they have to bear heavy expenditure during hospitalization during severe illness

like TB, Jaundice, Diarrhoea, Dysentery etc. Out pocket expenditure on health once in three months is 1200-2000 Rupees and once in 6 months range from 2000-3500 Rupees in certain cases. All the workers mentioned need for health insurance. Workers are unaware of health insurance schemes existing in Kasturba Medical Hospital in Manipal. Those workers who are living in Karnataka for more than one year were willing to enrol for insurance schemes but there were many who insisted for such insurance which will be valid for all the state due to the nature of work on sub contract basis. Most of the workers are willing to pay 250 Rupees as insurance premium and few of them were ready to pay 25% of daily wages for insurance. Majority of them also mentioned for provision of providing family insurance schemes.

Average income of the workers was 7000 Rupees per month as workers migrated they send a minimum of 4000-5000 Rupees monthly to support their families back in native state. 56% workers were married they share greater part of income to support their family and thus lack saving at the end of the month. As workers migrated from West Bengal, Bihar, Jharkhand, Uttar Pradesh thus facing problem with understanding local language of Karnataka which act as barrier in utilizing the local health care facilities. Most of them suffers from skin diseases which causes heavy expenditure on treatment, thus workers wanted a kind of health care schemes which provides insurance coverage for health problems predominant among the construction workers.

CONCLUSION

Majority of the migrant workers were young, illiterate, unskilled and semiskilled labourers. They were suffering from different skin morbidities. Their health care service utilization was low, not because barrier in access to health care facility but lack of knowledge about location of health care centres and lack of motivation towards need for general health

check-up. None of the worker had health insurance and lack social security schemes. Workers are willing to pay up to 25% of their income as premium for health insurance. They need such insurance schemes which are applicable throughout the country as these workers job is not fixed to one state or region. Karnataka States health services focuses need of all and government PHC and CHC are located nearby by Manipal with well supported public transport system by migrant workers are ignorant, lack information and devoid of utilizing these health services. Health education camps, orientation camps with awareness about local health system are needed for these migrant workers.

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Ethical Clearance: Informed consent obtained from participant and confidentiality of data was assured to individual workers and permission to interview the workers was given by Construction Company Chief Medical Service officer.

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Prevalence of Sinusitis in Children Aged 3yrs to 15yrs by Clinical and Radiological (X-Ray PNS) Methods in Children with Persistent Acute or Recurrent Respiratory Tract Symptoms

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ABSTRACT

Objectives: The objectives of the study was to know the prevalence of sinusitis among children aged 3 yrs to 15 yrs who had persistent acute or RRTS.

Method: All children aged 3yrs to 15 yrs who came to hospital with persistent acute or RRTS were subjected to x-ray PNS irrespective of whether they were clinically suspected (according to accepted criteria) or clinically unsuspected to have sinusitis. X-ray PNS was used as a confirmatory diagnostic test . This data was analysed and statistical significance was obtained with chi square test.

Results: Out of total 75 cases, PAURTS constituted 18 cases, i,e 24% and RRTS 57 cases i,e 76%.

Out of 50 clinically suspected sinusitis, x-ray PNS was positive in 42 cases i,e 84%.

Out of 25 clinically unsuspected sinusitis, x-ray PNS was positive in 15 cases i,e 60%.

Among the 18 PAURTS cases, 12 were clinically suspected sinusitis out of which 10 were x-ray PNS positive, i,e 83% and out of 6 clinically unsuspected sinusitis 5 were x-ray PNS positive i,e 83%.

Among the 57 RRTS, 38 were clinically suspected sinusitis of which 32 were x-ray PNS positive, i,e 84% and 19 were clinically unsuspected sinusitis of which 10 were x-ray PNS positive, i,e 52%.

Conclusion: Among children with PAURTS and RRTS, prevalence of sinusitis is high and it is always prudent to r/o sinusitis in such cases. The accuracy of diagnosing sinusitis is high when x-ray PNS is used along with clinical suspicion of the same.

Keywords: PAURTS = Persistent acute upper respiratory tract symptoms, RRTS = Recurrent respiratory tract symptoms, SINUSITIS

INTRODUCTION

Pediatric sinusitis has a significant adverse effect on health related quality of life in children. The average child will have 6 to 8 upper respiratory infection per year during first decade of life and that acute bacterial sinusitis complicates up to 13% of these infections¹. Acute maxillary sinusitis is claimed to be one of the most common diseases in childhood.

Though the recommendation is to diagnose acute bacterial sinusitis only on clinical grounds in young children, bacterial sinusitis cannot be differentiated from rhinitis on clinical grounds alone¹ The gold standard for diagnosis of bacterial sinusitis is puncture, aspiration and positive bacteriologic culture of sinuses², which are usually impossible in children without general anaesthesia.

Although CT scanning has, replaced plain film radiography in the evaluation of pediatric paranasal sinuses, plain radiography retains some advantages, including relatively low radiation dose and cost, the ability to obtain films without sedation, and capability of portable examination³. Hence Plain film radiography may suffice as an inexpensive confirmatory test in cases of suspected sinusitis involving older children with equivocal clinical presentations.

The abnormal radiographic images reflect inflammation and do not discern between viral⁴, bacterial⁵, allergic⁶ or other causes. However, in the setting of prolonged symptoms suggesting a bacterial infection, radiographic images can lend credence to the diagnosis. A normal radiograph is powerful evidence that bacterial sinusitis is not the cause of clinical syndrome⁷ and has a sensitivity of 90% in excluding acute bacterial sinusitis⁸.

RRTS involving upper or lower respiratory tract, is defined as, children having more than 6 episodes of respiratory tract infections in a year or more than 3 episodes in 6 months with healthy intervals in between.

Persistent acute respiratory symptoms, is defined as having respiratory symptoms for more than 10 to 14 days and less than 30 days.¹

Acute RRTIs are the commonest illnesses of childhood. Most involve only the upper respiratory tract, but in 10-30% the lower respiratory tract is also affected.

Sinusitis increases the burden of organisms in upper airway and serves as a reservoir that may cause recurrent descending infection of lower airways.

Inappropriate and or inadequate dose of antibiotics without complete evaluation by clinicians is common for children with RRTI leading to unnecessary side effects and emerging phenomenon of antimicrobial resistance. Accurate diagnosis of sinusitis would help the clinician to find children who really benefit from treatment and prevent morbidity from persistent or RRTS.

Very few reports of prevalence of sinusitis in children with PAURTS or RRTS have been reported in India and hence this study was carried out.

AIMS AND OBJECTIVES

To study the prevalence of sinusitis in children aged 3yrs to 15yrs by clinical and radiological (X-ray PNS) methods in children with Persistent acute or Recurrent respiratory tract symptoms, in Hassan institute of medical sciences.

MATERIALS AND METHOD

Place: Hassan institute of medical sciences.

Type Of Study: Descriptive Study

Study Period : 1 year

Inclusion Criteria : All Children between the age group of 3yrs to 15 years who had PAURTS (> 10 days and < 30 days) and RRTS (> 3 episodes in 6 months or 6 episodes in 1 year) were included in the study.

Exclusion Criteria

1. Children with

- a) Immunodeficiencies
- b) Cystic fibrosis
- c) Anatomic-obstructive factors
- d) Congenital Heart diseases
- e) Tuberculosis
- f) Gastro-esophageal reflux.

2. Children less than 3 yrs and > 15 years.

Demography (Study Population)

A Total number of 75 children were included in the study. who were divided according to presentation of symptoms. PAURTS as Group I and RRTS as Group II.

Group I had only Persistent upper acute respiratory tract symptoms.

Group II was again divided into

Group II-A: Recurrent upper respiratory tract symptoms.

II-B: Recurrent lower respiratory tract symptoms.

II-C: Recurrent Upper + Lower respiratory tract symptoms.

Criteria used in diagnosis of sinusitis in children with persistent acute or rrts

Sinusitis was diagnosed based on clinical and radiological (x-ray PNS) methods.

All 75 children (Group I and Group II) were subjected to x-ray PNS for diagnosis of sinusitis, irrespective of clinically suspected sinusitis or clinically unsuspected sinusitis, since many children with sinusitis have equivocal presentation of symptoms.

Clinical diagnostic criteria for sinusitis

Major Criteria	Minor Criteria
1. Facial pain or pressure. (Requires a second major criterion to constitute a suggestive history)	Head ache
2. Facial congestion or fullness	Fever (for subacute and chronic sinusitis)
3. Nasal congestion or obstruction	Halitosis
4. Nasal discharge, purulence or discolored post nasal discharge.	Fatigue
5. Hyposmia or Anosmia	Dental pain
6. Fever (for acute sinusitis requires a second major criterion to constitute a strong history)	Cough
7. Purulence on intranasal examination	Ear pain, pressure, or fullness.

2 major or one major and 2 minor criteria ⁹ for diagnosing sinusitis was considered, in children who presented with **Persistent acute or RRTS** .

X-Ray PNS (Waters View) Diagnostic Criteria for Sinusitis¹⁰

1. Complete opacification
2. Mucosal thickening (atleast 4mm)
3. Air – fluid level.

The ethics committee of the hospital approved the study.

Lab Investigations

Routine blood investigations, chest x-rays, investigation for co-morbidities like allergy or asthma and if needed mantoux were also done to come to a diagnosis or to rule out other diagnosis in children who presented with PAURTS or RRTS.

Statistical Analysis

The statistical significance of the results was evaluated by using Chi-square test. SPSS software was used for analysis of the results. P value considered significant at 0.05

Limitations Of Study

It is purely a descriptive study with limited number of study population conducted in a limited period and the study was not blinded.

Definitive diagnosis of sinusitis like isolation of bacteria/virus from antral punctures was not done and also we don't have controls, like x-ray PNS of normal children.

We didn't subject our patients to CT- scan of sinuses, which is more sensitive test than x-ray PNS in diagnosing sinusitis. Also x-ray diagnosis of sinusitis may be influenced by past treatment with antibiotics, or co-existent risk factors like atopy, allergic rhinitis, anatomical abnormalities and non inflammatory airway inflammation in patients with PAURTS and RRTS.

RESULTS

Out of total 75 cases, persistent acute upper respiratory tract symptoms constituted 18 cases, i.e 24% and RRTS 57 cases i.e 76%.

Out of 50 clinically suspected sinusitis, x-ray PNS was positive in 42 cases i.e 84%.

Out of 25 clinically unsuspected sinusitis, x-ray PNS was positive in 15 cases i.e 60%.

Total number of x-ray positive cases were 57 i.e 76%.

Among the 18 PA URTS cases, 12 were clinically suspected sinusitis out of which 10 were x-ray PNS positive, i.e 83%, and out of 6 clinically unsuspected sinusitis 5 were x-ray PNS positive i.e 83%.

Among the 57 RRTS, 38 were clinically suspected sinusitis of which 32 were x-ray PNS positive, i.e 84% , 19 were clinically unsuspected sinusitis of which 10 were x-ray PNS positive, i.e 52%.

DISCUSSION

In our study, the children who presented with PAURTS (Group I), were 18 out of total 75 cases.

X-ray diagnosis of sinusitis was present in 83.33 % of children who were clinically suspected to have sinusitis and 83.33% also among clinically unsuspected cases.

This is in correlation with the study done by Wald et al.,¹¹ and Jannert et al.,¹². Which showed that children who had PAURTS and RRTS the x-ray diagnosis was present in 80% and 73% respectively. This shows that x-ray diagnosis is important in this group of patients.

OBSERVATION AND RESULTS

Table 1: Comparison of Present study (Group I) with Wald et al¹¹ and Jannert et al¹²

	Present study	Wald et al	Jannert et al
Number	75	171	175
Age group (yrs)	3- 15	2-16	< 15
Percentage of X-ray sinus abnormality	83.33	80	73

Table 2: Total cases: (Group- I and Group- ii)

	Number	Percentage
Group-I persistent upperacute RTS	18	24
Group-II recurrent RTS	57	76

Table 3: Clinical & x-ray diagnosis of sinusitis in group I and group II

In total 75 cases, clinically suspected sinusitis were 50 and in which x-ray diagnosed sinusitis were 42. In 25 clinically unsuspected sinusitis x-ray diagnosed sinusitis were 15.

	Clinical Sinusitis		Chi squareX 2	Level ofsignificance (P value)
	Yes	No		
X-ray Sinusitis	42	15	5.816	0.05
	8	10		

The above table shows there is an association between clinically diagnosed sinusitis and x-ray diagnosed sinusitis.

Table 4: Clinical v/s X-ray diagnosis of sinusitis IN GROUP I – PAURTS.

Out of Total 18 cases in Group I, 12 cases were clinically diagnosed to have sinusitis of which 10 were x-ray positive. Out of 6 clinically unsuspected cases 5 were x-ray positive.

	Clinical Sinusitis		Chi squareX 2	Level ofsignificance (P value)
	Yes	No		
X-ray Sinusitis	10	5	0.0001	1.000
	2	1		

The above table shows that there is no association between clinically diagnosed sinusitis and x-ray diagnosed sinusitis.

Table 5: Clinical v/s x-ray diagnosis of sinusitis IN GROUP-II (TOTAL RRTS)

Out of 57 total RRTS, 38 cases were clinically suspected to have sinusitis in which 32 cases were x-ray positive and in 19 clinically unsuspected sinusitis 10 cases were x-ray positive which shows that there is an association between clinically diagnosed sinusitis and x-ray diagnosed sinusitis.

		Clinical Sinusitis		Chi squareX 2	Level ofsignificance (P value)
		Yes	No		
X-ray Sinusitis	Yes	32	10	6.514	0.01
	No	6	9		

Table 6: Group – II A (Recurrent Upper Respiratory Symptoms)

Out of 23 cases in Group II A, 15 cases were clinically suspected to have sinusitis in which 13 cases were x-ray diagnosed sinusitis. In 8 clinically unsuspected sinusitis 5 cases were diagnosed to have sinusitis on x-ray which shows that there is **no association** between clinically diagnosed sinusitis and x-ray diagnosis .

		Clinical Sinusitis		Chi squareX 2	Level ofsignificance (P value)
		Yes	No		
X-ray Sinusitis	Yes	13	5	1.791	0.181
	No	2	3		

Table 7: Group – II B (Recurrent Lower Respiratory Symptoms)

Out of 11 cases in Group II B, 7 cases were clinically suspected to have sinusitis in which 4 cases were x-ray positive. In 4 clinically unsuspected sinusitis 1 case was x-ray positive which shows that there is no association between clinically diagnosed sinusitis and x-ray diagnosed sinusitis.

		Clinical Sinusitis		Chi squareX 2	Level ofsignificance (P value)
		Yes	No		
X-ray Sinusitis	Yes	4	1	1.061	0.303
	No	3	3		

Table 8: Group – II C (Recurrent Upper + Lower Respiratory Symptoms)

Out of 23 cases in Group II C, 16 cases were clinically suspected to have sinusitis in which 15 cases were x-ray positive. In 7 clinically unsuspected sinusitis 4 cases were x-ray positive which shows that there is **an association** between clinically diagnosed sinusitis and x-ray diagnosed sinusitis.

		Clinical Sinusitis		Chi squareX 2	Level ofsignificance (P value)
		Yes	No		
X-ray Sinusitis	Yes	15	4	4.542	0.033
	No	1	3		

Among the children in Group I, x-ray diagnosis of sinusitis was present in 83.3% of the cases who were clinically unsuspected to have sinusitis. Hence from table 4 it is evident that there is no association between clinical diagnosis and x-ray diagnosis of sinusitis. Hence x-ray is important in this group of patients to diagnose sinusitis.

In group II (RRTS) (Total no= 57 children, X-ray abnormality in 42 cases = 73.68%).

X-ray diagnosis of sinusitis was present in 84.21% of children who were clinically suspected to have sinusitis and in 52.63% of children who were clinically unsuspected of sinusitis. Hence from table 5 it is evident that there is an association between clinical diagnosis and x-ray diagnosis of sinusitis. Hence clinical diagnosis of sinusitis is as good as x-ray diagnosis of sinusitis in patients having RRTS.

1. In group II-A (Recurrent upper RTS).

X-ray positivity was present in 86.66% of children with clinically suspected sinusitis and in 62.5% with clinically unsuspected sinusitis respectively hence from table 6 it is evident that there is no association between clinical diagnosis and x-ray diagnosis of sinusitis. Hence x-ray is important in this group of patients to diagnose sinusitis.

2. In Group II-B (Recurrent lower RTS)

X-ray positivity was present in 57.14% of children with clinically suspected sinusitis and in 25% of children with clinically unsuspected sinusitis. Hence from table 7 it is evident that there is no association between clinical diagnosis and x-ray diagnosis of sinusitis. Hence x-ray is important in this group of patients to diagnose sinusitis

3. In Group II-C (Recurrent Upper + Lower RTS)

X-ray positivity was present in 93.75% of children with clinically suspected sinusitis and in 57.14% of children with clinically unsuspected sinusitis. Hence from table 8 it is evident that there is an association between clinical diagnosis and x-ray diagnosis of sinusitis. Hence clinical diagnosis of sinusitis is as good as x-ray diagnosis of sinusitis in patients having recurrent upper and lower respiratory tract symptoms.

CONCLUSIONS

The prevalence of sinusitis, based on X-ray PNS diagnosed in children with PAURTS and RRTS in my study is 76% (57 out of 75 cases).

Hence it is always prudent to rule out sinusitis in any case of persistent acute upper respiratory tract symptoms or RRTS and hence I also conclude that sinusitis could be the cause for persistent acute URTS or RRTS.

The positive predictive value of clinical diagnosis of sinusitis by accepted criteria is 84%, when compared with x-ray PNS diagnosis of sinusitis in children with persistent upper acute and recurrent respiratory tract symptoms.

Therefore in all cases of persistent acute URTS and RRTS it is necessary to do x-ray PNS along with clinical suspicion of sinusitis based on accepted criteria.

Therefore I conclude that accuracy of diagnosing sinusitis in persistent URTS or RRTS is high when x-ray PNS is done along with clinical suspicion of sinusitis.

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Very few reports of prevalence of sinusitis in children with PAURTS or RRTS have been reported in India and hence there was no conflict of interest regarding this study.

The investigations done on our patients were free of cost.

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Comparative Study on the Health Problems between Beedi Rolling Women and non Beedi Rolling Women of a Selected Community at Mangalore

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ABSTRACT

Background- The beedi manufacturing is an agro based industry in India. Although beedi rolling began in the factory sector (in 21st century), over the last three decades, the beedi manufactures have increasingly shifted work from factories into the households. . The health impact on beedi workers is visible on all age groups . Hence the investigator felt the need to conduct a study to compare the health problems of the beedi rolling and non beedi rolling women in selected community at Mangalore.

Objectives; To determine the health problems of the beedi rolling women and non-beedi rolling women.To compare the health status of beedi rolling women and non-beedi rolling women .To find the association of the health problems of the beedi rolling and non-beedi rolling women with selected demographic variables

Methods: A Comparative descriptive approach was used for the study. 50 Beedi Rolling and 50 Non Beedi rolling women were selected (N=50+50) by purposive sampling technique. Tools used were checklist on health problems and observational checklist on health .Four systems assessed such as respiratory system, musculoskeletal system, Integumentary system and sensory system.

Results: Highest in percentage (98%) of the of the beedi rolling women has health problems mild, and (2%) of beedi rolling women had moderate health problems. None of them had severe health problems, where as in Non Beedi rolling Women (100 %.) Were Having Mild Health problems. When compared Beedi Rolling women had significantly higher health problems than the Non beedi rolling women (t 98 = 2.872,P=<0.05 significant).

Conclusion; Beedi rolling women has more health problems than Non beedi rolling women hence protective measures is needed to safeguard their health.

Keywords: Comparison, Beedi Rolling Women, Non Beedi Rolling Women, Health Problems

INTRODUCTION

Beedi industry is an old age industry in India. Beedi workers are constantly in contact with tobacco powder. Illnesses like tuberculosis, asthma, chronic bronchitis, backache, joint pain and arthritis are reported to be common among beedi workers. Nicotine is a major component of tobacco and has positive adverse health

consequences. The beedi occupies a prominent place in rural development in terms of its capacity to offer potential employment opportunities to a large number of people. It is estimated that around one million workers mostly women and children are employed in Beedi making. Apart from the other legal implications the health hazards which the women employees who are rolling the beedis are enormous.²

OBJECTIVES OF THE STUDY

- To determine the health problems of the beedi rolling women and non-beedi rolling women.
- To compare the health status of beedi rolling women and non-beedi rolling women .
- To find the association of the health problems of the beedi rolling and non-beedi rolling women with selected demographic variables.

MATERIALS AND METHOD

A comparative descriptive survey approach was adopted to compare the health problems of beedi rolling women and nonbeedi rolling women of a selected community at Mangalore. The study was conducted in selected community areas of Mangalore (Basavanagar and Devinagar) with the sample size of

50 beedi rolling and 50 non beedi rolling women of the age 18-45 yrs . Beedi rolling and non beedi rolling women who smoke or chew tobacco and who use snuff ,the women who were suffering from chronic illness like bronchitis, asthma , COPD,congenital heart diseases , and stroke were excluded from this study. Tools used were checklist on health problems and observational checklist on health problems.Four systems were assessed such as respiratory system, musculoskeletal system, Integumentary system and sensory system.

RESULTS

The data is analyzed and presented under following headings

Section A: Description of demographic variables of the sample

Table 1: Frequency and Percentage Distribution of Sample According to their Demographic Variables.

No	Demographic Variable	Frequency (f)	Percentage (%)
1	Age (in years)		
	a. 18-25	22	22
	b. 26-35	43	43
	c. 36-45	35	35
	d. >45	0	0
2	Religion		
	a. Hindu	48	48
	b. Muslim	40	40
	c. Christian	12	12
	d. Others	0	0
3	Educational status		
	a. No formal education	27	27
	b. Primary education	24	24
	c. High school	11	11
	d. SSLC	25	25
	e. PUC	11	11
	f. Graduate and above	2	2
4	Monthly family income (In rupees)		
	a. ?2500	11	11
	b. 2500-5000	54	54
	c. 5000-10000	33	33
	d. >10000	2	2
5	Type of family		
	a. Joint	24	24
	b. Nuclear	76	76
	c. Extended	0	0
6	Years of experience in beedi rolling		
	a. < 3	1	1
	b. b.3-5	9	9
	c. 5-10	19	19
	d. >10	21	21
	e. Not applicable	50	50

Table 1: Frequency and Percentage Distribution of Sample According to their Demographic Variables. (Contd.)

No	Demographic Variable	Frequency (f)	Percentage (%)
7	Number of hours spent in beedi rolling		
	a. <2	0	0
	b. 2-4	7	7
	c. 4-6	25	25
	d. >6	18	18
	e. Not applicable	50	50
8	Number of beedis rolled per day		
	a. <150	1	0
	b. 150-250	2	7
	c. 250-500	37	25
	d. >500	10	18
	e. Not applicable	50	50
9	Position used during beedi rolling		
	a. Sitting on chair with back support	5	5
	b. Sitting on floor with back support	42	42
	c. Sitting on floor without back support	3	3
	d. Not applicable	50	50
10	Place used for beedi rolling		
	a. Inside the house	18	18
	b. Outside the house	32	32
	c. Beedi industry	0	0
	d. Not applicable	50	50
11	Any protective measures used while beedi rolling		
	a. Face mask	0	0
	b. Gloves	0	0
	c. Steel nails	0	0
	d. No measures	50	50
	e. Not applicable	0	0

Age: The data shows that majority of the sample (43 %) belongs to the age group of 26 – 35 years and the lowest of the sample (22 %) belongs to the age group of 18 -24 years .Religion; It was noted that 48 % of the population belongs to Hindu religion and 40 % belongs to the Muslim religion. Only 12 % belongs to the Christian religion.Education: Majority(27 %)of the samples are having primary education. Only 2 % .are having graduation. and above education.Family Income: The data shows that majority (54%) of the sample had an income of rupees 2500-5000 and 2 % has more than rupees 10,000/month.Type of Family: The data show that 76% belongs to Nuclear family, and 24 % belongs to joint family.Years Of experience in beedi rolling; Among beedi rollers 21 % had more than 10 years of experience in beedi rolling. and rest of the 1 % has less than 3 years of experience in beedi rolling.Hours spent in beedi rolling; Among the beedi

rolling women 25 % used to spend 4-6 hours for beedi rolling. Least percentage (7 %) used to spent only 2-4 hours in beedi rolling.Number of beedis rolled per day: Majority (37%)of the beedi rollers rolled 250- 500 beedis per day. The least percentage (1 %)of the samples rolled less than 150 beedis per day.Position used in beedi rolling: Most of the samples (42 %) rolled beedis by sitting on the floor with back support and 3 % sitting on the floor without back support.Place used for beedi rolling: The data show that 32 % of the beedi rollers used to sit outside the house for beedi rolling and 18 % used to sit inside the house for rolling beedi. Protective measures used for beedi rolling; The data show that 50 % of the beedi rollers did not use any protective measures for beedi rolling .

Section B: Assessment of the health problems of the beedi rolling and non beedi rolling women.

Table 2: Frequency and percentage distribution of health problems of beedi rolling and non beedi rolling women.

N₁=50, N₂=50

Health problems	Beedi Rolling women		Non Beedi Rolling Women	
	F	%	F	%
Severe	-	-	-	-
Moderate	1	2%	-	-
Mild	49	98%	50	100%

The data presented in the Table 2 and Figure 1 show that in percentage (98%) of the of the beedi rolling women has Mild health problems, and 2% has moderate health problems, where as in non beedi rollers(100%) has mild health problems.

Table 4: Area-wise mean, standard deviation of Health problems of beedi rolling and non beedi rolling women in checklist on health problems.

N₁=50, N₂=50

Sl	Area	Maximum score	Beedi rolling Women		SD	Non-Beedi Rolling Women		SD
			mean	Mean Percentage		mean	Mean percentage	
1	Respiratory system	8	0.6	7.5	1.18	0.58	7.25	0.77
2	Musculoskeletal system	6	2.09	34.8	1.28	0.48	8	0.80
3	Integumentry system	3	0.3	10	0.57	0.2	6.6	0.6
4	Sensory system	2	0.08	4	0.27	0.02	1	0.14

Maximum score=19

The data in table 5 shows that in all areas mean scores of beedi rolling women is significantly higher than the mean scores of non beedi rolling women.

Table 5: Area-wise mean, standard deviation of Health problems of beedi rolling and non beedi rolling women in observation checklist on health problems.

N₁=50, N₂=50

Sl	Area	Maximum score	Beedi Rolling			Non-Beedi Rolling		
			mean	Mean percentage	SD	mean	Mean percentage	SD
1	Respiratory system	4	0.12	3	0.38	0.06	1.5	0.23
2	Musculoskeletal system	6	0.02	0.33	0.14	0.08	1.33	0.27
3	Integumentry system	11	1.66	15	1.64	0.5	4.5	0.80
4	Sensory system	4	0.3	7.5	0.57	0.16	4	0.36

Maximum score = 25

The data shows that the mean score of beedi rolling women in all the areas was significantly higher than the scores of non beedi rollers.

and non beedi rolling women independent 't' test were computed .In order to test the statistical significance the following hypothesis H₀ was stated;

Section C: Comparison of health problems of beedi rolling and non beedi rolling women.

H₀: There is no difference in the health problems of beedi rolling and non beedi rolling women.

To compare the health problems of beedi rolling

Table 6: Mean, Mean difference and 't' value on health problem checklist scores.

N=100

Parameter	Mean	Standard deviation	Mean difference	't' value (independent)
Beedi rolling women	5.18	3.6	3.06	5.3519
Nonbeedi rolling women	2.12	1.84		

$T_{98} = 1.9845, p < 0.05$ *Significant

The health problem of beedi rolling women is greater than that of the non beedi rolling women. Hence the computed value ($t = 5.3519$) is greater than the table (1.9845) value the H_0 is rejected and H_1 is accepted.

Section D: Association of health problems with selected demographic variables.

Chi square test was computed to determine the association of the health problems of beedi rolling and

non beedi rolling women with checklist scores and demographic variables. The following null hypothesis was stated to find the association.

H_{02} : There will not be a significant association of the health problems of the beedi rolling and non-beedi rolling women with their selected demographic variables.

Table 7: Chi-square test showing association of Health problems of beedi rolling women with selected demographic variables

N=50

SI No	Variables	χ^2	df	Table value
1	Age in years	2.81	1	3.84
2	Religion	4.84*	1	3.84
3	Education	2.439	1	3.84
4	Monthly income	2.37	1	3.84
5	Type of family	2.77	1	3.84
6	Years of experience in beedi rolling	5.232*	1	3.84
7	Number of hours spent in beedi rolling	0.08	1	3.84
8	Number of beedis rolled per day	0.27	1	3.84
9	Position used during beedi rolling	27.16*	1	3.84
10	Place used for beedi rolling	4.655*	1	3.84
11	Any protective measures used while beedi rolling.	0	1	3.84

*significant

The association of the health problem score with selected demographic variable was found out using chi square and Yates correction formula. The data presented in the Table- 8 shows there was significant association of religion, years of experience in beedi rolling, position used in beedi rolling, and place used for beedi rolling with the health problems as the

calculated value was more than the table value at 0.05 level of significance. However no significant association was found between the following variables (age, education, income, type of family, years of experience in beedi rolling, number of hours spent in beedi rolling, number of beedis rolled per day, protective measures used for beedi rolling.).

Table 8: Chi-square test showing association of Health problems of beedi rolling women with selected demographic variables

N=50

SI No	Variables	χ^2	df	Table value
1	Age in years	0.477	1	3.84
2.	Religion	3.61	1	3.84
3.	Education	0.069	1	3.84
4.	Monthly income	5.61*	1	3.84
5.	Type of family	0.764	1	3.84

*significant

The data presented in the Table- 9 shows there was significant association of monthly income with the scores of the health problems as the calculated value was more than the table value at 0.05 level of significance. However no significant association was found between the following variables such as (age, religion, education, type of family.).

DISCUSSION

The present study reveals that respiratory problems among the beedi rollers is 10.3 % ,musculoskeletal problems 34.8% and integumentary problems 35% respectively. A study conducted regarding the morbidity pattern of female beedi rollers in Mangalore states that the beedi rolling women who die with respiratory problems is 36 % and musculoskeletal problems 64 % and integumentary problems 47 % .From this situation one can understand that most of the beedi rolling women suffer from respiratory and integumentary system problems because of the indirect exposure of tobacco and the positions used for beedi rolling.¹²

In the present study it reveals that the beedi rolling women has more health problems than the non beedi rolling women. This is mainly associated with the years of experience, $t=5.232$ in beedi rolling .The women included were in the age group of 18 – 45 years with more than 3 years of experience in beedi rolling.

A comparative descriptive study was conducted to assess the association between female beedi worker and female non beedi worker and reproductive tract problem in selected area of Valliloor².The sample included women between 20 to 40 years with 3- 5 years of exposure to tobacco dust for female beedi worker and who were willing to participate in the study. The results showed a significant association between years of experience= $2.3(p<.05)$ and RTP among FBW.None of the other selected factors such as education, economic status, and number of beedis rolled, duration, were associated with RTP among FBW

CONCLUSION

The study concluded that There was significant association between variables such as religion, years of experience in beedi rolling, position used in beedi rolling ,and place used for beedi rolling with the health problem for beedi rollers and there was significant

association of monthly income with the scores of the health problems for the non beedi rolling women.The beedi rolling women has more health problems than non beedi rolling women .The findings of the study proved that the beedi rolling women should use some protective measures like gloves ,mask ,and steel nails to control the health problems caused by tobacco.

Ethical Clearance: Ethical clearance was obtained through the ethical committee of A.J institute of medical science Mangalore .A written permission was obtained from the concerned authority (District Health Officer) prior to the study .

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Conflict of Interest: There was no interest or conflict and no funding was required

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Effects of Forward Head Posture on Balance in Asymptomatic Young Adults

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ABSTRACT

Introduction: Forward head posture is a common postural deviation observed in young adults. Since postural orientation is a very important part in postural control, we hypothesized that forward Head Posture could influence balance.

Objective: To Assess effect of forward Head Posture on Balance in young adults.

Methodology: After the ethics committee approval an informed consent was taken from the participants. 25 Asymptomatic young adults with forward Head Posture in the age group of 18-25 years were selected. Other 25 without forward head posture formed the control group. They were evaluated for Modified Clinical Test for sensory interaction in balance and Limits of Stability with Neurocom Basic Balance Master.

Results: When subjects with forward head posture and controls were compared for Modified Clinical Test for sensory interaction in balance scores, There was no statistically significant difference as per unpaired t test ($P < 0.001$) In limits of stability, Forward, Right Forward were found to be statistically significantly different with ANOVA as compared to control group. ($P < 0.001$).

Conclusion: Forward head posture resulted increase in Reaction time, Movement velocity and End point excursion in forward direction (forward and forward right) of limits of stability. There was no statistically significant effect of forward head posture on an individual's balance in Modified Clinical Test for sensory interaction in balance.

Keywords: Forward Head Posture, Balance, Young Adults

INTRODUCTION

Posture is defined as "The Attitude of the Body" Simon et al, (1999). Griegel-Morris et al (1992) and Kendall et al (2005) stated that proper posture is believed to be a state of musculoskeletal balance that involves a minimal amount of strain on the body. Poor posture leads to misalignment of the body parts in relation to each other. These body parts are placed at a higher risk of injuries or pain due to the excess strain acting on its structures¹. Normal head neck alignment in the sagittal plane is the vertical alignment of the external auditory meatus over the acromioclavicular joint (tip of acromion process) (Seaman and

Troyanovich, 2000; yip et al, 2007). Any deviation from this is considered faulty. Forward head posture is a common postural deviation observed in young adults that increases with age.

Forward Head Posture is also called "Readers Neck", or "Scholars Neck." Forward Head Posture means the head is placed anterior to the postural line (yip et al 2007; kendell et al 2005). In order to maintain balance the body's centre of mass must be within the base of support. If there is anterior translation of the head, centre of gravity is moved ahead. Since postural orientation is a very important part in postural control, we hypothesized that Forward Head Posture could influence balance.

Studies have been done assessing balance in Forward Head Posture in geriatrics, balance and postural deviations of cervical spine in long term computer workers, balance in individuals with neck pain and pain free.^{6,7}

This study is done with the aim to notice if the presence of Forward Head Posture in an asymptomatic young individual would affect the balance.

METHODOLOGY

The study was performed on 50 young individuals, 25 of them being asymptomatic individuals with a forward head posture. The subjects were explained about the study and their consent for photography was taken. A lateral view photo was taken and the craniovertebral angle was calculated. The angle is formed between a horizontal line through the spinous process of C7 and a line through the tragus of the ear.⁶ The tragus-C7-horizontal angle measurement for the forward head position with photographic analysis exhibited good reliability in previous studies. Participants with angle less than 50 were included in the study. The other 25 without a forward head posture formed the control group. Individuals with neck Pain or muscle spasm and any

known musculoskeletal or neurological disease with balance impairment were excluded from the study.

The Limits of stability in 8 different directions and Modified Clinical Test for sensory interaction in balance was measured using Neurocom balance master. Limits of stability were measured in 8 different directions as per the instructions given in the balance master. Since there is a shift in COG position expected in forward head posture, we selected this outcome measure.

Modified Clinical Test for sensory interaction in balance assesses sensory aspect of the postural control. The subjects were instructed to maintain their balance on a firm surface with eyes open and eyes closed. The balance was also tested on foam, and subjects were asked to maintain balance with eyes and eyes closed. The test studies the patient's functional balance control to quantify postural sway velocity during the four sensory conditions:

1. Eyes open Firm Surface
2. Eyes closed Firm Surface
3. Eyes open Foam Surface
4. Eyes closed Foam Surface

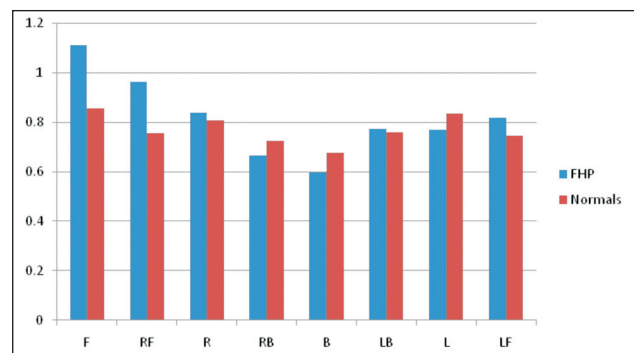
RESULT

Table 1. Comparison of Modified Clinical Test for sensory interaction in balance scores in forward head posture and control group

MCTSIBSway velocity	Mean±SD Forward Head Posture (degree/sec)	Mean±SD Control (degree/sec)	P value
Firm -Eyes Open	0.31±0.09	0.29±0.07	0.75
Firm- Eyes Closed	0.32±0.09	0.28±0.07	0.18
Foam -Eyes Open	0.75±0.16	0.72±0.13	0.45
Foam-Eyes Closed	1.56±0.32	1.51±0.34	0.64

When group A and B were compared for Modified Clinical Test for sensory interaction in balance scores, group A showed more sway compared to group B. However it was not statistically significant as per unpaired t test.

Graph 1. Reaction time (sec) of limits of stability in Forward head posture and control group



When limits of stability was assessed, ANOVA test suggest that there was no significant difference between reaction time in different directions in normal individuals. But in individuals with forward Head Posture, the following directions, Forward>Right Forward were found to be statistically significantly different as compared to control group. ($P<0.001$)

When compared to other directions the forward direction had the greatest reaction time. Movement velocity was also affected in anteroposterior direction and the highest endpoint excursion was also seen in forward direction.

DISCUSSION

Normal postural control is dependent on good posture, optimum biomechanical alignment, sensory input from visual, vestibular and somatosensory system and motor output. Griegel-Morris et al stated that the forward head posture may affect not only neck but also the thoracic spine and shoulder blade, possibly causing overall imbalance in the musculoskeletal system.⁷

On examining the values of Modified Clinical Test for sensory interaction in balance on a firm surface it suggested that in both Eyes Open and Eyes Closed conditions, individuals with forward Head Posture had a higher mean (0.31 ± 0.09 and 0.32 ± 0.09) as compared to the control group (0.29 ± 0.07 and 0.28 ± 0.07). Although a difference is present between them, a two tailed unpaired test showed this difference to be statistically not significant.

Similarly when the values of Modified Clinical Test for sensory interaction in balance on a foam surface were compared it suggested that in both Eyes Open and Eyes Closed conditions, the mean values of Forward Head Posture individuals were higher (0.75 ± 0.16 and 1.56 ± 0.32) as compared to the control group (0.72 ± 0.13 and 1.51 ± 0.34). This difference was however considered to be statistically not significant. Similar findings were also seen in a recent study on healthy volunteers where postural sway did not alter with eyes closed conditions.¹³

However we observed more difference between two groups in condition of eyes closed on firm surface. This condition demands proprioceptive system for maintenance of balance. Effect of forward head posture on proprioception needs further exploration. Earlier studies have documented Increase in postural sway

in patients with cervical pain.¹⁵ Jung Hokang performed a study on "The effect of the Forward head posture on postural balance" using Modified Clinical Test for sensory interaction in balance and limits of stability on the balance master in long time computer based workers which showed a significant difference in balance in Forward Head Posture and the control group.¹ In the above study, the study subjects were computer professionals with long working hours irrespective of the fact they had neck pain or were asymptomatic. In our study inclusion of only asymptomatic young adults could be a reason for no significant difference in balance by Modified Clinical Test for sensory interaction in balance.

When the values of reaction time in limits of stability were examined it was seen that the Forward Head Posture group had higher mean values in many directions than the control group. ANOVA test showed that in the Forward Head Posture group the direction Forward, Right Forward and Left Forward were highest and were statistically different from the control ($p<0.0001$). This showed that the forward direction has the highest Reaction time compared to others in Forward Head Posture group.

When the means of endpoint excursion were examined it suggested that it was more in forward direction. Movement velocity slowing was also noted in anteroposterior direction.

When the head shifts forward the body's Centre of Gravity (COG) is moved ahead in the forward direction within the Base of Support (BOS)¹². This places the head forward at or outside the limits of balance stability and will adversely influence the individuals balance capabilities¹¹. As a result of this it could be possible that due to fear of losing balance in the forward direction they have a greater reaction time in the forward directions. Reaction time involves measuring time of the first body movement after starting the test, which shows how quickly the body organizes input sensory information in the central nerve and shows an output body reaction End Point Excursion (EPE) is the distance of the first movement towards the designated target, expressed as a percentage of maximum limits of stability distance. The endpoint is considered to be at a point at which the initial movement towards the target ceases¹³.

Vernazza S. in a study stated that forward centre of gravity causes extended stretching of ankle joints to maintain body balance, and the stretched ankle joints

restrict movement of knee and hip joints. Therefore, the experiment group had more restricted movement capacity of the lower limb joints than the control group, which makes it difficult to control velocity in antero-posterior body sway and also to lean the body to the maximum extent while maintaining balance.¹

Thus these findings suggest affection of balance in individuals with forward head posture and a need to address this problem at the early stage.¹⁴

CONCLUSION

Forward head posture resulted increase in Reaction time, Movement velocity and End point excursion in forward direction (forward, forward right) of limits of stability. There is no effect of Forward head posture on an individual's balance in MCTSIB.

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Tobacco Usage among Adult Males in a Rural Area of Tamil Nadu: a Cross Sectional Study

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ABSTRACT

Background: By knowing the prevalence of tobacco use and their socio-demographic profile might prove useful in further strengthening the IEC and regulatory activities and thereby by decreasing tobacco use.

Objective: 1) To study the prevalence of smoking among rural men aged 18 years and above in rural area of Tamil Nadu. 2) To study the socio demographic factors of tobacco use among the above study group.

Materials and method: A cross sectional study was done among 714 males aged 18 years and above in Vadagarai village of Thiruvallur district of Tamil Nadu and interviewed with pretested questionnaire. The study was done during March 2009 to September 2009.

Results: About one fourth of the study population i.e. 36.7% was using tobacco. Cigarette smoking was more common than beedi and smokeless tobacco. The tobacco use was more common among illiterates and there was no association between smoking and socio-economic status.

Conclusion: Awareness about the ill-effects of tobacco can still more be intensified to reduce tobacco related morbidity and mortalities.

Keywords: Tobacco, Prevalence, Socio Demographic Factors

INTRODUCTION

Tobacco is the most important preventable cause of death and disease among adults. According to estimates made by the WHO, currently about 5 million people die prematurely every year in the world due to the use of tobacco, mostly cigarette smoking¹. More important is the fact that this epidemic of disease and death caused by tobacco is increasing very rapidly. By 2030 it is expected to kill more than 9 million people per year; half aged 35-69¹. The epidemic is increasingly

affecting developing countries, where most of the world's smokers (84% or 1 billion) live. Close to half of all men in low-income countries smoke daily and this has been increasing². Research has generated scientific evidence that secondhand smoke causes the same problems as direct smoking, including cardiovascular disease, lung cancer, and lung ailments such bronchitis and asthma attacks³. Many deaths and much disease could be prevented by reducing smoking prevalence.

In India, Tobacco consumption continues to grow at 2-3% per annum⁴. People in India consume tobacco in the form of cigarettes, non-cigarette items such as hand-rolled beedis, chewing etc⁵. The prevalence of tobacco use among men has been reported to be high (generally exceeding 50%) from almost all parts of India. The tobacco consumption is more in rural than in urban areas. In 2003, The Central Government passed 'The Cigarettes and Other Tobacco Products

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Act' (COTPA) applicable to all tobacco products⁶. But still, the prevalence of tobacco is a huge public health problem.

MATERIALS AND METHOD

A cross sectional study was done among adult males aged 18 years and above in Vadagarai village in Thiruvallur district of Tamil Nadu.

The sample size was calculated on the basis of 35% prevalence rate of smoking in rural area according to NFHS-3 survey with allowable error 10%, sample size came to 714⁷. There were 10 health sub centre in Naravarikuppam block Primary health center. Out of which 6 HSC comes under town panchayat and 4 HSC comes under village panchayat-Vadagarai, Surapattu, Theerthakarayanpattu and Villangadupakkam. I randomly took vadagarai subcenter. In order to get 714 men aged 18 years and above, it was decided to survey 445 households in vadagarai subcenter, with a total of 1581 households with population of 2539 men above 18 years. The households were sampled by systematic random sampling.

Respondents were interviewed using semi-structured questionnaire. The questionnaire for this study was developed based on Global Youth Tobacco Survey (GYTS)⁸. It was translated into Tamil language, pretested and standardized. Part I consist of questions related to socio-demographic profile, part II consist of questions regarding usage of smoking as well as smokeless tobacco.

Data entry was made in excel software in codes and analysis was done by SPSS software. Prevalence was expressed in percentage and association with the factors was tested for significance using chi-square test.

RESULTS

Table 1 shows that out of 714 respondents, majority of men were of age group 18-25 years(31.7%), of Hindu religion(82.5%), married(58.10%) and belongs to nuclear family(70.6%). On applying Chi-square test statistical significant association was found between age group and smoking status.

Table 1: Socio-demographic determinants of tobacco use

Socio-demographic variables	N=714(%)	Smoker N=262(%)	Non-Smoker N=452(%)	χ^2 , P value
Age				
18-25	226(31.7%)	90(39.8%)	136(60.2%)	27.428,0.001
26-30	131(18.3%)	33(25.2%)	98(74.8%)	
31-35	64(9.0%)	25(39.1%)	39(60.9%)	
36-40	48(6.7%)	9(18.8%)	39(81.3%)	
41-45	52(7.3%)	14(26.9%)	38(73.1%)	
46-50	71(9.9%)	32(45.1%)	39(54.9%)	
51-55	59(8.3%)	27(45.8%)	32(54.2%)	
55-60	34(4.8%)	16(47.1%)	18(52.9%)	
More than 60	29(4.1%)	16(55.2%)	13(44.8%)	
Religion				
Hindus	589(82.5%)	226(38.4%)	363(61.6%)	4.0661,0.1309
Christians	87(12.2%)	25(28.7%)	62(71.3%)	
Muslims	38(5.3%)	11(28.9%)	27(71.1%)	
Marital status				
Unmarried	251(35.2%)	95(37.85%)	156(62.15%)	0.213,0.085
Married	415(58.10%)	141(33.98%)	274(66.02%)	
Widower	33(4.6%)	18(54.55%)	15(45.45%)	
Divorced/separated	15(2.1%)	8(53.33%)	7(46.67%)	
Type of family				
Living alone	16(2.2%)	5(31.25%)	11(68.75%)	0.213,0.91
nuclear	504(70.6%)	207(41.07%)	297(58.93%)	
Joint	178(25%)	47(26.4%)	131(73.6%)	
Extended nuclear	16(2.2%)	3(18.75%)	13(81.25%)	

Table 2: Socio-economic status vs tobacco usage

Socio-demographic variables	N=714(%)	Smoker N=262(%)	Non-Smoker N=452(%)	χ^2 , P value
Education				
Illiterate	85(11.91%)	42(49.40%)	43(50.60%)	6.717,0.01
literate	629(88.09%)	220(35.00%)	409(65.00%)	
Occupation				
Unemployed/student	39(5.46%)	8(20.5%)	31(79.5%)	26.2353,0.001
Unskilled	288(40.33%)	127(44.1%)	161(55.9%)	
Semiskilled	79(11.06%)	33(41.8%)	46(58.2%)	
Skilled	176(24.65%)	64(36.4%)	112(63.6%)	
Clerk, shop-owner, farm-owner	97(13.59%)	21(21.6%)	76(78.4%)	
Semiprofessional/Professional	13(1.82%)	1(7.7%)	12(92.3%)	
Retired/old age dependent	22(3.08%)	8(36.4%)	14(63.6%)	
Socio-economic status⁹				
3653 & above(Class-I)	13(1.82%)	6(46.2%)	7(53.8%)	4.1579,0.3851
1827 -3652(Class-II)	87(12.18%)	26(29.9%)	61(70.1%)	
1096-1826(Class-III)	160(22.4%)	53(33.1%)	107(66.9%)	
548-1095(Class-IV)	350(49.01%)	137(39.1%)	213(60.9%)	
<547(Class-V)	104(14.56%)	40(38.5%)	64(61.5%)	

Table 2 depicts the education status and smoking. 49.4% of the illiterates were smokers and 15.7% of graduates were smokers. There was significant association between education and smoking. 46.2% of class I and 38.5% of class V socio economic status

were smokers. There was no statistically significant association between socio economic status and smoking (Table 2). 37.5% of class V socioeconomic status was using beedi. As socio economic status increases the use of beedi decreases.

Table 3: Prevalence of smoking

Category	N=714(%)	Type of smoking	N=262(%)
Current Smoker	262(36.7%)	Cigarette usage	169(64.5%)
		Beedi usage	63(24.0%)
		Both cigarette & beedi	30(11.5%)
Ex-Smoker	19(2.7%)		
Non-Smoker	452(60.2%)		

Table 3 depicts the prevalence of smoking of men in the study population. (With 95% confidence interval = 33.2 to 40.4) 36.7% of the study group were smokers, 2.7% were ex-smoker and 60.6% were non smoker. Among smokers majority of them were using cigarette (64.5%) and 24% were using beedi.

Table 4 depicts the no of days of smoking in the past 30 days. Analysis of no of days of smoking in the past 30 days shows 72.1% of the smoker population were smoking daily. Regular smokers who smoked > 25 days in the past 30 days were 74.8% and occasional smokers were 25.2%(Table 5).

Table 4: No of days of smoking in the past 30 days

No of Days of smoking/Month	N=262(%)
<5	4(1.5%)
6-10	15(5.7%)
11-15	30(11.5%)
16-20	1(0.4%)
21-25	16(6.1%)
>26	196(74.8%)

Table 5: Regular smokers

Type of smoker	N=262(%)
Occasional < 24 days	66(25.2%)
Regular > 25 days	196(74.8%)

Table 6: Duration of smoking in years

Duration	N=262(%)
< 1 year	23(8.8%)
2-10	98(37.4%)

Table 6: Duration of smoking in years (Contd.)

Duration	N=262(%)
52(19.8%)	11-20
21-30	47(18.0%)
31-40	22(8.4%)
41 and above	20(7.6%)

Table 6 shows the duration of smoking. Analysis of duration of smoking shows majority of them i.e., 37.4% were smoking between 2 – 10 years.

Table 7: Frequency of smoking per day

No of cigarette/beedi/Day	N=262(%)
< or = 1	81(31.0%)
2-5	53(20.2%)
6-10	53(20.2%)
11-20	32(12.2%)
>20	43(16.4%)

Analysis of number of cigarette or beedi smoked per day shows 31% were smoking 1 or less than 1 cigarette/beedi per day. 16.4% were smoking more than 20 cigarette/beedi per day (Table 7).

Table 8: Prevalence of smokeless tobacco

Other Tobacco Products	N=714(%)
Non-users	511(71.6%)
Smokeless Tobacco User	203(28.4%)

Table 8 shows the prevalence of smokeless tobacco usage among the study population. Analysis of the use of smokeless form of tobacco shows 28.4% of the study population (n = 714) use smokeless tobacco products. Among smokers (N=262), 33(12.6%) were using smokeless tobacco i.e., using both smoking as well as smokeless tobacco.

DISCUSSION

Of the study population of 714 men aged 18 years and above in Vadagarai village of Thiruvallur district of Tamilnadu, the prevalence of smoking was 36.7%. This finding was little above the NFHS -3 value which was 35% in rural area.

Among smokers, 74.8% were regular smokers who were smoking more than 25 days in a month and 28.6% were smoking more than 11 cigarettes/beedis per day. This shows the depth of the problem.

64.5% were using cigarette and 24.0% were using beedi. This was in contrast with the report that beedi was more common than cigarette in rural area.

28.4% were using smokeless tobacco and among smokers it was 12.6%. It was well below the national average. According to NFHS -3 reports the prevalence of smokeless tobacco in men was 36%.

In my study population there was a biphasic trend in smoking pattern i.e. the prevalence of smoking was 39.8% between 18-25 years, 18.8% in 36-40 years and 47.7% in 56-60 years. According to ICMR reports, Tobacco use increases with increasing age.

There was statistically significant association between smoking and education status. Prevalence of smoking was more common in illiterates than literates. This report was similar to the findings from NFHS-3. Also it was similar to the study *BMJ* 1996; 312:1576-1579 (22 June) Prevalence and patterns of smoking in Delhi: cross sectional study by K M Venkat Narayan et al¹⁰.

In my study population there was no significant association between smoking prevalence and socioeconomic status. But beedi usage was more common in lower socio economic people. Similar findings were seen in the study conducted by Ram B singh et al¹¹. Prevalence of smoking was more in unskilled and semiskilled laborers.

CONCLUSION

The prevalence of smoking was 36.7% and among them 74.8% were regular smokers. The prevalence of smokeless tobacco was 28.4%. There was a biphasic trend in age and smoking pattern-prevalence was more among younger and older age groups. There was no difference between the smoking status and different Socio-economic class. Prevalence of smoking was more common in illiterates than literates.

The study concludes that the prevalence of smoking was higher than the national average. Therefore, preventive steps like behavioral change communication, fiscal measures and further more strong enforcement of the COTPA act 2003 will be needed to decrease the prevalence further.

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Effectiveness of Community Based Health Finance on Utilization of Health Care Services and Out of Pocket Expenditure among Women in Rural Pune Maharashtra

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ABSTRACT

The aim of the study was to assess effectiveness of a community based health insurance (CBHF) scheme on socio-demographic (household profile-characteristics of household enrolled) profile, utilization of health services as well as on financial protection of money against the catastrophic expenditure among insured and non-insured women. Financial barrier is one of the major bottlenecks for access and use of health care services. Since having health insurance cannot guarantee access to care among the insured persons, their actual health seeking behavior should be evidence reflecting true access. Systematic random sampling was done of 100 enrolled insured and 100 non-enrolled women who were willing to participate in the study from Daund and Haveli block of Pune district. A questionnaire was used as the data collecting tool. Statistical test were found to be significant 0.025 (<0.05) for occupation of women, 0.001 (<0.005) for caste of women and 0.023 (<0.05) for the education qualification of the women. Advance statistical test e.g. Multivariate analysis (binary logistic regression) shows the significant value of 0.002 (<0.005) for household expenditure above 6000 rupees, 0.006 (<0.05) for the higher primary education of women and 0.003 (<0.005) for the occupation of the head of the household. The average illness rate was 5.64 women/month for out-patient care among enrolled group and 4.20 person/month among non-enrolled. Seeking help from public hospital; private hospital; trust hospital and seeking help from clinics were the patterns of health seeking behaviors found in the study. Being an enrolled in CBHF increases the utilization of the health care services but at the same time there is no financial protection of money among the enrolled group. 14 % women from the enrolled group were found to fall in catastrophic expenditure against 11 % of women from the non-enrolled group. Therefore health insurance in study site of Pune increases utilization of health care services among the enrolled group at the same time it fail to protect the catastrophic events among the insured women than the non-ensured women.

Keywords: CBHF (Community Based Health Finance), Health Seeking Behavior, Utilization of Health Care Services, Catastrophic Expenditure, Out of Pocket Expenditure

INTRODUCTION

Community based health insurance (CBHF) also known as micro-insurance, community health finance organizations, mutual health insurance schemes etc. by which women actively participates in area of empowerment and development. CBHF is very effective and emerging concept in sub Saharan

countries and India. In India CBHF like SEWA, YASHASWANI, STUDENT HEALTH HOME, BAIF, KARUNA TRUST, are playing outstanding role in health care activity, women empowerment etc, The Students Health Home (SHH) from West Bengal 1952 was noted as first micro-finance movement in India(by N. Devdasan, Kent Ranson, Wim V. Damme and Bart Criel 2004⁶)

In Bangladesh and Sub-Saharan countries CBHI extended to poorest of poor. Study from sub-Saharan countries showed 40 % increase in utilization of health care services, out of pocket expenditure and total health spending decreased by 48 % and 36 % respectively.....(As highlighted by community involvement in health care by Melta J, Chitra K¹⁵)

In china, various study done shows Hospital admission rates were 60% among insured members compared to 43% in control group.....(As highlighted by Xing-yuan and Xue-K, 2007 ²¹)

In India total cost of seeking care for SEWA was significantly less than for ESIS members and the uninsured (Rs. 295 vs. Rs. 380 and Rs. 401 respectively for acute morbidity; and Rs. 451 vs. Rs. 644 and Rs. 697 respectively for chronic morbidity.....(By Gumber and Kulkarni, 2000⁹)

MATERIAL AND METHOD

Quantitative cross sectional method using structured questionnaire with systemic random sampling applied. 1595 (considered approximately 1600). Sample size for the research is 200, so 1600 is divided by the sample size 200 we will get as., $1600/200 = 8$, i.e. so every 8th household considered for data collection. e.g. 1st., 8th., 16th., 24th member..., likewise with the help of list provided by the BAIF organization all data are collected. 110 interview (in 900 membership Daund) and 90 (700 members Haveli) in this way total 200 interview conducted respectively.

RESULT

Socio-demographic data of the participants

P-value (Chi-square –Table No.1) significant association with enrollment and education, occupation, caste of the women indicating relation between variables and Table no.02 strength of

association between some of these variables

Determinant of enrollment in CBHF by logistic regression

Binary logistic regression consist of the total nine independent variable as Gender (male and female), family size (below and above 5), education (below and above primary school), occupation of women (housewife and others) age of women (below and above 30), age of head of household (below and above 38), occupation head of household (agriculture and others) and expenditure or consumption pattern (below and above 6000 rupees per month) as a independent variables.

Dependent variable: Enrolled in CBHF and non-enrolled in CBHF used as dependent variables proxy used as type of respondent

Household expenditure or consumption pattern Value of the Exp (B) is 2.786 i.e. 278% high

Interpretation: The chances of the household enrollment in CBHF increases by 2.8 times which is nearly 3 i.e. chances increases by 3 times with increase in consumption of household beyond the level of 6000 rupees.

Education of the women: Value of the Exp (B) is 2.811 i.e. 281% high

Interpretation: The chances of women enrollment increases by 2.8 times which is nearly 3 i.e. chances of enrollment in CBHF increases by 3 times with increase in the education of women beyond the primary level.

Employment of the head of the household

Value of exp (B) is 0.361 i.e. we can write it as $(1 - 0.361) = 0.639 = 63.9\%$ less

Interpretation: In other word occupation of the head of the household other than the farmer will increases the chances of the women in enrollment in CBHF by 36.1 percentages.

Table no. 1. Association of Demographic factors and Enrollment (N=200)

Name of variable	Among enrolled in %	Among non-enrolled in %	Chi-square test	
			P- value	Sig.
Occupation Housewife				
Farmer	65	51	9.35	0.025**
Both	7	16		
Others	18	13		
	10	20		
Caste wise distribution of women among both group				
Caste of women				
OPEN	47	35	15.7	0.001**
OBC	19	9		
SC & ST	28	33		
OTHRES	6	23		
Education of head of household's wise distribution				
Education				
Illiterate	19	31	9.53	0.023**
Primary	28	35		
Middle	35	27		
Higher than middle	18	7		

** Value indicates the level of significance of Chi-square test

Table No. 2. Factors associated with Enrollment (multivariate analysis N=200)

Type of the variable	B	S.E.	d.f.	Sig.	Exp (B)
Household expenditure (base - below 6000)					
Above 6000	1.025	0.333	1	0.002**	2.786
Family size (base - above 4)					
Below 4	0.658	0.442	1	0.136	1.932
Education of women (Lower than primary)					
Higher than Primary	1.033	0.379	1	0.006**	2.811
Occupation of the head of household (Base –other than)					
Farmer	-1.019	.345	1	0.003**	.361
Occupation of the women (Base other)					
Farmer	-0.219	0.368	1	0.551	.803
Sex of the head of household (Base female)					
Male	0.627	0.632	1	0.321	1.871
Age of women (base above 30)					
Below 30	0.855	0.606	1	0.158	2.352
Age of the head of household (baseabove38)					
Below 38	0.423	0.594	1	0.476	1.527
Constant	-1.955	0.806	1	0.015	.142

** Value indicates the level of significance at 95 % confidence interval

Utilization of health care services

Data on OPD is collected by asking the question - whether fall sick/injured in last three months. Table no. 04 show; percentages of women are fall sick in enrolled and non-enrolled group were (56%) and (42%) respectively. 21% (one fifth) non-enrolled group and

7% (one tenth) women using public health services respectively.

All other facility i.e. treatment from the local general practitioner, private practitioner and local trust hospital is maximum in enrolled group against non-enrolled group. There is no any reimbursement for

OPD indeed utilization of OPD is found to be more in enrolled against non-enrolled because of assured for 30% reimbursement if hospitalized. Indeed

membership of CBHF increases health care utilization as well as the choices of treatment among the enrolled women.

Table no. 3. utilization of health care services (N = 200)

Outpatient healthcare facility				
Type of the variable	Among the enrolled group		Among the non-enrolled group	
Sickness in last three month	56 % are sick		42 % are sick	
	In %	In frequency	In %	In frequency
Name of the faculty visited Local G.P.	67	37	60	25
Government hospital	7	5	21	9
Trust hospital	6	3	2	1
Private hospital	20	11	17	7
Total	100	56	100	42
Inpatient health care facility utilization				
Admitted patient in last one year	Yes = 40 no=60		Yes = 24 no=76	

Inpatient health care utilization

Table no 03 also show that Hospitalization rate of the enrolled group is nearly doubled (40%) against rate of non-enrolled group (24%).

Table no.04 show that ante-natal care (registration of the pregnancy) found 92% (enrolled) against 68%. Ante-natal check-up visit (up to 5) and laboratory examination (84%) is found to be more in enrolled against non-enrolled but antenatal checkup visit more than the five to ten visit were found to be more in non-enrolled group indicating health seeking behavior at the final stage.

Antenatal care utilization: Number of time sonography done (HSG) found to be more in the enrolled group against non-enrolled group. Table no.06 also show that among the enrolled group around two-third of the pregnant women (68 %) were deliver their baby in the private hospital against 49 % (non-enrolled). No single home delivery in the enrolled group against non-enrolled group (20 %). As 30 percentages of the benefit packages are given by the CBHF influencing institutional deliveries in the enrolled group.

Table no. 4. Maternal health care utilization (N=200)

Maternal health care utilization	Among the enrolled group		Among the non-enrolled group	
	In %	In frequency	In %	In frequency
Registration of the pregnancy				
Yes	92.00	23	68.00	32
No	8.00	02	25.00	12
Unknown	00.00	00	6.00	03
Total	100.00	25	100.00	47
Ante-natal care received				
Below three visit	28.00	07	13.00	06
3-5 visit	28.00	07	17.00	08
5-7 visit	00.00	00	4.00	02
7-9 visit	24.00	06	26.00	12
Above 10 visit	8.00	02	9.00	04
Don't know	12.00	03	00	00
No any visit	00.00	00	31.00	15
Total	100.00	25	100.00	47

Table no.04 Maternal health care utilization (N = 200) (Contd.)

Maternal health care utilization	Among the enrolled group		Among the non-enrolled group	
	In %	In frequency	In %	In frequency
Pre-natal care-regular checkup/laboratory checkup.	Yes=84.00	21	Yes=70.00	33
	no = 16.00	04	No. 30.00	14
Sonography done				
One time	20.00	05	17.00	08
Two time	16.00	04	15.00	07
Three time	24.00	06	21.00	10
Four time	28.00	07	11.00	05
Not done	12.00	03	36.00	17
Place of delivery				
Public	28.00	07	30.00	14
Private	68.00	17	49.00	23
Home	00.00	00	21.00	10
Others	4.00	01	00	00
Total	100.00	25	100.00	47

Table no. 05. distribution of catastrophic events among both the group (N = 200)

Catastrophic events head count		Enrolled group (%)	Non-enrolled group (%)
Due to IPD and maternal health treatment	Below 30%	86	89
	Above 30%	14	11
Due to OPD	Below 30%	100	98
	Above 30%	0	2

Above table no. 05 indicates household who's out of pocket expenditure is more than 30 % of their family consumption pattern (catastrophic event) for In-patient care (IPD) and maternal health treatment among the enrolled group and non-enrolled groups were 14 % and 11% respectively. Catastrophic events due to out-patient care (OPD) among enrolled and non-enrolled group were 0% and 2 % respectively.

DISCUSSION AND CONCLUSION

Study limitation

Diagnosis is not confirmed with pathological test, sample size and type of study (cross sectional) instead of time being longitudinal study may be limiting factors

Household characteristic of the enrolled and non enrolled group

Study shows consistently association between economic status of household and likelihood in CBHF enrollment. Multivariate analysis of nine independent variable and respondent type (enrolled and non-enrolled) shows the consumption pattern (6000/

month)/level of education/head of household/caste of women were significantly associated with enrollment of CBHF. In conclusion open caste educated women having expenditure rupees 6000/ month are more likely enrolled than the others. Indeed occupation as a farmer negatively associated with enrollment as working in farm acts barrier between meetings held among women indicating poor performance.

Utilization of the health care services

As per pattern sick will seek care from the modern health care services-utilization of maternal health care services and hospitalization for other reason such as abdominal pain/operative/fever/trauma etc. found to be maximum among the enrolled group against non-enrolled group due to 30 % benefit package provided by the scheme. CBHF coverage significantly affects the choices of provider. Regarding maternal health care services, women who are beneficiaries of CBHF are more likely to have had at least more than four prenatal care visits against non-beneficiaries of CBHF. Indeed no such kind significant finding regarding outpatient care among both groups.

Household protection of the money and out of pocket expenditure

Evidence emerging from the literature review show that there is positive association of the protection of the income and household consumption due to enrollment in the scheme in other part of the world like Sub-Saharan country of Africa. Indeed in case of India shows poor or none protection of the money due to enrollment.

“It conclusively demonstrates that the poorer sections of households in intervention districts of the Rashtriya Swasthya Bima Yojna, Rajiv Aarogyasri of Andhra Pradesh, and Tamil Nadu Health Insurance schemes experienced a rise in real per capita healthcare expenditure, particularly on hospitalization, and an increase in catastrophic headcount – conclusive proof that RSBY and other state government-based interventions failed to provide financial risk protection.”

.....(As highlighted by Sakthivel Selvaraj, Anup K Karan Why publicly¹⁸)

Similar way as per above finding in Uralikanchan area: Overall result indicates that membership spread across Pune, i.e. Daund and Pune, having low premium increases utilization of health care services indeed with less amount of benefit packages received increasing the chances being felt catastrophic events are more in enrolled group against non-enrolled group. Conclusively enrollment in CBHF influences accessibility and utilization of health care services viz. OPD, IPD and maternal health care services but fails protect the families from catastrophic events

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Exploring Computation of Modified Human Development Index by using Proxy Indicators

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ABSTRACT

Introduction: At international level human development report is published every year. At national level state wise human development report is published regularly. Such reports below state level are scarcely available. One of the reasons may unavailability of statistics pertaining to life expectancy at birth.

Objective: To explore the possibility of using infant mortality rate and/or crude death rate as proxy indicator to life expectancy at birth.

Material and Method: Desk analysis of available data for the years 2005-08 was carried out. State wise data required for calculation of human development index was obtained from websites and the indices for the states were computed. Then proxy indicators were used in place of life expectancy at birth and modified human development indices for states were calculated. We used total five indicators derived from infant mortality rate and crude death rate. Correlations of these modified human development indices and conventional human development indices were studied. Correlation by using SPSS and significance of correlation by using t test was computed.

Results: All five indicators have strong and significant correlation with conventional index. Highest correlation was found when 50% weightage is given to infant mortality rate and crude death rate.

Conclusions: Even crude death rate can be considered as good proxy for life expectancy at birth. The modified human development index can be considered for smaller units like districts.

Keywords: Life expectancy at birth, Proxy-indicators, Modified Human Development Index

INTRODUCTION

Human Development Index (HDI) was first proposed in 1990 by Pakistani economist Mahaboob Ul Haq with the explicit purpose; "to shift the focus of development economics from national income accounting to people centered policies"⁽¹⁾. Since then HDI is used by The United Nations Development Program for its Human Development Reports.

Computation of conventional HDI requires information about four indicators namely Adult Literacy Rate (ALR), Combined Gross Enrolment Ratio (CGER), per capita Gross Domestic Product (GDP)-Purchase Power Parity (GDPPP) and Life Expectancy at Birth (LE0). There are modifications in the assessment of knowledge and standard of living in 2010 Human Development Report. Knowledge assessment is based on mean years of schooling and expected years of schooling. Gross Development Product is replaced by Gross National Income. The Life Expectancy at Birth continues. There is practical difficulty in obtaining the information about LE0 for smaller geographic units like district. This article is an attempt to test whether Crude Death Rate and Infant Mortality Rate (IMR) can be used as proxy indicator for LE0.

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MATERIAL AND METHODS

Information about the ALR, CEGR, GDP, LE0 and the proxy indicators IMR and CDR for major states in India for period 2005-08 was obtained from various sources⁽²⁻⁶⁾. We have calculated average for male and female for adult literacy rate⁽²⁾ and life expectancy⁽⁵⁾. Since the comparison involves the states within India, GDP is expressed in Indian rupee is used without converting it into Dollars and without calculating its purchase power parity. HDI for each of the major state was then calculated by using the standard method⁽⁷⁾. However, the lowest and highest values for each indicator are taken for the Indian states only. For Modified Human Development Index (MHDI), we used IMR and CDR (as proxy for LE0). Related index (i.e. IMR index and CDR index was calculated by following formula.

$$\text{Index} = 1 - [(X - \text{MIN}) / (\text{MAX} - \text{MIN})]$$

Where, X is the observed value of the indicator, (IMR or CDR), MIN is minimum value and MAX is the maximum value for the indicator respectively among the Indian States. Having calculated the index values separately for IMR (IMR index) and CDR (CDR index), combined index (IMCD index) was then calculated giving 50%, 1/3rd, 2/3rd weight to IMR. These indices are named IMCD1, IMCD2 and IMCD3 respectively. This combined index was used as proxy instead of index for LE0 for calculating the three MHDIs namely MHDI1, MHDI2 and MHDI3 respectively. In calculation of MHDI4 and MHDI5 the CDR index and IMR index (respectively) was used as a proxy to LE-index. Thus, for each state, the five MHDIs including three combined namely MHDI1,

MHDI2, MHDI3, MHDI4 and MHDI5 were computed. Correlation coefficient (r) was then calculated using HDI as dependent variable (y) and MHDIs as independent variable (x). Hypothesis $r = 0$ was tested with t-test for r. As UNDP carries out ranking, all major states have been ranked by the conventional human development index and using all five modified human development indices. The extent of agreement between human development index and modified human development indices was calculated by Spearman rank coefficient test.

RESULTS

The values of various indicators required for calculation of HDI and MHDIs for major Indian states are shown in table 1. The calculated values of various indices required for calculating HDI and MHDIs are shown in table 2. The calculated values of HDI and MHDI along with ranking of the states are shown in table 3. Table-4 shows state-wise ranking for HDI and MHDIs. The correlation coefficients (r) with y (dependent variable) = HDI and MHDIs as independent variable are shown against each MHDI in table 3. Similarly, Spearman's Rank Order Correlation Coefficient (rho) is also calculated to test whether there is significant correlation in the rankings of the states as per HDI and five MHDIs (Table 4). It clearly reveals that all modified HDIs show highly positive correlation ($r > +0.9$, and $\rho > 0.8$) with HDI and all are statistically significant ($P < 0.01$). Highest correlation (r) is obtained with MHDI1 which uses IMCD1 (50% weight-age to both IMR and CDR) as proxy to index for LE0 and lowest correlation is obtained with MHDI4 which uses CDR index as proxy.

Table 1. Indicators for calculation of human development index; major states of India

State	ALR 05-06 ⁽²⁾	GER 06-07 ⁽³⁾	GDP INR ⁽⁴⁾	LE0 06-10 ⁽⁵⁾	IMR 07 ⁽⁶⁾	CDR 07 ⁽⁶⁾
Delhi	83.8	85.4	78,690	73.10	36	4.8
Kerala	94.3	87.5	43,104	74.40	13	6.8
Himachal Pradesh	86.8	99.8	40,107	71.85	47	7.1
Maharashtra	79.3	90.7	47,051	69.60	34	6.6
Haryana	71.9	71.7	59,008	68.85	55	6.6
Tamil Nadu	76.8	97.8	45,773	69.10	35	7.2
Punjab	75.8	63.4	46,686	70.15	43	7.0
Mizoram	93.6	100.5	27,501	69.95	23	5.2
Meghalaya	71.1	116.2	29,811	69.95	56	7.5
Sikkim	77.7	85.6	33,349	69.95	34	5.3
West Bengal	66.4	71.3	40,757	69.55	37	6.3
Tripura	72.8	92.4	28,806	69.95	39	6.5
Karnataka	67.5	83.1	36,266	68.80	47	7.3

Table 1. Indicators for calculation of human development index; major states of India (Contd.)

State	ALR 05-06 ⁽²⁾	GER 06-07 ⁽³⁾	GDP INR ⁽⁴⁾	LE0 06-10 ⁽⁵⁾	IMR 07 ⁽⁶⁾	CDR 07 ⁽⁶⁾
Arunachal Pradesh	65.8	96.4	28,945	69.95	37	5.1
Gujarat	73.4	82.2	32,065	69.10	52	7.2
Andhra Pradesh	60.7	74.7	35,600	67.40	54	7.4
Manipur	82.1	108.3	19,780	69.95	12	4.4
Uttaranchal Uttarakhand	75.5	93.7	32,884	66.00	48	6.8
Nagaland	79.2	58.9	21,822	69.95	21	5.0
Rajasthan	55.1	83.8	23,986	67.65	65	6.8
J. & K.	66.0	68.9	24,214	67.00	51	5.8
Orissa	63.2	79.5	26,654	63.55	71	9.2
Chhattisgarh	59.5	85.2	29,776	62.05	59	8.1
M. P.	59.3	101.6	18,051	62.90	72	8.7
Jharkhand	52.8	65.4	19,928	65.00	48	7.3
Assam	69.7	86.9	21,991	62.20	66	8.6
Uttar Pradesh	60.5	73.0	16,060	64.00	69	8.5
Bihar	53.7	56.7	11,074	66.90	58	7.5
MIN	52.8	56.7	11,074	61.90	12	4.4
MAX	94.3	116.2	78,690	74.40	72	9.2

Table 2. State-wise indices for human development indicator; based on indicators in table-1

State	LE- Index	Edu- Index	Income- Index	IMR- Index	CDR- Index	IMCD1 IMR 50%- Weight	IMCD2 IMR- 1/3 rd- Weight	IMCD3 IMR- 2/3 rd Weight
Delhi	0.8934	0.8433	1.0000	0.6000	0.9167	0.7583	0.8111	0.7056
Kerala	1.0000	0.9203	0.6931	0.9833	0.5000	0.7417	0.6611	0.8222
H. Pradesh	0.7910	0.9113	0.6563	0.4167	0.4375	0.4271	0.4306	0.4236
Maharashtra	0.6066	0.8310	0.7377	0.6333	0.5417	0.5875	0.5722	0.6028
Tamil Nadu	0.5656	0.8380	0.7237	0.6167	0.4167	0.5167	0.4833	0.5500
Haryana	0.5451	0.7183	0.8532	0.2833	0.5417	0.4125	0.4556	0.3694
Punjab	0.6516	0.7167	0.7338	0.4833	0.4583	0.4708	0.4667	0.4750
Mizoram	0.6352	0.9590	0.4639	0.8167	0.8333	0.8250	0.8278	0.8222
Meghalaya	0.6352	0.8613	0.5050	0.2667	0.3542	0.3104	0.3250	0.2958
Sikkim	0.6352	0.8033	0.5622	0.6333	0.8125	0.7229	0.7528	0.6931
West Bengal	0.6025	0.6803	0.6645	0.5833	0.6042	0.5938	0.5972	0.5903
Tripura	0.6352	0.7933	0.4875	0.5500	0.5625	0.5563	0.5583	0.5542
Arunachal P.	0.6352	0.7600	0.4900	0.5833	0.8542	0.7188	0.7639	0.6736
Karnataka	0.5410	0.7270	0.6050	0.4167	0.3958	0.4063	0.4028	0.4097
Gujarat	0.5656	0.7633	0.5422	0.3333	0.4167	0.3750	0.3889	0.3611
Manipur	0.6352	0.9083	0.2958	1.0000	1.0000	1.0000	1.0000	1.0000
Nagaland	0.6352	0.7243	0.3459	0.8500	0.8750	0.8625	0.8667	0.8583
Uttarakhand	0.3115	0.8157	0.5550	0.4000	0.5000	0.4500	0.4667	0.4333
A. Pradesh	0.4262	0.6537	0.5955	0.3000	0.3750	0.3375	0.3500	0.3250
Rajasthan	0.4467	0.6467	0.3941	0.1167	0.5000	0.3083	0.3722	0.2444
J & Kashmir	0.3934	0.6697	0.3990	0.3500	0.7083	0.5292	0.5889	0.4694
Orissa	0.1107	0.6863	0.4479	0.0167	0.0000	0.0083	0.0056	0.0111
Chhattisgarh	0.0246	0.6807	0.5044	0.2167	0.2292	0.2229	0.2250	0.2208
Assam	0.0000	0.7543	0.3499	0.1000	0.1250	0.1125	0.1167	0.1083
Jharkhand	0.2295	0.5700	0.2996	0.4000	0.3958	0.3979	0.3972	0.3986
M. Pradesh	0.0574	0.7340	0.2492	0.0000	0.1042	0.0521	0.0694	0.0347
Uttar Pradesh	0.1475	0.6467	0.1896	0.0500	0.1458	0.0979	0.1139	0.0819
Bihar	0.3852	0.5470	0.0000	0.2333	0.3542	0.2938	0.3139	0.2736

Table 3. State-wise HDI and MHDI and ranking

State	HDI-1	IMR-50% Weight	MHDI-1 IMR- 1/3 rd Wt MHDI-2	IMR- 2/3 rd Wt MHDI-3	CDR- 100% Wt MHDI-4	IMR-100% Wt MHDI-5
Delhi	0.9123	0.8672	0.8848	0.8496	0.9200	0.8144
Kerala	0.8711	0.7850	0.7582	0.8119	0.7045	0.8656
H. Pradesh	0.7862	0.6649	0.6661	0.6637	0.6684	0.6614
Maharashtra	0.7251	0.7187	0.7137	0.7238	0.7035	0.7340
Tamil Nadu	0.7091	0.6928	0.6817	0.7039	0.6595	0.7261
Haryana	0.7055	0.6613	0.6757	0.6470	0.7044	0.6183
Punjab	0.7007	0.6404	0.6390	0.6418	0.6363	0.6446
Mizoram	0.6860	0.7493	0.7502	0.7484	0.7521	0.7465
Meghalaya	0.6672	0.5589	0.5638	0.5541	0.5735	0.5443
Sikkim	0.6669	0.6962	0.7061	0.6862	0.7260	0.6663
West Bengal	0.6491	0.6462	0.6474	0.6450	0.6497	0.6427
Tripura	0.6387	0.6124	0.6131	0.6117	0.6145	0.6103
Arunachal P.	0.6284	0.6562	0.6713	0.6412	0.7014	0.6111
Karnataka	0.6243	0.5794	0.5782	0.5806	0.5759	0.5829
Gujarat	0.6237	0.5602	0.5648	0.5555	0.5741	0.5463
Manipur	0.6131	0.7347	0.7347	0.7347	0.7347	0.7347
Nagaland	0.5685	0.6443	0.6456	0.6429	0.6484	0.6401
Uttarakhand	0.5607	0.6069	0.6125	0.6013	0.6236	0.5902
Andhra Pradesh	0.5585	0.5289	0.5331	0.5247	0.5414	0.5164
Rajasthan	0.4958	0.4497	0.4710	0.4284	0.5136	0.3858
J & K	0.4874	0.5326	0.5525	0.5127	0.5923	0.4729
Orissa	0.4150	0.3809	0.3799	0.3818	0.3781	0.3836
Chhattisgarh	0.4032	0.4693	0.4700	0.4686	0.4714	0.4672
Assam	0.3681	0.4056	0.4070	0.4042	0.4097	0.4014
Jharkhand	0.3664	0.4225	0.4223	0.4227	0.4218	0.4232
Madhya Pradesh	0.3468	0.3451	0.3509	0.3393	0.3624	0.3277
Uttar Pradesh	0.3279	0.3114	0.3167	0.3061	0.3274	0.2954
Bihar	0.3107	0.2803	0.2870	0.2735	0.3004	0.2601
	r =	0.9326	0.9281	0.9281	0.9075	0.9250
	t =	13.18	12.72	12.72	11.02	12.42
	P	<0.01	<0.01	<0.01	<0.01	<0.01

Table 4. State-wise Ranking as Per HDI and MHDIs

State	HDI	MHDI-1	MHDI-2	MHDI-3	MHDI-4	MHDI-5
Delhi	1	1	1	1	1	2
Kerala	2	2	2	2	5	1
Himachal Pradesh	3	8	10	8	9	8
Maharashtra	4	5	5	5	7	5
Tamilnadu	5	7	7	6	10	6
Haryana	6	9	8	9	6	12
Punjab	7	13	13	12	13	9
Mizoram	8	3	3	3	2	3
Meghalaya	9	18	18	18	19	18
Sikkim	10	6	6	7	4	7
West Bengal	11	11	11	10	11	10
Tripura	12	14	14	14	15	14
Arunachal P.	13	10	9	13	8	13
Karnataka	14	16	16	16	17	16

Table 4. State-wise Ranking as Per HDI and MHDIs (Contd.)

State	HDI	MHDI-1	MHDI-2	MHDI-3	MHDI-4	MHDI-5
Gujarat	15	17	17	17	18	17
Manipur	16	4	4	4	3	4
Nagaland	17	12	12	11	12	11
Uttarakhand	18	15	15	15	14	15
Andhra Pradesh	19	20	20	19	20	19
Rajasthan	20	22	21	22	21	24
J.& Kashmir	21	19	19	20	16	20
Orissa	22	25	25	25	25	25
Chhattisgarh	23	21	22	21	22	21
Assam	24	24	24	24	24	23
Jharkhand	25	23	23	23	23	22
Madhya Pradesh	26	26	26	26	26	26
Uttar Pradesh	27	27	27	27	27	27
Bihar	28	28	28	28	28	28
	rho	0.885	0.879	0.891	0.839	0.833
	P	<0.01	<0.01	<0.01	<0.01	<0.01

DISCUSSION

Human Development Index is used as a composite indicator for comparing the human development in different countries and regions in the country. Some of the limitations of the index have resulted in evolution of other indicators like Human Poverty Indicator, Gender Development Index and Gender Empowerment Index etc. The indices and ranking of the country has been well described⁽⁸⁾. One limitation of HDI is that the information about life expectancy is not available for smaller geographic units. It is therefore practically impossible to calculate HDI for these smaller geographic units like districts. However, in India information about crude death rate and infant mortality rate is available from the sources like Sample Registration System, Health Management Information System (HMIS), Survey for Causes of Death on annual basis (in states like Maharashtra) and now Annual Health Surveys. Use of these two indicators as a proxy indicator to LE0 to calculate modified human development index is logically correct as these two indicators are major determinants of life expectancy. Particularly the crude death rate is an all-inclusive index showing almost other side of life expectancy at birth. Our observations indicate a significantly positive correlation between HDI and MHDI. Similarly, a high and statistically significant positive correlation is observed between ranking of the states as per HDI and MHDIs. We have tried to test correlation with five different combinations to answer which correlates best. Among the three variations of combination of IMR and

CDR tested, the index using 50% weightage to IMR gives best correlation than the other two combinations.

The difficulty in obtaining expectancy of life at births was addressed by considering infant mortality rate as proxy to life expectancy at birth by the Government of Maharashtra while calculating district wise Human Development Index⁽⁹⁾ and Ministry of Women and Child Development Government of India⁽¹⁰⁾. The death registration is not complete. Particularly the problem of completeness of registration pertaining to infants is more serious and is difficult to overcome^(11,12). Among mortality statistics the crude death rate is the most likely available from some sources in smaller units like districts. The quality and completeness is certainly better than infant mortality. Under National Rural Health Mission the districts are expected to have district comprehensive plan and convergence with other departments. District level statistics is surely needed for developing plans. Considering such extremely good correlation between conventional human development index and modified human development index using proxy indicators of LEO, crude death rate combined with infant mortality giving equal weightage may be considered whenever possible or crude death rate alone may also be considered for computing human development index. The findings indicate that such computation will be valid and can be used at district level. It is planned to carry out district level computation as a second phase. Calculation of HDI has been changed since 2010^(8,13). However, our data set is for period prior to 2010, hence

we have used older method of calculation of HDI and secondly information about new indicators is still not easily available.

Limitations

The data pertaining to recent period was not available hence not used. Computation of the MHDI requires complete and accurate data which may not be available in some states.

CONCLUSION

In the absence of data about life expectancy at birth combination of infant mortality rate and crude death rate with 50% weightage may be used to compute human development index. Even crude death rate alone also gives good substitute for life expectancy at birth.

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Study of Plasma Total Proteins and Hemoglobin Changes in Lead Based Industrial Workers Having High Blood Lead Levels

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ABSTRACT

Background: Lead is one of the hazardous agents. Lead and its related compounds are toxic materials that have various physiological unfavourable effects on humans including hematopoietic System. Thus this study was carried out to assess changes in plasma total proteins and hemoglobin concentration in lead based industrial workers who had been exposed to lead.

Method: In this study 20 workers of lead based industry who are exposed to high lead levels ($> 40 \mu\text{g}/\text{dl}$) were selected as case group and 20 non-exposed to lead ($<10 \mu\text{g}/\text{dl}$) were selected as control group. Blood lead was assayed by using ESA Lead Analyser 3010B operating on anodic stripping voltammetry, Plasma total proteins and hemoglobin were estimated in cases and control groups. The results were analysed by statistical procedures such as correlation test and p value less than 0.05 were considered significant.

Results: Mean Lead level in cases was $84.60 \mu\text{g}/\text{dl}$ and in controls was $5.89 \mu\text{g}/\text{dl}$. Plasma total proteins and hemoglobin levels were significantly lower in cases as compared to controls ($p < 0.005$). Plasma total proteins and hemoglobin were negatively correlated to lead.

Conclusion: Lead is a toxin that its chronic exposure decreases hemoglobin and plasma total proteins levels. Protective measures should be anticipated to save workers from harms of lead exposure.

Keywords: Hemoglobin, Lead, Plasma Proteins, Lead Based Industry

INTRODUCTION

Lead is naturally occurring ubiquitous environmental contaminant. However both occupational and environmental exposure remains a serious problem in many developing and industrialising countries⁽¹⁾.

In spite of its usefulness in day to day life it has many undesired effects, including neurological, behavioural, immunological, renal, hepatic and especially haematological dysfunctions as it is not

biodegradable⁽²⁾. Lead toxicity is closely related to its accumulation in certain tissues and its interference with the bioelements, whose role is critical for several physiological processes⁽³⁾. Markers of lead intoxication have been developed based on their capacity to identify lead intoxication at preclinical biochemical stage of manifestation. Lead can enter into the body by many ways such as oral, dermal, and inhalation routes⁽⁴⁾.

Absorption is increased in nutritional deficiencies and once absorbed they are bound to plasma proteins or red blood cells, about 99% of lead present in the blood is bound to erythrocytes, they have high affinity for lead and contain majority of lead found in the blood stream which makes them more vulnerable to oxidative damage than many other cells. More ever, erythrocytes can spread lead to different organs of the body like renal, hepatic, neural, endocrine, damaging

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them⁽⁵⁾. Lead can inhibit hemoglobin synthesis as a result of its influence on erythroblast growth and interference with hemoglobin synthesis. Many studies have shown that lead can inhibit synthesis of hemoglobin⁽⁶⁾ by interfering with several enzymatic steps like Delta aminolevulinic acid dehydratase a polymorphic enzyme that converts aminolevulinic acid to porphobilinogen in heme biosynthetic pathway is an effective biomarker of exposure to lead⁽⁷⁾.

The liver has central to play in the synthesis of plasma proteins. Liver damage could lead to quantitative changes in plasma proteins. Lewis et al⁽⁸⁾ have suggested that peroxide formation may lead to oxidative destruction of thiol - groups of amino acids and proteins. Lead can cause derangement of several hepatic biochemical pathways and energy metabolism. In particular lead causes transient, but marked hypercalcemia, which may contribute to hepatotoxicity. Many studies have investigated the possible relationship between lipid peroxidation and cellular damage in hepatic tissues under various pathological conditions⁽⁹⁾.

Lead toxicity still pertains as menace due to its use in various industries like petrol, batteries etc. Battery factory workers are class of labourers prone to long term lead toxicity⁽¹⁰⁾.

This study was carried with following aim, firstly to assess blood lead levels in both in lead based industrial workers and non-exposed persons. Secondly to assess the level of plasma total proteins and hemoglobin in cases and controls. Thirdly to study correlation between blood lead and hemoglobin in cases. Fourthly to study the correlation between blood lead and plasma total proteins in cases.

MATERIALS AND METHOD

Case group comprised of 20 lead based industrial workers who are exposed to lead with high lead levels (>40 micrograms/dl). The occupational exposure of subjects to lead ranged from 2 to 10 years.

Control group comprised of 20 non-exposed subjects with blood levels of < 10 micrograms /dl between age group of 20 to 60 years.

Sampling

Blood samples (4 ml) were drawn from the subjects. Blood was dispensed in to tubes for analysing lead and hemaglobin study. The plasma is separated from

the same for estimation of total proteins.

Biochemical Assessments

Total plasma protein was estimated spectrophotometrically by biuret method. Hemoglobin was estimated by Drabkins method.

Estimation Of Blood Lead

Lead was estimated using ESA lead analyser 3010 B which operates on principle of anodic stripping voltammetry. When sufficiently large negative potential is placed on an electrode lead ions in solution are placed on mercury electrode. The observed current during the stripping process is integrated and is proportional to the concentration of lead in the sample.

Reagents used for estimating lead are Metexchange reagent(2.9 ml), Chromium Chloride(1.07 % by weight), Calcium Acetate (1.43% by weight), Mercuric ion(0.0028% by weight).

Statistical Analysis

Statistical measurement of two groups was done using the student t test. The Pearson's correlation coefficient was also calculated between various parameters. For all statistical comparisons a value of p value of < 0.05 or correlation coefficient > 0.7 was considered significant.

RESULTS

Hemoglobin (gm/dl), Plasma proteins (gm/dl) and lead concentrations are shown in Table 1. Mean hemoglobin concentration was lower in lead based workers compared to controls while their lead concentration was higher. Mean hemoglobin concentration was 11.04 ± 1.47 in cases group where as their mean lead concentration 84.60 ± 23.83 . The corresponding values were 15.06 ± 1.35 and 5.89 ± 3.08 . The differences between the two groups were statistically significant ($p < 0.05$). The correlation between lead and hemoglobin was found to be (-0.84) therefore it is clear that lead and hemoglobin are negatively correlated as shown in Table 2.

Mean plasma total proteins concentration was lower in cases it was 5.88 ± 0.52 compared to controls it was 8.43 ± 0.24 , while their lead concentration was higher. The correlation between lead and plasma total proteins was found to be (-0.83) therefore It is clear that lead and plasma total protein are negatively correlated as shown in Table 2

Table 1: Mean + SD for Lead, Hemoglobin, Plasma total proteins concentrations in case and control groups

Parameters	Units	Cases (20)	Controls (20)	P Value
Blood Lead	µg/dl	84.60 ± 23.83	5.89 ± 3.08	<0.05
Hemoglobin	gm/dl	11.04 ± 1.47	15.06 ± 1.35	<0.05
Plasma total protein	gm/dl	5.88 ± 0.52	8.43 ± 0.24	<0.05

Table 2: Correlations between Lead – Plasma total proteins, Lead – Hemoglobin

	Lead – Plasma total proteins	Lead – Hemoglobin
R value (Correlation)	-0.83	-0.84
R square (Correlation coefficient)	0.7	0.71

DISCUSSION

Lead has been recognised as a biological toxicant. Absorbed lead following oral ingestion is carried via blood to soft tissue and 95% of blood lead is transported on erythrocytes as lead diphosphate⁽¹¹⁾.

This might be reason of lead concentration increase in the blood following oral exposure to lead⁽⁴⁾. The findings of this study confirmed the presence of a significant relationship between occupational lead exposure and haemoglobin concentration and plasma total proteins, there was decline in levels of plasma total proteins and hemoglobin in lead based industrial workers than who are non-exposed to lead. It was also found that lead levels were high among cases than controls. Many researchers have described the relationship between occupational lead exposure in nature and blood lead levels clearly^(12,13). Aminipour et al., showed that work places are main factors for increasing the blood lead and blood factors change and concluded that occupational health experts should pay attention to this matter⁽¹⁴⁾.

Lead can disturb cellular and molecular processes in the body and effect many organs and physiological functions⁽¹⁾. Many studies show strong association between lead exposure and renal effects. Impairment of proximal tubular function due to high dose lead manifests as proteinuria⁽¹⁵⁾. Protein loss in lead toxicity might decrease level of specific proteins such as albumin, hormones, metal binding Protein. Almost all plasma proteins are synthesised in liver, lead can cause adverse effects to hepatic cells. Lead is known to produce oxidative damage in the liver tissue by enhancing peroxidation of membrane, a deleterious process carried out by free radicals^(16,17). Lead binds to plasmatic proteins where it causes alteration in high number of enzymes. It can also perturb protein synthesis in hepatocytes⁽¹⁸⁾.

The observed decrease in plasma protein in one of the study may be due to decrease in hepatic DNA and RNA hence protein synthesis is affected⁽¹⁹⁾. It has been reported a decrease in total protein content in response to lead intoxication, is attributed that to a decrease utilisation of free amino acid for proteins synthesis⁽²⁰⁾.

The results in table1 indicate that high level of blood lead in lead based industrial workers showed decrease in level of total plasma proteins which reflects major functional changes in kidney and liver.

A significant decrease in level of hemoglobin was also observed in lead based industrial workers when compared to controls. This shows effect of this toxin on haemoglobin, Lead is known to interfere with heme and hemoglobin synthesis which effect erythrocyte morphology and survival⁽²¹⁾.

Interference in heme synthesis by lead is through interfering with several enzymatic steps in heme pathway specifically is through inhibition of delta aminolevulinic acid dehydratase resulting in increased delta aminolevulinic acid which is one of the important biochemical effects of lead^(22,23). Previous studies have shown that lead binds to the enzyme SH group which normally binds zinc hence preventing binding of ALA⁽²⁴⁾. Thus delta aminolevulinic acid dehydratase measurement could serve as biomarker lead exposure⁽⁷⁾. As delta aminolevulinic acid dehydratase catalyses one of important step in heme biosynthesis decrease in level of haemoglobin may also be due to decrease in delta aminolevulinic acid dehydratase activity. Ferrochelatase an enzyme, which catalyses the insertion of iron in to protoporphyrin IX is quite sensitive to lead. Studies have shown that lead toxicity facilitates conversion of haemoglobin to met-Hb. During oxidation of Hb in presence of lead H₂O₂ is generated which may induce lipid peroxidation in erythrocytes cell membrane leading peroxidative damage of erythrocyte cell membrane⁽²¹⁾. Moreover

free radicals produced in the presence of heavy metals contribute to haemoglobin denaturing and precipitation, leading to anaemia which is one of the earliest manifestations of lead intoxication after its effect on hemoglobin⁽²⁵⁾. William and his colleagues stated that haemoglobin concentration depended on blood lead concentration in occupations that have lead exposure⁽²⁶⁾.

CONCLUSION

The exposure of lead possesses the potentials to induce hazardous biological effects. The main damaging role of exposure to lead may be on cellular membrane and also the change in shape and structure of hemoglobin which is component of RBC. Lead toxicity damages organs like liver and kidney hence the change in levels plasma proteins. Concomitant measurement of blood lead, Hemoglobin, Plasma total proteins is recommended in situation that causes lead exposure to avoid potential hazard caused by lead. Also using protective measures can reduce lead exposure in workers who are at risk.

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Effectiveness and Tolerability of Intravenous Iron Sucrose versus Oral Iron Therapy in IDA of Pregnancy

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ABSTRACT

Aim of our study was compare the effectiveness and tolerability of intravenous iron sucrose versus oral iron therapy Iron- deficient anemia in pregnancy.

Method and material: In a prospective and retrospective study department of SIMS Hapur. Two hundred twenty nine women with IDA were sequentially selected and assigned in intravenous iron sucrose group and oral iron ferrous sulfate group. Target hemoglobin was set at 12 g / dl. Hemoglobin and serum ferritin were reviewed at 2 weeks, 4 weeks, and 6 weeks followed, paired, independent test was applied.

Result: The change in hemoglobin ≥ 1.5 g/ dl at 4weeks, serum ferritin level raised from baseline was highly significant (p =0.000). In the intravenous sucrose group than oral iron.

Conclusion: IV sucrose elevates hemoglobin and restores iron faster than oral iron therapy, administration of IV iron sucrose therapy in pregnant women was well tolerated.

Keywords: Anemia, Iron sucrose Ferrous Sulfate

INTRODUCTION

Anemia is about (80%) most common indirect cause of maternal mortality in India. Prevalence of anemia among pregnancy women in India is 57%¹. Iron-deficient anemia (IDA) is responsible for 95% of anemia during pregnancy². The most common causes of anemia are poor nutrition, deficiencies of iron, micronutrients, malaria, hook worms infestation and schistosomiasis, in developing countries³⁻⁴ over the past years, various, oral. Intramuscular and intravenous preparations of iron with recombinant erythropoietin and blood transfusion have been used for correction of IDA in pregnant patient but they have some or other association drawbacks like non

compliance and uncertain absorption rate or unrepeated life-threatening side effects. Hence, to achieve the target rise in hemoglobin (Hb) level in a limited time period when patient is approaching the term, main modality that remained was blood transfusion. Iron therapy before delivery may reduce the transfusion rate for iron deficient women.

The aim of this study was to compare the efficacy and tolerability of intravenous iron sucrose versus oral ferrous sulfate in the treatment IDA in pregnancy.

METHOD AND MATERIAL

In a prospective and retrospective study carried out from Jan 2009 to Dec. 2010 in a SIMS (Saraswathi Institute of Medical Sciences, Hapur) were recruited from the antenatal clinic.

Eligible participants were pregnant women between 20 – 37 weeks and 36 – to 48 hr after delivery with established iron deficiency anemia who had Hb levels between 6 and 10 g% and serum ferritin less than 15 ng/ml.

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Exclusion Criteria

Anaemia from causes other iron deficiency, multiple pregnancy, previous blood transfusion, H/o hematological disease, recent administration of iron, preterm labor, intolerance to iron derivatives, allergic condition, asthma, heart disease, liver disorder, renal disorder, peptic ulcer.

A total of 229 patients were studied. All were hundred patients were in intravenous group and one hundred twenty nine patients in oral group but 38 women had experience of adverse effects, out of 29 women were discontinued oral iron therapy. In the intravenous group, the total iron does in mg was calculated from the following formula $2.4 \times \text{weight of patient} \times (\text{Target} - \text{actual Hb}) \text{ in gm per dl} + 500\text{mg}$.

Target Hemoglobin in gm per dl was set at 12 gm per dl.

In each infusion the maximum total dose administered was 200 mg elemental iron in 100 ml of normal saline infused over 20 – 30 min given on alternate days each ampoule was 2.5 ml containing 50

mg of elemental iron. No test dose was given treatment was completed after administration of the calculated dose. Additional iron was not administered during the study.

In the oral group, women were instructed to take two tablests (ferrous sulfate 100 mg twice daily) throughout the pregnancy women were instructed to take the tablets on an empty stomach either 2hr before or after their meals. The primary outcome measure was hemoglobin concentration at 2, 4 and 6 weeks. The secondary outcome was serum ferritin level done at 2, 4 and 6 weeks. All women were followed up every 2 weeks. During each visit all adverse events immediate or delayed were evaluated. Twenty nine women discontinued oral iron treatment because of GI upset, so 29 women were excluded form effectiveness of study Laboratory evaluation was performed at the time of inclusion in the study and then at 2, 4, 6 weeks. Initial evaluation included CBC, GBP, and iron profile whenever possible.

Observation data was collected and student's test paired test was applied.

RESULT

Table 1. Baseline Demographics in the intent to treat population.

	IVS n = 100	N = 129 Oral	Ferrous Sulfate
Age (years)	24.9 ± 6.4	24.1 ± 6.0	0.180
Weight (kg)	72.0 ± 19.1	68.0 ± 19.7	0.033
Hb (g/dl)	7.92 ± 8.6	7.9 ± 8.01	0.890
S. Ferritin	8.44 ± 1.3	8.13 ± 1.45	0.126

Total number if selected patients was 229 cases. The demographic data shown as in table 1 mean age of IV sucrose was 24.9 ± 6.4 , Hb was 7.92 ± 8.6 and serve farritin level was 8.44 ± 1.3 .

An increase in hemoglobin was observed from baseline to 6 weeks in each group, but the increase in hemoglobin in intravenous iron sucrose group was more than oral ferrous sulfate group at each point of measurement ($p=0.000$) as shown in table 2.

There was significant rise in hemoglobin level and ferritin leval baseline to 6 weeks in both group but more the increase in intravenous group sucrose group than oral group at each point of measurement ($p = 0.000$) as shown in table 2, and 3.

There were no serious adverse durg reaction recorded.

Table 2. Actual hemoglobin levels over 6 weeks.

Group	Hb g/dl baseline	Hb (g/de) at 2 weeks	Hb at 4 weeks g/dl	Hb at 6 weeks g/dl
IV Sucrose,	7.92 ± 8.6	9.64 ± 0.885	10.09 ± 0.808	10.80 ± 0.8532
Oral	7.90 ± 8.01	8.40 ± 0.890	19.40 ± 0.707	09.90 ± 0.884
P value	0.890	0.0001	0.000	0.000

Table 3. Actual ferritin levels over 6 weeks

Group	Ferritin level ng/ml baseline	Ferritin levels at 2 weeks ng/ml	Ferritin levels at 4 weeks ng/ml	Ferritin level at 6 weeks ng/ml
I. V.	8.28 ± 1.29	48.49 ± 16.56	61.05 ± 19.70	86.98 ± 19.94
Oral	8.1 ± 1.45	16.65 ± 4.83	22.39 ± 8.60	34.80 ± 8.70
P Value	0.125	0.000	0.000	0.000

Table 4. Tolerability of IV, Iron Sucrose and ferrous sulfate.

	IV Sucrose n == 100	Oral n = 129
Adverse events in mother, At least one AEs	20	N = 38
Anaphylaxis	0	0
Metallic taste	3	9
Headache	3	-
Nasopharyngitis	2	-
GI disorder	1	29 (discontinue oral iron)
Venous Thrombosis	Nil	-
Fever	1	-
Arthralgic	Nil	-
Infusion-site Burring.	10	-

Tolerability of IV Sucrose with oral Fe sulfali from subset patient in the study overall adverse effects were experienced by 20% of patients treated with IV sucrose and by 29.4% of patients treated with oral ferrous sulfate as shown in table 4, except for infusion site burning in sucrose group more but it was better tolerable than ferrous sulfate other side effect that is statistically significant. There was no serious adverse drug reactions recorded. There were no patients withdrawals and no drug discontinuation caused by drug related adverse events in IV sucrose group, In oral group gastrointestinal symptoms were experienced by 29% woman, out of 29 women 22 women had upper gastrointestinal symptoms and seven women suffered from diarrhea and constipation which was managed by symptomatic treatment, but they were discontinued oral iron treatment and excluded from effectiveness of therapy, they were treated with blood transfusion.

DISCUSSION

Women in developing countries are always in a state of precarious iron balance during their reproductive years. The factors producing iron deficiency anemia generally precede the pregnancy including diet poor in iron content coupled with menstrual losses and rapid succession of pregnancy in which supplemental iron was provided.

In this study, potential and oral iron treatment were both effective in treating IDA in pregnancy, IV sucrose was non-inferior to ferrous sulfate, significantly elevated hemoglobin and restored iron stores better than oral Fe sulfate.

In a study by Al RA et al⁶ compared intravenous iron sucrose with oral Polymaltose complex (300 mg elemental iron per day). The change in hemoglobin from baseline was significantly higher in intravenous group than oral group at each measurement the changes with respect to subsequent hemoglobin were significantly higher on day 14th ($p = 0.031$). Serum ferritin levels were higher in the intravenous group than oral group at each of measurement. $11 \pm 11 \mu\text{g/L}$ compared to $28 \pm 26 \mu\text{g/L}$ in the intravenous group ($p < 0.001$) at the fourth week.^b

This study is comparable to our study because there was a significant rise in hemoglobin and ferritin levels in intravenous group.

Al Momen et al⁷, in their study compared 52 women treated with intravenous iron sucrose and 59 women treated with 300 mg oral iron sulfali, intravenous iron sucrose complex group. Achieved significantly higher hemoglobin levels 128.5 ± 6.8 versus $111.4 \pm 12.4 \text{ g/L}$ in the oral iron groups. ($p < 0.001$) in short period 6.9 ± 1.8 versus 14.9 ± 3.1 week in control group. ($p \leq 0.001$). This study is comparable

to our study in the Hb concentration was higher in the intravenous group in shorted period of time.

Westad et al – conducted an open labeled randomized study in 128 postpartum women with hemorrhagic anemia [Hb between 6.5 to 8.5 gm/dl] fifty nine women received 600 mg of iron sucrose IV. Followed by 200 mg of ferrous sulfates daily from week 5 onwards and control group [n=70] received 200 mg of ferrous sulfate daily. At the end of 12 weeks, the rise in Hb was comparable between the groups however ferritin levels improved much faster and better in the iron sucrose the study support the our study.

CONCLUSION

The efficacy and safety of IV. Sucrose in correcting IDA has been investigated in wide range of indications. IV sucrose has been shown to be superior to oral Fesulf in terms of the proportions of patients achieving “success” in term of the Hb increase according to various definitions. IV. Sucrose demonstrated a comparable efficacy to oral in achieving an increase in Hb \geq 1.5 g/dl at 4 weeks post baseline. Safety data from more than 200 patients has shown the IV sucrose is well tolerated with low risk of immunogenicity. The incidence of aduers effects were lower in patients receiving IV sucrose and better tolerated than Fesulfate.

Through this study, it has been proved that intravenous iron therapy is a safe alternative for the treatment of anemia, being able to reduce the need of blood transfusion and its concomitant adverse effects such as anaphylatic shock ,febrile, hemolytic reactions, infection (Hepatitis B, C, HIV, Protozoan and bacterial, all immunizations, During pregnancy and puerperal it helps to rebuild iron stores, helping the symptoms of anemic to subside at a faster rate and reduce the risk of developing anemic in subsequent pregnancies.

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Ethical Clearance: Taken

Financial Disclosure: This is to certify that I Dr poonam mani the author of Effectiveness and Tolerability of IV iron versus oral iron therapy in IDA of pregnancy do not have any comercial association or finacial interst n the publication of this work.

Conflict of Interest: I Dr poonam mani the author of Effectiveness and Tolerability of IV iron versus oral iron therapy in IDA of pregnancy do not have any comercial association orfinacial interst n the publication of this work.

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A Comparative Study to assess the effect of Oil Massage vs Kangaroo Mother Care on Changes in the Physiological and Neurobehavioural Parameters among Low Birth Weight Babies

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ABSTRACT

Objective: A comparative study to assess the effect of oil massage and Kangaroo Mother Care on changes in physiological and neurobehavioral parameters in low birth weight babies in selected hospitals of Bhilai city.

Materials and Method: This study was concluded in four groups with different interventions specifically Group I with oil massage, Group II with KMC, Group III with oil & KMC, Group IV is Control Group. Each group consist of 40 samples of LBW. A standaralised tool - the neonatal intensive care unit network neurobehavioral scale for neurobehavioural parameter and anthropometric measurements were used for physiological parameters.

Result: There was significant improvement in physiological and neurobehavioural parameters of low birth weight babies who had undergone both oil massage and KMC in comparison to all other three groups.

Conclusion: Oil massage has a relaxing effect which will enhance weight gain, stabilizes vital parameters and induces sleep in the baby and KMC facilitates skin to skin contact with the mother thereby maintains the baby's body temperature and encourages exclusive breast feeding and enhances the physiological and neurobehavioural development.

Keywords: LBW : Low Birth Weight babies., KMC: Kangaroo Mother Care

INTRODUCTION

Children constitute the most important and vulnerable segment of our population. They are truly the foundation of our nation. Hence the focus of every citizen should be to promote their health and safeguard their interests. So every unborn child should be allowed to achieve his/her optimal growth and development potential so that, he can effectively contribute towards nation's productivity. The future of our nation depends on the way in which we nurture our children today.

WHO (2009) estimates that globally about 25 million low-birth weight babies are born each year, consisting 14 % of all live births, nearly 93 % of them in developing countries. The number of LBW infants concentrated in two regions of the developing world India and Africa. The incidence of low birth weight varies widely between regions of the world, with levels of 27 % in Southern Asia, 6% in Eastern Asia, 14 % in Africa and 9% in Latin America.^{1,2}

Park K (1997)³ The incidence of low birth weight varies between religions, countries and within areas of the same country. WHO (1991) estimates that 7% of all within the world are low birth weight with a contributory low birth weight rate of 19% in developing countries and 7% in developed countries. Neither the incidence of low birth weight nor the risk attached is spaced evenly around the globe. In some

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countries third of all babies born are low birth weight and 50% of them do not live to see their first birth days. Therefore the best way to reduce the infant mortality rate would be to reduce as many low birth weight babies as possible. Babies who fall in category of low birth weight suffer adversely because of physiological handicaps like difficulty in maintaining temperature, respiration, inability to suck, proneness to infection due to reduced humoral and cellular immunity and consequent disorders.³

Mary W Walters (2007)⁴ study to determine whether breastfeeding behaviors, skin temperature, and blood glucose values could be influenced through the use of Kangaroo care at the time of birth in healthy full term infants.

Dabi et al (2000)⁵ reported a significantly higher standardized weight gain in the oil massage group compared to control group.

Half of all perinatal and one-third of all infant deaths are due to low birth weight; which leads human wastage and suffering; the very high cost of special care in intensive care units and its association with socio-economic underdevelopment. Low birth weight is single most important factor determining the survival chances of the child. Many of them die during their first year. The infant mortality rate is about 20 times greater for all low birth weight babies than for other babies.

MATERIAL & METHOD

The research design was an experimental evaluative study. In this study three Experimental groups and one Control group were formed. Total number of subjects are 160 who met the specified criteria (low birth weight babies, voluntariness, permission of the subjects parent and availability of time) were randomly assigned to either experimental groups or Control Group. Each Experimental group consisted of 40 subjects of low birth weight babies for intervention (Kangaroo Mother care and Oil Massage) purpose. In total 120 subjects in the Experimental group and 40 subjects in Control group were randomly selected. LBW babies with oil massage (Exp-I) 40, LBW babies with KMC (Exp-II) 40, LBW babies with Oil Massage & KMC (Exp-III) 40, LBW babies with No Intervention (Control Group-IV) 40. The current study was approved by the institutional review boards of the university. To get the required information of the subjects survey was conducted from each hospital

during day time with the help of instrument and pre tested structured standardized tool. The neonatal intensive care unit network neurobehavioral scale was the instrument used to measure the neurobehavioral parameters of low birth weight baby includes habituation, motor activity, and reflex. Physiological parameters (weight, length, chest circumference and head circumference) and neurobehavioural parameters were measured from each of the four groups both experimental and control separately at first day after registration (pretest) and after 28 days (post test).

Present study intended to investigate the effect of Oil massage and Kangaroo Mother Care on physiological and neurobehavioural parameters among low birth weight babies. For this correlated 't' value, gain score, 't' test (Significance test) and one way ANOVA was constituted. Details of data are tabulated and explained separately.

FINDINGS

Comparison between mean Pre test & Post test scores on physiological and neurobehavioural parameters of Control Group IV and Experimental Group I-The reported correlated 't' values of Experimental Group I of physiological parameters are 7.72 for height, 9.07 for weight, 14.75 for head circumference, 5.50 for chest circumference and 8.77 for neurobehavioural parameters is significantly higher than Control Group IV correlated "t' values 7.10 for height, 8.83 for weight, 10.64 for head circumference, 4.40 for chest circumference and 5.74 for neurobehavioural parameters are statistically significant at 0.01 level. The reported t value for physiological parameters includes 3.92 for height, 3.55 for weight, 2.92 for head circumference, 2.58 for chest circumference and 3.57 for neurobehavioural parameter are statistically significant at 0.01 level. (df =78 Table value = 2.64)

Comparison between mean Pretest & Post test scores on Physiological and neurobehavioural parameters of Control Group IV and Experimental Group II- The reported correlated 't' values of Experimental Group II physiological parameters are 7.90 for height, 16.19 for weight, 14.75 for head circumference, 9.60 for chest circumference and 12.34 for neurobehavioural parameters is significantly higher than Control Group IV correlated "t' values 7.10 for height, 8.83 for weight, 10.64 for head

circumference, 4.40 for chest circumference and 5.74 for neurobehavioural parameters are statistically significant at 0.01 level. (** Significant at 0.01 level (df =39 Table value = 2.70) .The reported t value physiological parameters 2.75 for height, 10.46 for weight, 4.46 for head circumference, 5.24 for chest circumference and 7.04 for neurobehavioural parameters are statistically significant at 0.01 level.

Comparison between Mean Pre test & Post test scores on Physiological and Neurobehavioural parameters of Control Group IV and Experimental Group III- The reported correlated 't' values of Experimental Group III of physiological parameters are 8.13 for height, 21.20 for weight, 13.63 for head circumference, 12.86 for chest circumference and 32.09 for neurobehavioural parameters is significantly higher than Control Group IV correlated "t' values of physiological parameters 7.10 for height, 8.83 for weight, 10.64 for head circumference, 4.40 for chest circumference and 5.74 for neurobehavioural parameters are statistically significant at 0.01 level. The reported t value for physiological parameters 4.12 for height, 13.76 for weight, 10.54 for head circumference, 8.52 for chest circumference and 16.04 for neurobehavioural parameters are statistically significant at 0.01 level. (df =78 Table value = 2.64) .

Comparison of gain score on measures of physiological and neurobehavioural parameters between Experimental Group III and I -The reported "t value" for physiological parameters 2.71cm for height, 8 for weight, 10.33 for head circumference, 4.75 for chest circumference and 12.33 for neurobehavioural parameters are statistically significant at 0.01 level (df =78 Table value = 2.64).

Comparison of gain score on measures of physiological and neurobehavioural parameters between Experimental Group III and II -The reported t value in physiological parameters 2.8 for height, 3 for weight, 7.7 for head circumference, 6 for chest circumference and 7 for neurobehavioural parameters are statistically significant at 0.01 level also indicate that mean gain in physiological and neurobehavioural parameters of low birth weight babies who received oil massage and KMC both (Experimental group III) is significantly higher as compared to low birth weight babies who received kangaroo mother care only as intervention (Experimental group II).

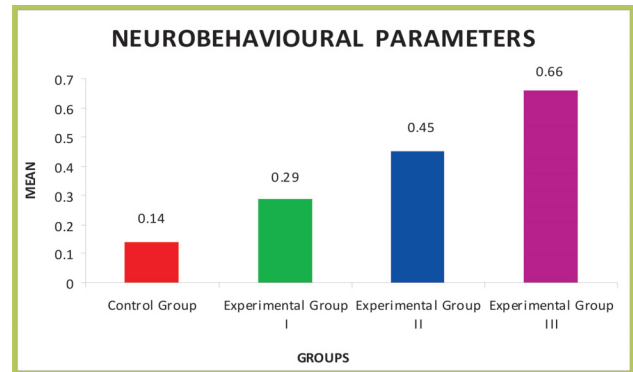


Fig. 1. Bar diagram shows comparison of mean gain for NEUROBEHAVIOURAL PARAMETERS in different study groups

One Way ANOVA

Comparison of gain scores in physiological parameter with reference to height, weight, head circumference, chest circumference among different study groups - the reported F ratio 7.46, 58.60, 61.07, & 21.27 are significant at 0.01 level thus the subjects physiological parameters of height, weight, head circumference, chest circumference mean gain scores who received intervention of oil massage and kangaroo mother care both are found to be significantly higher from the other groups i.e. Experimental Group I, II and Control Group IV. (Table Value= 3.91) ,Hence it can be concluded that the obtained results are in the direction of predicted hypothesis that subjects of low birth weight babies of Experimental Group III would show higher improvement in their physiological parameters of chest circumference after joint intervention of oil massage and KMC. (** Significant at 0.01 level (Table Value= 3.91) .

Comparison of gain scores in neurobehavioural parameters among different study groups - the reported F ratio 56.61 which is significant at 0.01 level confirms the fact that mean gain in neurobehavioural parameter after study period is significantly higher in low birth weight babies who received oil massage and KMC both (Experimental group III) as compared to mean gain after study period of Experimental Group I, II and Control Group IV. Hence it can be concluded that the obtained results are in the direction of predicted hypothesis that subjects of low birth weight babies of Experimental Group III would show higher improvement in their neurobehavioural parameter after intervention of oil massage and KMC jointly. (Table Value= 3.91).

Table 1: Comparison of gain scores in height among various study groups by using One Way ANOVA

Source	df	Sum of Squares	Mean Squares	F-ratio
Between Group	03	3.6855	1.2285	7.46**
Within Groups	156	25.6695	0.1645	
Total	159	29.3550		

** Significant at .01 level (df=156 Table Value= 26.23)

DISCUSSION

Previous empirical research on oil massage as intervention has demonstrated many benefits to low birth weight babies physiological as well as neurobehavioural parameters, which is supported by the Jyoti Arora et al (2005)⁶, Soriano et al (2003)^{7,8}, Dabi et al (2000) Study revealed that weight gain was greater in oil massage group than Control group due to cutaneous absorption of oil which acts as a source of energy, nutrient and improved overall growth.

Soriano et al (2003) demonstrated a significant increment in the length, triceps skin fold thickness and mid arm circumference after 30 days of oil massage in preterm neonates.

Solkoff et al (1973)^{9,10} trials suggested that tactile and kinesthetic stimulation could have beneficial effect on preterm neurobehavioral. The only trial that evaluated the effect of tactile stimulation using Brazelton neurobehavioural scoring which demonstrated the beneficial role of massage in improving neurobehavioural of preterm babies. Findings of the present study was also supported by Mullany (2006)¹¹, Soriano (2000), Sheeden A et al (1993)^{12,13}, Barbora F Weller (1991)¹⁴, Barbora E Walsh (1980)¹⁵, Friedman X (1976).^{16,17}

This study is the first comprehensive study in Chhattisgarh State which examines the impact of oil massage and KMC care jointly on changes in physiological and neurobehavioural parameters in low birth weight babies.

The low birth weight babies who received KMC intervention gained higher physiological and neurobehavioural scores than their counter parts who did not receive the KMC intervention as it is mentioned in the previous chapter KMC intervention incorporates the following basic procedure.

The present finding support the previous research that low birth weight babies could increase their physiological and neurobehavioural parameters through KMC intervention (Charpak et al 2008^{18,19}).

In preterm babies, weight, length and head circumference were significantly higher in the Kangaroo Mother Care group (weight 2388 g, length 47.8 cm and head circumference 33.4 cm) than in the routine care group (weight 2065 g, length 46.4 cm and head circumference 32.1 cm) and demonstrated a significantly higher daily weight gain in infants who received the kangaroo mother care intervention. This beneficial effect was reflected in other growth parameters. The recommended weekly increment of 0.75 cm in head circumference was achieved only in the kangaroo mother care group. Head circumference has been emphasized to be one of the most important growth parameters in low birth weight babies being a reflection of the underlying brain growth. Kangaroo mother care by promoting exclusive breastfeeding, ensuring temperature maintenance, facilitating physiologic stability and decreasing neonatal morbidities could result in improved physical and cognitive growth. It is concluded from the study that kangaroo mother care improves growth in low birth weight infants and has a significant role in protecting the low birth weight infant from hypothermia, hypoglycemia and sepsis and it is definitely feasible, acceptable to mothers and can be continued at home in the Indian set up. The finding of present investigation was also supported by Salles BGC (2003)²⁰, Silva OPV²¹, (2003), Korones SB, (1997)²², Anderson GC et al (1991)^{23,24,25}, Affonso DD et al (1989)²⁶, Mann NP et al (1986)²⁷, Korrones SB (1976).

The effect of oil massage and kangaroo mother care together (Experimental Group III) was found more significant in improving physiological and neurobehavioural parameters of low birth weight babies than as compared with only oil massage (Experimental Group I) and only kangaroo mother care (Experimental Group II). In general the effect of oil massage and KMC intervention together tends to benefit low birth weight babies in more significant ways by instilling a greater effect of well being because kangaroo mother care facilitates skin to skin contact with the mother thereby maintains the baby's body temperature and encourages exclusive breast feeding

and enhances the physiological and neurobehavioural development. Oil massage has a potential effect on motor maturity, improves reflexes, increases digestion leading to more intakes of nutrients. The joint intervention of oil massage and kangaroo mother care creates more significant effect on physiological and neurobehavioral development of low birth weight babies in their early neonatal period (Suraj Gupta 2005, Marlow 2004)²⁸.

CONCLUSIONS

Kangaroo mother care can be proposed as an alternative to conventional neonatal care for low birth weight babies. Massage has a relaxing effect which will enhance weight gain, stabilizes vital parameters and induces sleep in the baby. Findings of the study have proved the positive effect of interventions like oil massage and kangaroo Mother Care on physiological and neurobehavioural parameters of low birth weight babies. It can be implemented as alternative method in the management of low birth weight babies in hospital as well as at home. Training of the methods like oil massage and Kangaroo Mother Care can be planned and given by trained personnel for the nursing mothers. Care givers should initiate this simple, culturally acceptable, mother focused and home based programme to foster low birth weight babies development.

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Ethical Clearance: Before registration and conduction of study it was undergone ethical clearance by

University Departmental Research Committee and then the study was found ethically safe and accepted by University Research Committee for undertaking the study in PhD programme.

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Study of Factors Influencing the Choice of Contraceptive Method among Eligible Couples in a Rural Population Near Chennai

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ABSTRACT

Background: In spite of various efforts on the government's part, the percentage of eligible couples using contraception is low, leading to population explosion.

Objectives: 1. To find the prevalence rates of different types of contraceptive methods adopted by eligible couples, in a rural population. 2. To assess how personal and socio-cultural factors influence the choice of a contraceptive method.

Materials and Method: It was a cross sectional study done on randomly selected 300 eligible couples of a rural population served by PHC Mugalivakkam, Porur, Chennai. Pretested questionnaire was used to collect the data by interview method.

Results: The age of the respondents at the time of study ranged between 18 to 46 years. Among the 300 study population, 179 were currently using either a permanent or temporary method of contraception, with the prevalence of contraceptive use being 59.7% (95% CI 54.1 to 65.3). Among the women who had 2 children, 37.2% were users of contraceptives as compared to 15% who had more than 2 children (X²29263.3, p < 0.001 Statistically significant). Health factors influencing the discontinuation of contraceptive usage were abdominal pain in 26.3%, leucorrhoea 15.8%, menorrhagia 5.3% and irregular menstruation in 5.3% of subjects.

Conclusions: The overall prevalence of contraceptive use was found to be 59.7%. Though the prevalence of contraceptive use among the study population was high as compared to National average, there are still important factors of concern like early age at marriage, increased parity, low Intersperse communication and health factors for non usage of contraceptives. This suggests that there is still scope for improving the contraceptive usage amongst women with regard to their education which, in turn, would lead to women empowerment. The effect of this causality would be the improvement of Intersperse communication. Intersperse communication enables eligible couples to take responsible reproductive decisions, and also garner acceptance and compliance of contraceptive use.

Keywords: Eligible Couples, Contraceptive Use, Intersperse Communication, Health Factors

INTRODUCTION

While the world's population has increased 3 fold, during the century (1900-2000), from 2 Billion to 6

billion, the population of India has increased nearly 5 fold, from 23 million to 1.21 billion and is estimated to reach 1.6 billion by the year 2050. This will make India the most populous country in the world, surpassing China, and will threaten to neutralize all developmental efforts and achievements of the country. Any percentile change in the size of the population is possible, only if there is a reduction in the birth rate. There are 168 million eligible couples those who are in need of Family Planning ¹.

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Though the Total Fertility Rate has come down from 3.2 children per woman (1999- 2000) to 2.5 children per woman (2010), it is still above the 'replacement level' of 2.1²

The National Family Welfare Program, in India, has traditionally sought to promote responsible and Planned Parenthood through voluntary and free choice of family planning methods, best suited to individual acceptors². However, these methods have not been widely accepted by a large number of eligible couples, as these methods do not meet their psychosocial requirements. Thus in spite of various efforts on the government's part, the percentage of eligible couples using contraception (Couple Protection Rate) is only 48.2 percent². This is far below the set target of 60% (as set by the National Population Policy 2000). Therefore, it is important for us to know the reasons why some women use contraception while others do not. The success of Family Welfare Program depends to a large extent on the woman's fertility preferences, also on knowledge of contraception, education and social status of women in our society.

AIMS AND OBJECTIVES

1. To find the prevalence rates of different types of contraceptive methods adopted by eligible couples, in a rural population.
2. To assess how personal and socio-cultural factors influence the choice of a contraceptive method.

MATERIALS AND METHOD

SETTINGS AND DESIGN: this study was a population based cross sectional study done on a rural population served by Mugalivakkam Primary Health Centre. The total population served by the PHC is 42,604, of which the eligible couple population is 7,184. The study was conducted from March 2004 to May 2004.

Sample Size: Based on prevalence of contraceptive use, which was 48% (NFHS 2), the sample size of 266 was calculated. Based on feasibility a sample size of 300 eligible couples was decided.

Methodology: List of the eligible couples was obtained from the eligible couple register maintained at the PHC. The couples were then selected by simple random sampling method using the Random number table. From the list of couples selected by simple random sampling a house to house visit was made.

Data was collected using a pre tested questionnaire by interview method.

Standard of living index (SLI), as used for NFHS-2, was included for determining the socio economic status of the family instead of per capita income. The SLI is based on certain characteristics namely: house type, toilet facility, source of water, ownership of land, ownership of house and household goods. A weighted score is given for each of the characteristics and a total score is calculated. Based on the total score, the family is assigned SLI as high (score of 25-67), medium (15-24), and low (0-14).

Unmet need: The unmet need is defined as those women who are sexually active and do not want to any children, but are not using any contraception due to one or the other reason.

Couple Protection Rate (CPR) : The couple protection rate is calculated based on duration of use of temporary contraceptives for six months and more and those undergone sterilization.

Inclusive Criteria: Women among eligible couple in a family.

Data Analysis: Data entry and analysis was done using the statistical software SPSS 8. Percentages and 95% Confidence Interval were calculated for variables wherever applicable. Chi square test was used for test of statistical significance.

RESULTS

The age of the respondents at the time of study ranged between 18 to 46 years. Mean age was 27 years. Of all the respondents 44.3% were in the age group of 25 to 29 years and 0.3% was 40 to 44 years.

The age of respondents at the time of marriage ranged between 11-28 years, with the median age at marriage being 19 ± 3.1 years. Among the study group 33% were less than 18 years and only 24.7% were more than 21 years of age at the time of marriage. Distribution of population as per age at marriage is given in table no 1.

Among the eligible couples, 88.6% of women were literates as against 85% of men. Majority of men (66.7%) and women (60%) had completed secondary school education, 12.7% of men and 26% of women had completed primary education and very few men (5.7%) and women (2.7%) were graduates.

Among the 300 study population, 179 were currently using either a permanent or temporary method of contraception, with the prevalence of contraceptive use being 59.7% (95% CI 54.1 to 65.3). The prevalence of Tubectomy as a method of contraception was highest at 52.7%. Prevalence of IUD users was 4%, condom users 2.3% and 0.7% of OCP users. None of the men had undergone vasectomy.

Prevalence of contraceptive methods among eligible couples is as given in Table no 2.

The percentage of women who used any temporary method in past was 6.3% (95%CI 3.5 to 9) and those who never used any method of contraception at any time was 34% (95%CI 26.5 to 41.4). It was found that 13.7% (95% CI 10.0-17.4) of women had used induced abortion at least once as a method of birth control.

The overall couple protection rate was 58.7% (95% CI 53.1-64.2). The couples who had adopted permanent method were 158 as against 18 who were using temporary methods for more than six months.

The prevalence of unmet need of contraception was found to be 19% among the study group, those who did not feel the need for contraception.

Relation of factors like age of women using contraception, parity, reproductive intentions (women who want to have more children), inter-spouse communication, health factor and socio cultural factors on usage of contraception were studied the results are as given below.

The mean age of contraceptive use is 27 years. The usage of contraception was maximum in the age group of 25-29 years, to the extent of 48.6%. The percentage of contraceptive use was found to be very low at extremes of age as given in Table No 3.

Among those who had adopted permanent sterilization, 67% had undergone Tubectomy by the age of 29 years and 4.4% by 22 years of age.

Among the current users of contraception, majority of couples (87.7%) had two or more children, followed by 11.2% who had only one child. Two couples were practicing contraception (OCP) even without any child. Prevalence of different methods of contraception by parity is given in Table No 4. It shows that 50.5% of the couples with 2 or more children have adopted Tubectomy. However, only 5.4%, who had one or no children were using any of the temporary methods.

Contraception usage was discussed among each other by 148 (49.4%) eligible couples of whom

89(60.1%) were users and only 59(39.8%) were non users. Among the 152 (50.6%) who have not discussed 90(59.2%) were users, this difference though seems to be associated is not statistically significant (OR=1.04).

The health factors that influenced the discontinuation of contraceptive usage were abdominal pain in 5(26.3%), leucorrhoea in 3(15.8%), menorrhagia in 1(5.3%) and irregular menstruation in 1(5.3%) subjects. The difference observed was statistically significant ($\chi^2 = 12.06, P < 0.001$).

Prevalence of contraceptive usage among Hindus & Christians was 59.8% and 62.8% respectively. Among the two Muslims though none were current users of contraception, both had been users in the past and had discontinued for having another child. This difference is statistically not significant ($\chi^2 = 4.62, P > 0.05$).

In relation to education, those educated up to secondary, 94.4% were users as compared to illiterates at 52% only. This is statistically not significant ($\chi^2 = 4.317, p > 0.05$).

Based on Standard of Living Index, 56.3% of families belonged to medium SLI, 28.7% to low SLI and 15% to high SLI. Association of SLI with contraceptive usage was found to be 82.2% among high SLI group of individuals, followed by 53.4% in low SLI and 53.2% in medium SLI. This difference is statistically significant, ($\chi^2 = 12.42, p < 0.05$).

Different reasons were attributed for never using contraceptives. Of the never users, 45(44.1%) had never felt the importance of its usage. About 13(12.8%) of the spouses and in laws had various prejudices (contraceptive use causing infertility or ill health), which interfered with contraceptive usage.

DISCUSSION

Prevalence of contraceptive use: The overall prevalence of contraceptive use is found to be 59.7%, this is comparatively higher than the National average of 48%². Induced abortion was adopted by 13.7% of women. This could be for a reason that women soon after delivery or after completing their desired family size, feel they are sub fecund or in fecund. Studies show the percentage of women who ever had an abortion raises with women's age³.

In this study 52.7% had undergone Tubectomy of which 67% were by the age of 29 years of age, 4.4% by 22 years. The reasons for an early sterilization can be attributed to early age at marriage and early

completion of family size of 2 or 3 children by the age of 22-29 yrs. These findings are at par with the study of A.M. Khan ¹, which reports that delay in birth of first child is culturally unacceptable.

Among the temporary methods used prevalence of IUD usage was 4%, condom 2.3% and oral pills 0.7% in comparison with the NFHS-2 (TN) which is 3% for IUD usage, 2% for condom and negligible for oral pills ².

Couple Protection Rate: The CPR was found to be 58.7%. The CPR for TN (50.3) and Chennai (67.6%) were higher than the national average (46.1%)², which are consistent with this study.

Age & parity: There is strong evidence of inverse relationship between the average age at marriage and the TFR of a country ³, which is consistent with this study that reveals the median age at marriage as 19 years. According to researchers, most southern states have achieved a low fertility rate as women got married early, had two children in quick succession and then got sterilized ⁴

Education: Based on education status, among the 179 (59.7%) of current users, 161 (89.9%) were literates as against the 18(10.1%) who were illiterates. This difference though statistically significant, was quite different from NFHS-2 for Tamil Nadu, which reveals minimal difference in use rate of 51% for literates and 52% for illiterates.

Intersperse communication: Among the 148(49.3%) who had discussed contraception, 89 (60.1%) were users and 59(39.8%) were non users. Among the 152(50.6%) who have not discussed 90(59.2%) were users. This difference was found to be statistically not significant but studies prove that spouses who discuss with each other are more likely to use contraception effectively and have fewer children ⁵.

Health Factor: The percentage of never users was 102(34%) of whom 9(8.8%) attributed health problems as a reason. The ever users were 19(6.3%) of whom 8 (42.1%) had discontinued contraceptives for health problems. The survey for NFHS-2 for TN and India reveal that side effects for family planning methods were 53.9% and 21.7% respectively.

Table No. 1: The study population according to age at marriage

Age	Frequency	Percentage
<18 years	99	33.0
18-21 years	127	42.3
>21 years	74	24.7
Total	300	100

Table No 2: Pattern of use of various methods of contraceptives

Method used	Frequency N=179(Users)	Percentage	95% CI
Permanent(Tubectomy)	158	52.7	45.9-58.2
IUD	12	4.0	1.7-06.2
Condom	7	2.3	0.6-03.9
Oral contraceptive pills	2	0.7	0.2-01.5
TOTAL	179	59.7	

Table No 3: Prevalence of contraceptive usage among different age groups.

Age	Frequency of usage N=179(Users)	Percentage
15-19	0	0
20-24	47	15.7
25-29	88	29.3
30-34	30	10.0
35-39	13	4.3
40-44	1	0.3
45-49	0	0
TOTAL	179	

$\chi^2_6 = 24.58, p < 0.001$, statistically significant.

Table No 4: Prevalence of different methods of contraception by parity

No of children	Condom (%)	IUD (%)	OCP (%)	Tubectomy (%)	Non users (%)
Nil	-	-	2(0.7)	-	7(2.3)
1	5(1.7)	9(3)	-	6(2.0)	64(21.3)
2	2(0.7)	3(1)	-	107(35.5)	42(14.0)
>2	-	-	-	45(15)	8(2.7)

$\chi^2=263.3$, $p<0.001$, statistically significant

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Prevalence and Antimicrobial Susceptibility Pattern of *Acinetobacter* SPP Causing Nosocomial Urinary Tract Infections

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ABSTRACT

Introduction: *Acinetobacter* spp are ubiquitous aerobic gram negative coccobacilli that are increasingly responsible for a large number of nosocomial infections. It represents severe problems for choosing effective antimicrobials because of the resistance to many available drugs.

Materials and method: Specimens collected from IP patients were cultured and identified as *Acinetobacter* spp using standard methods. Antibiotic sensitivity pattern was done using modified Kirby Bauer disc diffusion method.

Result: A total of 60 isolates of *Acinetobacter* spp were isolated from 312 mid stream urine samples. Among these, 80% were female and highest prevalence was seen in age group of more than 60 years (40%). 66.6% isolates were sensitive to Amikacin, 60% sensitive to Norfloxacin and all were sensitive to Netilmycin and Imipenem.

Conclusion: Emergence of multidrug resistance in *Acinetobacter* spp is a formidable challenge. Continued efforts are needed to develop better antimicrobial policies against this pathogen.

Keywords: *Acinetobacter*, Nosocomial Infections, Urinary Tract Infections, Non Fermenters

INTRODUCTION

Urinary tract infections (UTI) are considered to be one of the most common bacterial infections. Accurately assessing the incidence of UTI is difficult, because they are not reportable diseases. Diagnosis depends on the symptoms and urine culture. In the outpatient setting, however, diagnosis is usually made without the latter.¹ Nosocomial urinary tract infections (UTIs) account for up to 40% of all hospital-acquired infections.² *Acinetobacter* sp are ubiquitous aerobic gram negative coccobacilli that are increasingly responsible for a large number of nosocomial infections. It represents severe problems for choosing

effective antimicrobials because of the resistance to many available drugs.³

OBJECTIVES

To study the prevalence and antibiotic susceptibility pattern of *Acinetobacter* sp in nosocomial urinary tract infections in tertiary health care centre.

MATERIALS AND METHOD

Mid stream urine specimens, collected from IP patients over one year period, were cultured on blood agar and MacConkey agar. Urine specimens containing organisms and pus cells on Gram staining and yielding a pure culture of 10⁵ or more CFU/ml were considered to be significant bacteriuria cases.⁴ Species identification by standard biochemical tests was done. In-vitro antibiotic sensitivity test was performed by Kirby Bauer's disc diffusion method using Muller Hinton Agar as per Clinical Laboratory

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Standards Institute (CLSI) guidelines and susceptibility pattern was noted. Antibiotics used were Gentamycin (10 µg), Netilmycin (30 µg), Amikacin (30 µg), Norfloxacin (10 µg), Ampicillin (10 µg), Cefotaxime (30 µg). Cefoperazone-sulbactam & Imipenem (30 µg)

RESULT

A total of 396 isolates of various bacteria from 312 patients with nosocomial urinary tract infections were collected and evaluated. Majority of the organisms isolated were gram negative bacilli (264) constituting 84.6% of positive cultures. Non fermenters (78) formed 29.5% of gram negative bacilli and 25% of total positive cultures. A total of 60 isolates of *Acinetobacter* sp were isolated during study period accounting for 19.2% of total positive cultures. (Fig. 1)

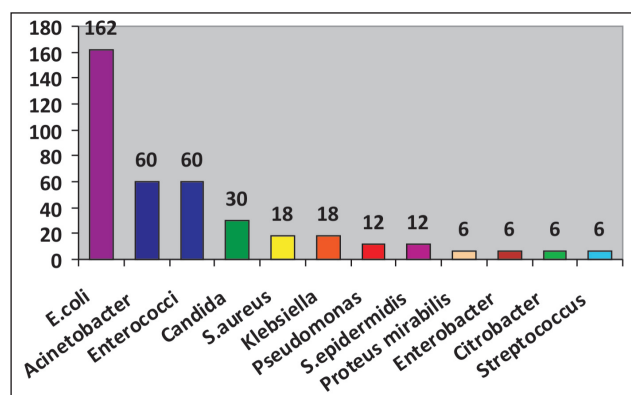


Fig. 1. Isolates from urine samples

The prevalence was more among females (80%) and highest prevalence was seen in age group of more than 60 years (40%). The male to female ratio is 0.25:1.

Table 1: Antibiotic sensitivity pattern

Antibiotics	Sensitive	Resistant
Amikacin	39(65%)	21(35%)
Ampicillin	30(50%)	30 (50%)
Cefotaxime	3(5%)	57 (95%)
Cefoperazone-sulbactam	33(55%)	27 (45%)
Imipenem	60 (100%)	0
Gentamycin	24(40%)	36 (60%)
Netilmycin	60(100%)	0
Norfloxacin	36(60%)	24(40%)

Multidrug resistance isolate showing resistance to two or more antibiotics was 90% (54). Only 2 isolates were sensitive to all antibiotics. In this study all were sensitive to Netilmycin and Imipenem followed by Amikacin (65%) and Norfloxacin (60%). Poor sensitivity was seen with Cefotaxime (5%), and Gentamycin (40%).

DISCUSSION

Urinary tract infection is seen in all age groups. The most common causative organism was *E.coli* (51.9%). This is comparable to other studies done by Patel et al⁵ and Gupta et al.⁶ In our study *Acinetobacter* sp (19.2%) and *Enterococcus* sp (19.2%) were the next commonly isolated organisms. This percentage may be high due to better identification schemes and more indiscriminate use of antibiotics in the hospitals today. *Acinetobacter* infection was more common in patients over 60 years of age and in female patients. This is similar to studies done by Gupta et al⁶ and Stansfeld et al.⁷ All the patients had some underlying diseases. They were admitted for some acute illness and were on prior antibiotic treatment. So the hospital stay, debilitated state of health and exposure to antibiotics may have predisposed for *Acinetobacter* infection. This is consistent with the study done by Siegman Igra et al.⁸ In this study all the isolates of *Acinetobacter* were sensitive to imipenem and netilmycin. This is similar to the study by Shobha et al.⁹ *Acinetobacter* infection in hospitalised patients showed high degree of resistance to almost all the antibiotics used routinely necessitating its susceptibility testing for newer drugs.^{6,9}

CONCLUSION

Nosocomial urinary tract infections are common. Gram negative bacilli are most frequent uropathogens and are resistant to commonly used antibiotics. Emergence of multidrug resistance in *Acinetobacter* sp is a formidable challenge. Continued efforts are needed to develop better antimicrobial policies against this pathogen.

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Awareness of Diabetes and its Relation to Prevalence of Microalbuminuria in Known Cases of Type 2 Diabetes

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ABSTRACT

Background: Microalbuminuria is one of the most common micro vascular complications in Type 2 Diabetes Mellitus. Awareness about glycemic control and complications is important to identify and treat microalbuminuria. The aim of the study is to assess awareness about glycemic control and complications and prevalence of microalbuminuria in known cases of type 2 diabetes mellitus in urban and rural population of Rajahmundry, Andhra Pradesh, India.

Method: 287 known cases of type 2 diabetes mellitus were included in the present study. Awareness levels were assessed by structured questionnaire. Microalbumin: creatinine ratio was measured using first morning mid stream urine sample. Cases were grouped into microalbuminuria group if microalbumin is > 30µg/mg creatinine.

Results: Awareness levels are 28% at 95% CL; CI: 5.19. Prevalence of microalbuminuria is 48% at 95% CL; CI: 5.76. Awareness levels are low in microalbuminuria cases (20%) when compared with normal cases (34%) (P value=0.008). Awareness levels are low in females (19%) when compared with males (32%) (P value=0.018). Lack of awareness is associated with microalbuminuria (P value=0.008).

Conclusion: There is lack of awareness about glycemic control and complications, and higher prevalence of microalbuminuria in urban and rural population of Rajahmundry. Mass awareness programmes are required to prevent and identify the complications of type 2 diabetes mellitus.

Keywords: Diabetes, Complications, Awareness, Microalbuminuria, Prevalence

INTRODUCTION

Type 2 Diabetes mellitus is one of the most common forms of chronic disease. With the change in life style and urbanization, the numbers of diabetics are increasing and the age of diagnosis is decreasing. Longer periods of exposure to hyperglycemia have increased the risk of developing complications related

to diabetes.¹ The real burden of diabetes is due to its micro and macro vascular complications which may present even at the time of diagnosis.² Microalbuminuria is the most common (26.9%)³ micro vascular complication when compared with peripheral neuropathy (26.1%)⁴ and retinopathy (17.6%).⁵

The awareness levels of Diabetes and its complications are low in India. Nearly 25% of population living in metro city like Chennai are not aware of condition called as Diabetes.⁶ Very few studies are available about awareness levels of diabetes in urban and rural population in India. Most of the available studies were either clinic based or limited to metro population.

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The present study is under taken to assess the awareness levels about glycemic control and complications of diabetes, measure prevalence of microalbuminuria and to find out the association between lack of awareness and prevalence of microalbuminuria in known cases of type 2 diabetes mellitus in urban & rural population of Rajahmundry, Andhra Pradesh, India.

METHOD

This cross-sectional observation study was carried out in Rajahmundry urban and rural population in the month of April 2013. Rajahmundry is a coastal town with a population of 3,43,903 which was divided into 50 municipal wards. The surrounding rural population of five villages (Bommuru, Dowleswaram, Hukumpet, Katheru and Morampudi) under Rajahmundry metro area is 1,34,296. The study group is comprised of 300 known cases of Type-2 Diabetes mellitus. 200 cases

were recruited from five wards of Rajahmundry city and 100 cases were recruited from surrounding five villages by systematic random sampling as a part of ongoing Rajahmundry Integrated Diabetes Evaluation and Research (RIDER) study. Study was approved by institutional Ethics committee. Written and informed consent was obtained from all the participants.

Cases which were positive for protein in urine by strip method (n=8), known cases of congestive heart failure (n=2), and urinary tract infection (n=3) were excluded from the study. The remaining 287 (males n=183, females n=104) cases were Included in the present study.

Structured questionnaire was given to all participants in local language (Telugu) and in English to assess the levels of awareness. They were asked to tick in appropriate box.

S.No.	Question	YES	NO
1	Are you aware of HbA1C / Test to assess glycemic control over preceding 3 months?		
2	Are you aware of microalbuminuria / kidney complications of diabetes mellitus?		
3	Are you aware of retinopathy / eye complications of diabetes mellitus?		
4	Are you aware of peripheral neuropathy / neurological complications of diabetes mellitus?		
5	Are you aware of cardio vascular / Heart complications of diabetes mellitus?		

First morning midstream urine sample was collected in a sterile urine container. Microalbumin was measured by immuno turbidimetry and urinary creatinine by jaffe's method. Microalbumin: creatinine ratio was calculated. Cases were separated in to two groups based on the ratio.

30µg/mg creatinine –normal group.

30 – 299 µg/mg creatinine – microalbuminuria group.

Statistical Analysis

Data was analyzed using Microsoft excel 2007 and SPSS trial version 16.0. Prevalence of microalbuminuria and awareness about diabetes were expressed as percentage values at 95% Confidence Level (CL) with Confidence Interval (CI). Z test (test for proportions) was used to compare awareness between normal and microalbuminuria groups, males and females. Chi-square (χ^2) test was used to assess

the association between awareness levels of diabetes and microalbuminuria. Probability (*P*) value less than 0.05 was regarded as statistically significant.

RESULTS

Results were divided into different groups based on microalbumin value and gender [Table 1]. Average awareness about glycemic control and complications is 28% at 95% CL; CI: 5.19. Prevalence of microalbuminuria is 48% at 95% CL; CI: 5.76. Awareness levels are 34% in normal cases and 25% in microalbuminuria cases. Awareness levels are 32% in males and 19% in females. Lack of awareness is statistically significant in microalbuminuria cases [Table 2]. Lack of awareness is statistically significant in females [Table 3]. There is statistically significant association between lack of awareness and microalbuminuria [Table 4].

Table 1: Awareness in different groups with gender wise division.

	Normal Cases (n=149)								Microalbuminuria Cases (n=138)							
	Male (n=104)				Female (n=45)				Male (n=79)				Female (n=59)			
	Yes		No.		Yes		No.		Yes		No.		Yes		No.	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
HbA1C	29	(28)	75	(72)	6	(13)	39	(87)	12	(15)	67	(85)	4	(7)	55	(93)
Microalbuminuria	13	(13)	91	(87)	4	(9)	41	(91)	7	(9)	72	(91)	2	(3)	57	(97)
Retinopathy	35	(34)	69	(66)	7	(16)	38	(84)	22	(28)	57	(72)	13	(22)	46	(78)
Neuropathy	58	(56)	46	(44)	10	(22)	35	(78)	25	(32)	54	(68)	16	(27)	43	(73)
Cardiac Complications	59	(57)	45	(43)	17	(38)	28	(62)	34	(43)	45	(57)	22	(37)	37	(63)
Average	39	(37)	65	(63)	9	(20)	36	(80)	20	(25)	59	(75)	11	(19)	48	(81)

Table 2: Comparison of average awareness between normal cases and microalbuminuria cases.

	Normal Cases	Microalbuminuria Cases	Z Value	P Value
Aware = n (%)	51 (34)	28 (20)	2.64	0.008*
Total (n)	149	138		

Table 3: Comparison of average awareness between males and females.

	Males	Females	Z Value	P Value
Aware = n (%)	59 (32)	20 (19)	2.37	0.018*
Total (n)	183	104		

Table 4: Association between lack of awareness and microalbuminuria.

	Normal Cases	Microalbuminuria Cases	Total	χ^2 Value	P Value
Aware = n	51	28	79	6.98	0.008*
Not Aware = n	98	110	208		
Total	149	138	287		

* P value < 0.05 – statistically significant.

DISCUSSION

The present study shows that overall awareness about glycemic control and complications is low (28%) in the study population compared to previous study in metro population(41%).⁶ Lack of awareness results in lesser chances of detecting microalbuminuria at early stages, which may be responsible for finding lower levels of awareness in microalbuminuria cases. Dependence on others for periodical testing and lower education background may be responsible for lower levels of awareness levels in females.

Prevalence of microalbuminuria is high (48%) compared to previous population based study (27%) in India.³ Kidney disease in type 2 diabetes can have relatively mild symptoms for quite some time before diagnosis is made. The earliest known manifestation of diabetic kidney disease is presence of microalbuminuria.⁷ Awareness at the level of physician is important in detection of microalbuminuria. But in developed countries of European Union microalbumin

in urine was measured in 33.9-42.5% of diabetic patients treated by a diabetologist.⁸ This shows that physician’s awareness is incomplete about consequences of microalbuminuria.⁸ In developing country like India the numbers are further less with only 26% of diabetic patients are advised to undergo microalbumin test in metro populations according to doctor’s perception.² Patient’s awareness of microalbuminuria was low when compared to disease state like hypertension.⁹ Only less than 2% of the patients in metro cities felt that microalbuminuria test was advised to them.² This clearly shows the gap between doctor’s perception and patient’s perception and lack of awareness at both doctor and patient level about microalbuminuria.

Awareness about glycemic control and HbA1C is only 18% in the study population, and is very low when compared with metro population (33%).² Lack of standardization of HbA1C testing procedures has limited the regular use of HbA1C to monitor glycemic

control.² Awareness about HbA1c and glycemic control is very much important because it is well established that HbA1C is a strong predictor of complications of Diabetes Mellitus.

With the increased prevalence of microalbuminuria and lack of awareness about glycemic control and complications, diabetic kidney disease could be the leading cause of morbidity in urban and rural population. This underscores the statement by International Society of Nephrology (ISN), International Federation of kidney Foundations (IFKF) and International Diabetes Federation (IDF) about the importance of diabetic kidney disease with a slogan – 'Act now or pay later'.¹⁰ As India leads the world in number of diabetic patients and with the projected number of nearly 80 million by 2030, there is strong need for a public health policy to deal with diabetes and its complications.¹¹ Other wise developing economy like India is going to lose its productivity. The present expenditure of 5-25 % of the family income on Diabetes, will increase further due to the complications of Diabetes.¹²

The limitation of the present study is measurement of microalbuminuria in a single urine specimen. A second measurement to confirm microalbuminuria may result in marginal decrease in the prevalence. Higher sample size is required to improve precision.

Further evaluation of these cases is required to study the correlation of other variables like education, economic status, age, duration of diabetes, HbA1C and blood pressure with microalbuminuria.

CONCLUSION

The study reflects the high prevalence of microalbuminuria and lack of awareness in urban and rural population of type 2 diabetes mellitus in Rajahmundry. Awareness levels are low in microalbuminuria cases. Awareness levels are low in females. Microalbuminuria is associated with lack of awareness about glycemic control and complications in known cases of Type 2 diabetes Mellitus. Mass awareness campaigns and implementation of strict protocols are required to prevent, recognize and counter microalbuminuria and to reduce the burden on the society.

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Ethical Clearance Institutional Ethics committee clearance was obtained for the study.

Source of Funding: Authors have not received any grant for the present study.

Conflicts of Interest: There are no conflicts of interest in the present study.

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Etomidate is Rapid Acting and has Good Cardiovascular and Respiratory Stability than Thiopentone Sodium

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ABSTRACT

Background: The ideal intravenous induction agents will provide hypnosis, amnesia, analgesia, muscle, relaxation without undesirable cardiac and respiratory depression and pleasantly induce anaesthesia in one arm brain circulation time and completely wears off in a few minutes.

Aims: To study the onset of action, Hemodynamic changes and untoward effects.

Method: This clinical study was conducted in 60 ASA grade I and II. All the patients were premedicated with inj fentanyl 2µg / kg and Inj. Glycopyrolate 0.01 mg / kg. The patients were divided into 2 groups. The 't' group was induced with Inj. Thiopentone 5 mg / kg and group 'e' was induced with Inj. Etomidate 0.3 mg / kg. The induction time, hemodynamic changes and adverse effects were studied in both the groups.

Statistics: Percentage, t-test and p-values.

Results: Induction time was faster in Etomidate group when compared to thiopentone group, Haemodynamic changes like systolic blood pressure was significantly raised in thiopentone group and there was minimal changes in Etomidate group compared to the thiopentone group after intubation. Mean heart rate was also increased in thiopentone group compared to the Etomidate group. The incidence of apnoea was more with thiopentone than Etomidate group.

Conclusion: We conclude that Etomidate is an effective and rapid acting induction agent with good cardiovascular stability and respiratory stability. Its side effects can be reduced to minimum by proper premedication with suitable intravenous anaesthetic techniques.

Keywords: Thiopentone, Etomidate, Onset, Haemodynamics, Adverse effects

INTRODUCTION

Induction agents are integral in the performance of general anaesthesia. They provide amnesia, blunt sympathetic responses and can improve intubating condition.¹ An intravenous drug that produce rapid onset of hypnosis without adverse effects on the

respiratory and cardiovascular systems would be appreciated by anaesthesiologists. Such a drug would fill an existing gap in our current armamentarium of anaesthetic induction.²

There has always been a search for an ideal intravenous induction agent, thiopentone has been the routine induction agent since 1930's because of its rapid onset and predictable action. The main drawbacks are cardiovascular and respiratory depression, increased incidence of laryngospasm, bronchospasm, allergic reaction. Thiopentone has survived the test of time as an intravenous anaesthetic drug.³

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The research for a better inducing agent which has good control of hemodynamic changes during intubation like Etomidate have been tried with varied success. The Etomidate was introduced into clinical practice in 1972. Its properties include hemodynamic stability, minimal respiratory depression, cerebral protection and rapid recovery. The fast onset of anesthesia and high therapeutic index for cardiovascular side effects are helpful during a rapid sequence induction.⁴

Out study allows evaluation of Etomidate in comparison with thiopentone sodium as an induction agent.

MATERIALS AND METHOD

After obtaining institutional ethical committee approval and informed consent we studied 60 ASA I – II of patients aged 15-60 years, undergoing elective surgery under general Anesthesia. Patients with known neuromuscular disease or history of hypersensitivity to drugs or receiving medication known to influence neuromuscular function were excluded.

Patients were allocated randomly to one of two groups (n = 30 in each) to receive thiopentone (t-group) or Etomidate (e-group) as the I.V. induction agent.

In the operating room all patients were positioned and a conventional four lead ECG was attached on arrival in the anaesthetic room and lead 2 displayed continuously. An automatic blood pressure cuff was attached to one arm and an indwelling cannula inserted into a vein in the other arm for drug administration. Infusion was started and continued throughout the procedure.

Prior to the induction of anaesthesia all patients were pre-medicated with injection fentanyl 2 microgram per Kg and Inj. Glycopyrolate 0.005 – 0.01 mg per kg 10 minutes before induction. Patients were preoxygenated with 100% oxygen for 3 minutes. The induction was either Inj. Etomidate 0.3 mg/kg (group – E) or Inj. Thiopentone 5 mg / Kg .(Group T) administered I.V. over 20 seconds. The patient was asked to count aloud from the beginning of the injection and to report any discomfort at the injection site or in the arm. The induction time was judged by recording the time from the start of the injection to the cessation of counting.

Following induction, patients breathed 67% Nitrous oxide in oxygen. The occurrence of apnoea lasting more than 10 seconds was noted. The presence or absence of the eyelash reflex at one minute after completion of the injection was recorded. Patient was intubated with appropriate size endotracheal tube after relaxing with inj. succinylcholine / choline 2 mg / kg. Anaesthesia was maintained with 33% oxygen + 67% Nitrous oxide + Non depolarizing muscular relaxation (Vecuromium 0.05 mg / kg). At the end of surgery when the patient had good respiratory efforts was reversed with injection Neostigmine 0.05 mg / kg + Inj glycopyrolate 0.01 mg / kg and extubated.

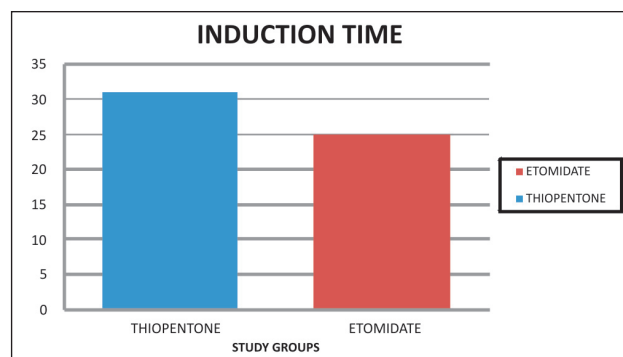
Statistics

All the values are presented as the mean (SD) unless and otherwise stated. Statistical analysis was done using t-test and p-values between the groups. p value < 0.005 was considered significant.

RESULTS

A clinical study of 60 patients belonging to ASA grade I or II undergoing ENT, orthopedic and Abdominal surgeries under general anesthesia were done.

There was no significant difference between the two groups with regard to weight, age or the distribution of males and females.



After premedication, the heart rate showed no significant change in both the group 't' and 'e' that was not statistically significant.

Following induction, heart rate increased in Etomidate group and there was a decrease in heart rate in thiopentone group.

And after intubation there was a significant increase in heart rate in thiopentone group compared to etomidate group. This was statistically significant. ($p \leq 0.005$) (Table 1)

Table 1: Comparison of heart rate in the two study groups

Time of assessment	Thiopentone Mean±SD	Etomidate Mean±SD	t value	P value
Pre induction				
1 Min	79.4±18	86.2±17.7	1.57	0.22*
3 Min	79.8±21	85.7±19.3	1.4	0.31*
5 Min	78.8±19	85.2±21	1.8	0.11*
Induction				
1 Min	82±19	87.9±17	1.33	0.43*
2 Min	81.5±22	90.3±23	1.9	0.10*
3 Min	80±20	91±21	1.7	0.2*
Post intubation				
1 Min	105±24	84.7±19	3.04	0.004**
2 Min	102±23	84.5±15	3.9	0.003**
3 Min	97±19	83±17	4.32	0.005**

*Not Significant

**Significant

The respiratory rate decreased slightly in both the groups after the premedication and after induction. There was decrease in respiratory rate in thiopentone group but there was not much change in etomidate group. The respiratory rate was fixed after the intubation in both the groups.

Systolic blood pressure and diastolic blood pressure were recorded at 1, 2 and 3 min. There was a fall in both Systolic blood pressure and diastolic blood pressure in thiopentone group at 1 min and 2 minute.

In Etomidate group there was very minimal change in both systolic blood pressure and diastolic blood pressure. In both group, it was not statistically significant $p > (0.005)$.

After the intubation, there was significant increase in both systolic and diastolic blood pressure in thiopentone group. Whereas, there was minimal change in Etomidate group. $P < 0.005$ which was found to be statistically significant. (Table 2 & 3)

Table 2: Comparison of Systolic blood pressure in the two study groups

Time of assessment	Thiopentone Mean±SD	Etomidate Mean±SD	t value	P value
Pre induction				
1 Min	115±25.6	114±25.7	0.17	>0.05*
3 Min	115±23	115±24.3	0.23	>0.05*
5 Min	114±19	115±22.6	0.82	>0.05*
Induction				
1 Min	113±23	117±25	1.2	>0.05*
2 Min	114±22	116±24	0.9	>0.05*
3 Min	111±21	116±21	1.7	>0.05*
Post intubation				
1 Min	132±21	118±24	3.65	<0.05**
2 Min	133±24	118±23	3.9	<0.05**
3 Min	131±25	116±25	4.8	<0.05**

*Not Significant

**Significant

Table 3: Comparison of Diastolic blood pressure in the two study groups

Time of assessment	Thiopentone Mean±SD	Etomidate Mean±SD	t value	P value
Pre induction				
1 Min				
3 Min	75.5±15.4	74±17.7	0.07	>0.05*
5 Min	73.6±15	73±16	0.65	>0.05*
	73±15	74±16	0.8	>0.05*
Induction				
1 Min	71±15	74±17	0.98	>0.05*
2 Min	70±14	75±16	1.49	>0.05*
3 Min	70±15	75±16	1.43	>0.05*
Post intubation				
1 Min	87±17	77±17	3.94	<0.05**
2 Min	87±19	76±16	3.76	<0.05**
3 Min	85±18	74±19	3.32	<0.05**

*Not Significant

**Significant

Pain at the site of injection was more noted in Etomidate group (33%) than thiopentone group. Apnoea occurred more frequently in thiopentone group (87%) compared to the Etomidate group (10%). The post operative complication like nausea and

vomiting were low in the thiopentone group (10%) when compared to Etomidate (16%). Myoclonus was more in Etomidate group (27%) than thiopentone group. (Table 4)

Table 4: Adverse effects recorded in the two study groups

Adverse effects	Thiopentone group (N=30)Number (%)	Etomidate group (N=30)Number (%)
Pain on injection	0(0)	10 (33)
Apnea	26 (87)	3 (10)
Nausea-vomiting	3 (10)	5 (16)
Myoclonus	0 (0)	8 (27)

Yates corrected Chi square: 6.5, d.f:3, P <0.05

DISCUSSION

In this study a randomized clinical comparative evaluation of Inj. Thiopentone 5 mg / kg (group t) and Inj. Etomidate 0.3 mg/kg (group e) was done.

According to our study, the time of induction with Inj. Etomidate was 25±3.2 sec and with Inj. Thiopentone was 31±3.4 sec. The induction time with Etomidate was significantly shorter than thiopentone which was statistically significant. S.C. Shah et al⁵ showed Etomidate to have a fast and smooth induction of anaesthesia and time was 20 seconds . These results were consistent with our study results. Batra R.K⁶ et al showed the similar onset time of induction as with our study. John M. Gooding² et al explained the faster

induction time of Etomidate to be because of rapid distribution and short elimination time. This study also explained that Etomidate has a large volume of distribution (160 lt) and high plasma clearance of 1600 ml / min resulting in a relatively short elimination half life of about 70 minutes and rapid distribution from blood into Central Nervous System with substantial tissue uptake.

Apnoea

Following administration of drug in both the groups , there was significant decrease in respiratory rate in thiopentone group when compared to Etomidate group. Apnoea occurred more frequently in Thiopentone group than Etomidate group. Batra⁶

et al, Jeffery⁷ et al, M.M. Ghonem⁸ et al and S.S. Korgaonkar⁹ et al observed the similar findings.

Hemodynamic changes

After premedication

After premedication with inj. Fentanyl and Inj. Glycopyrolate 10 min before induction. There was statistically insignificant difference with regard to heart rate, respiratory rate and blood pressure after premedication in our study. These findings were similar to studies conducted by C.E. Harris¹⁰ et al and S.C. Shah⁵ et al.

After Intubation : Heart rate : There was increase in heart rate in Thiopentone group compared to the Etomidate group. The heart rate showed marginal increase when compared to the preinduction value in Etomidate group which was statistically not significant. Studies by C.E. Harris¹⁰ et al found Thiopentone to increase heart rate and return to pre induction level just prior to the intubation. John M. Gooding² et al, S.V. Korgaonkar⁹ et al and S.W. Chaudhary¹¹ also reported similar results.

Respiratory Rate : In the Thiopentone groups there was a decrease in respiratory rate at 1,2, and 3 min. The Etomidate group had increase in respiratory rate at 1, 2, 3 min after intubation. S.V. Korgaonkar⁹ et al reported similar findings in his study. Ford S.R.¹² et al found respiratory rate increases by 7.2% after Etomidate and 22% increase with Thiopentone. The respiratory rate was fixed after the intubation in both the groups.

Blood pressure: The commonest response to intubation was an increase in heart rate and blood pressure due to increase in sympathetic activity.

In our study there was significant increase in both systolic and diastolic pressure following intubation in Thiopentone group (p value < 0.005). This was statistically significant. But in Etomidate there was no significant rise in both systolic and diastolic blood pressure. W. Scott Jellish¹³ et al reported a similar study in relation of Etomidate. Jeffery L Giese⁷ et al and Naresh Dhawan¹⁴ et al observed the same finding as our study.

Complications

1) Pain an injection

In the present study, the incidence of pain during injection was higher with Etomidate (33%) and none

in Thiopentone group. Batra⁶ et al, Jeffery⁷ et al., S.U. Korgaonkar⁹, Schou Olesen A¹⁵ and S.L. Chaudhury¹¹ found similar results.

Nausea and Vomiting

Post operative nausea and vomiting in our case was 10% in Thiopentone group and 16% in Etomidate group. Batra⁶ et al, S.V. Korgaonkar¹⁶, Jeffery L⁵, Giese et al found Etomidate to have more nausea and vomiting when compared to Thiopentone.

Myoclonus

In our study 27% of patients has myoclonus than that of the patients in Thiopentone group. Batra et al⁶, Jeffery L. Giese⁷, Desatos P¹⁶ et al and S.C. Shah⁵ also concluded that the patients who were induced with Etomidate had higher incidence of myoclonus.

CONCLUSION

From the present study, it was concluded that Etomidate is an effective and rapid acting induction agent with good cardiovascular stability and respiratory stability. Thus Etomidate can be safe, hemodynamically stable and effective alternative to Thiopentone for the induction.

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Psychiatric Profiles of Alcoholics Admitted in De-addiction Centre Attached to Rural Teaching Hospital

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ABSTRACT

Use of alcohol is a universal phenomenon. In many societies the use of alcohol during the teenage and adult life is very common. For a large number of youth it may signify nothing more than a healthy psychological experiment. Epidemiological data have shown that a substantial minority of lifetime alcohol users (20%-50%) progress to one or more alcohol problems or become alcohol dependent in due course. The social, economic, and health related costs associated with these conditions are enormous

Aims and Objectives: To study the demographic profiles and related details of alcohol dependents. To study the psychiatric co morbidity in alcohol dependents.

Material and Method: Fifty patients who fulfilled the criteria for alcohol dependence syndrome (F10.2) according to International Classification of Diseases (ICD-10)1992 and who gave consent for the study were subjected to a detailed psychiatric interview and assessed on different scales.

Results: 66% of the subjects started drinking between 11-20 yrs. 44% of the subjects had co morbid depressive disorder. 18% had anxiety related illness. 66% had sexual dysfunction. 28% had H/O Anti social activities under the influence of alcohol.

Conclusion: In a country like ours where literacy is low the biggest challenge is to increase the awareness among people regarding the ill effects of the alcohol and providing them with de addiction facilities in rural areas. Educating the target segments to form self help groups in the lines of Alcohol Anonymous which will help in preventing relapses.

Keywords: Alcohol Dependence, Psychiatric co -morbidity, Sexual Dysfunction

INTRODUCTION

Use of alcohol is a universal phenomenon. But the practice and patterns differ from people to people, culture-to-culture and time-to-time. In many societies the use of alcohol during the teenage and adult life is very common. A study conducted by Vijoy K Varma et al in Punjab showed that a majority of alcohol users (78.3%) had their first drink between 14 to 21 years of

age.¹ For a large number of youth it may signify nothing more than a healthy psychological experimentation². Epidemiological data have shown that a substantial minority of lifetime alcohol users (20%–50%) progress to one or more alcohol problems or become alcohol dependent in due course³. The social, economic, and health related costs associated with these conditions are enormous.

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AIMS AND OBJECTIVES

To study the demographic profiles and related details of alcohol dependents

To study the psychiatric co morbidity in alcohol dependents

MATERIAL AND METHOD

Hospital based study. Fifty patients who fulfilled the criteria for alcohol dependence syndrome (F10.2) according to International Classification of Diseases (ICD-10) 19924 and gave consent for the study were subjected to a detailed psychiatric interview and assessed on different scales.

Inclusion criteria

Males between the ages of 18 – 65 years and fulfilling the ICD – 10 diagnostic criteria for alcohol dependence (F10.2).

Exclusion Criteria

Severe withdrawal symptoms, which need intensive medical attention.

Patients with severe physical illnesses warranting close medical supervision.

Tools

- Semi Structured Pro forma for collecting demographic data and details of Alcohol Consumption.
- Socio-economic scale by O.P Aggarwal.
- Alcohol use disorders identification test (AUDIT).
- Hamilton Depressive Rating Scale (HDRS).
- Hamilton Anxiety rating scale (HARS).
- Brief Psychiatric Rating Scale (BPRS).
- Sexual Dysfunction Checklist
- Family Interaction Scale - NIMHANS Scale I-Bhatti (1982).
- Family and Social Integration Schedule - Venkoba Rao (1989).

RESULTS

Table 1: Socio demographic features of alcohol dependents. n=50(%)

Age					Marital status		Religion		
15-25	26-35	36-45	46-55	56-65	Married	Unmarried	Hindu	Muslim	Christian
05(10)	21(42)	19(38)	04(08)	01(02)	43(86)	07(14)	47(94)	03(06)	00(00)
Education						Domicile			
Primary	High	Intermediate	Degree	Uneducated	Rural	Urban	Semi-urban		
05(10)	13(26)	10(20)	16(32)	06(12)	16(32)	25(50)	19(38)		
Type of family						Occupation			
Nuclear	Joint	Student	Household	Unskilled labourer	Skilled labourer	Professional	Business		
34(68)	16(32)	03(06)	06(12)	14(28)	09(18)	12(24)	06(12)		
Socio economic status									
Upper high				High	Upper middle	Lower middle	Poor	Very poor	
05(10)				05(10)	13(26)	08(16)	14(28)	05(10)	

Table 2: Family dynamics of alcohol dependants. n=50(%)

Integration level					
Interaction status					
Well integrated	Moderately integrated	Not integrated	Cordial	Indifferent	Antagonistic
15(30)	21(42)	14(28)	28(56)	17(34)	05(10)
Psychiatric illness in family					
Alcohol abuse			Suicides	Others	Nil
21(42)			04(08)	08(16)	17(34)

Table 3: Alcohol consumption details. n=50(%)

Age at first alcohol use						Preferential pattern of drinking		
≤10	11-15	16-20	21-25	26-30	≥31	Alone	Group	
04(08)	13(26)	20(40)	06(12)	04(08)	03(06)	32(64)	18(36)	
Duration of alcohol dependence (years)				Previous attempts to quit alcohol				
<2	2-4	>5	1	2	3	4	>5	Nil
15(30)	19(38)	16(32)	07(14)	12(24)	05(10)	07(14)	04(08)	15(30)
Previous admissions in de addiction centers						RTAs under influence of alcohol		
Yes		No				Yes	No	
08(16)		42(84)				17(34)	33(66)	
Anti social activities under influence of alcohol					Suicide attempts under influence of alcohol			
Yes		No				Yes	No	
14(28)		36(72)				04(08)	46(92)	

Table 4: Psychiatric morbidity among alcohol dependents (%)

Depressive disorder	Anxiety disorders	Psychosis
44%	18%	Nil
Sleep disorders	Sexual dysfunctions	
58%	66%	

DISCUSSION

Socio-Demographic Features

In the present study 80% of the sample belong to the age group of 26 – 45 yrs. Abdul Khalid et al (2000)⁵ showed similar results, and so did the study by Anthony et al⁶. 86% of the subjects are married; this is in agreement with the study of A.K.Vohra et al (2003)⁷. Most of the subjects are educated and the result is comparable to both the studies done by Abdul Khalid et al (2000)⁵ and Anthony et al. When compared with the study of A.K.Vohra et al (2003)⁷ that was done by in a government tertiary care center 56.6% were from rural background whereas in the current study 50% are from urban background. Most of the subjects in the present study are laborers while study of Vijoy.K.Varma et al¹, which was conducted in both urban and rural areas of Punjab, however showed mainly Business / Agriculture as occupation. In the current study and as well as studies done by Abdul Khalid et al⁵ and Anthony et al⁶ majority are from middle socio-economic status with similar percentage.

Alcohol consumption

66% of the subjects started drinking between 11 – 20 yrs. The results are comparable with study done by Vijoy.K.Varma et al¹. Subjects who tried to quit alcohol previously were 70% in this study and A.K.Vohra et

al⁷ showed similar results.16% of the subjects had undergone de addiction treatment previously, but the study of A.K.Vohra et al⁷, which was conducted in a tertiary care centre of an urban area showed 46.66%, It can be explained in the light of better awareness of urban people. 34% of the subjects gave H/O RTAs under the influence of alcohol, But G.D.Costa et al⁸ showed less number of RTAs under the influence of alcohol. It may be the result of increase in road traffic in recent years.8% of the sample have attempted suicide under the influence of alcohol which is in line with study by Ulrich W.Preuss et al⁹. Anti social activities under the influence of alcohol were 28% in this study; G.D.Costa et al⁸ reported 37.4% in his study.

Co- morbidity

The prevalence of depressive disorder was found to be 44%. The results are comparable with those of Abdul Khalid et al⁵, A. K. Vohra et al⁷.18% of study population were found to be suffering from Anxiety disorders. This was found to be lot more than J.Venkateshan et al¹⁰ study, which was done in an urban teaching hospital, It only suggests poor coping and stress management in rural population. Sexual dysfunction was noted in 66% of the sample which was reflected the same in Arackal et al¹¹. Alcohol causes disturbed sleep this was reflected both in the present study (58%) and study done by Annie Mc Cloud et al¹².

CONCLUSION

As the future belongs to youth, the motto should be to catch them young in schools and inculcate good values into them. Educating the target segments to form self-help groups in the lines of Alcohol Anonymous that will help in preventing relapses. In a country like ours where literacy is low the biggest challenge is to increase the awareness among people regarding the ill effects of the alcohol and providing them with de addiction facilities in rural areas. If implemented the required help would reach out to a wider section of the society. Stringent legislation to prohibit free availability of liquor will go a long way in addressing the problem of alcohol abuse. In fact this was the view held by Mahatma Gandhi, our father of the nation

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Conflict of Interest: None.

Study Funding: None

Ethical Issues: Institutional ethical clearance was obtained for the study. Confidentiality of participant's personnel information was maintained throughout the study.

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A Qualitative Study of Newborn Care Practices among Mothers in a Rural Setting

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ABSTRACT

Introduction: The first 48 hours after birth is the most crucial period in the life of an infant as the risk of death is highest during this period. The problem is more profound in rural areas of India as most deliveries are conducted at home with poor environmental conditions and unhealthy newborn practices.

Methodology: The present research work is a community based field study done in Bisrakh block of district Gautam Budh Nagar. The study conducted in all the villages of two randomly selected sub-center areas each from two randomly selected PHC field areas of Bisrakh Block, Gautam Budha Nagar, U.P.

Observations: 14% newborns did not cry immediately after birth, requiring resuscitation; 22% newborns were clothed within 6 hours of birth; breastfeeding started within one hour of birth among 11% newborns; 86% of newborns delivered at home were given pre-lacteal feeds; colostrum given to 34% of newborns and 26% of newborns were exclusively breastfed. **Conclusions:** Newborn care practices in deliveries conducted at home are far from ideal, it is of paramount importance that practical strategies involving behavioral change communication should be adopted in order to realistically reduce neonatal mortality in Rural India.

Keywords: *Newborn Care, Practices, Rural*

INTRODUCTION

In India, especially in rural areas newborn care practices are far from the norms suggested by the various maternal and child care programs. In India 61.3% of all infant deaths occur within the first month of life. The risk of death is the greatest during the first 24-48 hours after birth. The problem is more acute in rural areas where expert obstetric care is scarce, and the home environmental conditions in which the baby is born are usually unsatisfactory.

In India, stillbirths are seldom registered and most studies on perinatal mortality are hospital based. Although a good start in life begins well before birth, it is just before, during and in the very first hours and days after birth that is most at risk¹. Three quarters of

neonatal deaths happen in the first week, the highest risk of death being on the first day of life.

Rural-urban and socio-economic differences are important determinant of perinatal mortality. The perinatal mortality in rural area is 41 while in urban area 24 per thousand births². India presents many problems for both health care providers & recipients, which are linked to capacity of health care systems, socio-cultural perceptions of stakeholders & availability of effective interventions to manage the problem³. Although being newborn is not a disease, large numbers of children die soon after birth: many of them in the first four weeks of life (neonatal deaths), and most of those during the first week (early neonatal deaths). For every baby who dies in the first week after birth, another is born dead (fetal deaths or stillbirths).

Causes and determinants of neonatal deaths and stillbirths differ from those causing and contributing to post neonatal and child deaths ⁴.

This study was conducted to study the newborn care practices in a rural population; role of various health functionaries in promoting healthy newborn care practices and factors affecting it. In India over two-thirds of deliveries occur at home⁵, reflecting both the traditional notion that child bearing is not an event worthy of medical attention².

METHODOLOGY

The present study is a community based field study undertaken to study the Newborn Care Practices among mothers in a Rural setting. The study was

carried out in mothers who delivered during study period in the study area. This research work was conducted in District Gautam Buddha Nagar of Uttar Pradesh. Bisrakh block of this district, selected to represent the rural area of UP because of feasibility and convenience. Study was completed in one year including the development of study tools, collection of data, analysis and presentation of findings. From the list of one block PHC and five additional PHCs, two PHCs were selected randomly. From each PHC, two sub-centers were selected randomly. All the villages under each of the four randomly selected sub centers were included for study. Mothers, who delivered live or stillborn, within last two months in all these villages. Data was analyzed using Epi. Info. Version 6.04.

OBSERVATIONS:

Table 1: Practices regarding resuscitation of newborn of newborn

Characteristics		N=115	
		No.	%
Cry	Immediately	99	86
	Delayed	9	7.8
	After long time	2	1.7
	Did not cry	5	4.3
Cyanosis	Yes	10	8.7
	no	105	91.3
*Resuscitation	Slapped on the back/feet	9	7.8
	Above and mouth to mouth respiration	4	3.5
	Nothing done	3	2.6

*Resuscitation practices only of those cases where new born did not cry immediately.

Out of eleven newborns with delayed cry nothing was done in three who subsequently cried spontaneously. Eight newborns were slapped on the back and feet, three of these failed to respond and then mouth to mouth respiration was given.

Five of the new born did not cry at all and the TBAs tried to resuscitate by slapping on the back in all five and also mouth to mouth respiration in two cases but the newborn were stillbirth according to the information given during in-depth interview. The cyanosis was seen in 8.7% of newborns.

Table 2: Practices related to prevention of hypothermia in newborns

Characteristics		N=115	
		No.	%
What was done immediately after birth	Given bath	88	76.6
	Cleaned and wrapped in clothes	22	19.1
	Don't Know	5	4.3
Bathing time	Immediately(within 1 hour)	77	66.9
	1-6 hours	2	1.7
	6-24 hours	7	6
	1-2 days	16	13.9
	After 2 days	9	7.8
	Not applicable	5	4.3

Table 2: Practices related to prevention of hypothermia in newborns (Contd.)

Characteristics		N=115	
		No.	%
Clothing time	Immediately(within 1 hour)	3	2.6
	1-6 hours	22	19.1
	6-24 hours	22	19.1
	1-2 days	28	24.3
	After 2 days	35	30.4

Fire was kept at the door step of the room in 31.9% of the cases.

Table 3: Distribution of breast feeding practices

Time of Initiation of breastfeeding		n=165	
		No.	%
Initiation of breastfeeding	Within 1hour	19	11.0
	1-6 hours	51	29.7
	6-24 hours	30	17.4
	1-3 days	50	29.1
	After 3 days	12	7.0
	Not given	3	1.7
Colostrum	Given	109	66
	Not given	56	34
Prelacteal feed	Given	116	70.3
	Not given	49	29.7
Exclusive BF	Given	43	26%

Prelacteal feed was given to 70.3% of the newborns. Forty three percent of them were given *ghutti* made by *gur*, sugar or *batasha* dissolved in water to follow by honey in 12.2%. Artificial milk was given in 5.8% (mostly in hospital deliveries) and animal milk in 3.5%. Animal milk and *gutti* both were given in 2.3% of cases. Plain water and tea were also given in 1.2% each

Knowledge of mothers about Breast feeding practices

Initiation of breast feeding: On interview it was found that 79.4% of mothers had knowledge about breast-feeding. They knew that they should start breast feeding as early as possible preferably in first hour but only 11% could start within first hour.

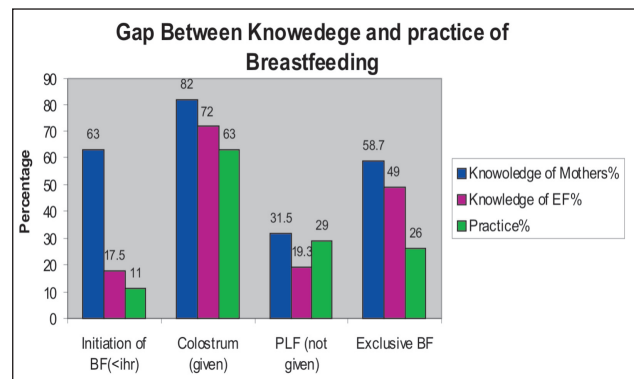
Reason for delayed breastfeeding

The mother having knowledge could not start breast feeding because elderly female/mother in-law did not allow in 20.3% of cases and because of the custom in 18 %. According to 14.5% mothers they were told by others that breast milk secretion starts on third day so did not put the newborn to the breast. Other reason for delayed breast feeding were due to caesarian section in three, shifting of three newborn to nursery because of being sick and rest considered it to be bad day to start breastfeeding and many of the

above believed that feeding should be started when stars shine in the sky.

Reason for not giving colostrum

Colostrum was not given to 16.3% of newborns because mother in-law/elderly female did not allow mothers, customs was the cause in 5.8 %, ignorance in 4.1% and absent milk secretion in 4.7%. There were three new born who were shifted to nursery and three mother who because of having caesarian section done, delayed the breast feeding and could not give colostrum to the newborn.



Gap between Knowledge and practices of breast feeding

Considering the time of initiation of breast feeding knowledge of mother and mother in- law/elderly female was 63% and 17.5% respectively whereas practice of breast feeding the newborn within first hour was only 11%. The reasons for delayed breast feeding are given in

Knowledge of giving colostrum to the newborn among mothers and mother in-law /elderly female was

82% and 72% respectively while colostrum was given to 63% of the newborns. The reasons for not giving colostrum are given above.

Knowledge of not giving prelacteal feed was low among both mothers (31.5%) and mother in-law (19.3%) but, in spite of low level of correct knowledge about prelacteal feed it was practiced in 29%.

Table 4: Practice of giving prelacteal feed in relation to place of delivery

Place of delivery	Prelacteal feed				Total	
	Given		Not given		No	%
	No	%	No	%		
Home	96	86.5	15	13.5	111	67.3
Hospital	20	37	34	63	54	32.7
Total	116	71	49	29	165	100

Above table clearly shows that practice of giving PLF was more among home deliveries (86.5%) then the institutional deliveries (37%).

Knowledge of exclusive breast feeding was higher in mothers (58.7%) then mother in-laws or elderly female (49%). Exclusive breast feeding was practiced by 26% of mothers only.

Birth weight

There were 34.9% new born weighed and the birth weight of rest was not known. The mothers were asked about the size of the newborns whose weight was not known. Out of these 112 new born with unknown weight, 71 were normal size, 39 were small in size as perceived by them, of these two very small. Two newborns were large in size.

Among the hospital deliveries, 19.3% of the newborn were less then 2500 gm while in home deliveries 33.9% said that the born was small in size which can be taken as proxy for LBW, in the absence of birth weight. On asking the reasons for not taking weight it found that 49(42.6%) mothers thought that it was not important, 27 (23.4%) showed their unawareness about weighing of newborns while according to 14 (12%) it was not good. Unavailability of weighing machine was the reason in 22(19%) of the deliveries for not recording weight.

DISCUSSION

Effect of CSSM can be seen with knowledge of clean practices in mothers, which was better then the level of mother in-law / elderly female except for

knowledge about clean cut, which was higher in mother in-law (97.4%). Gap between knowledge and practice was not much except for clean cord tie where knowledge of mother and mother in-law was 72% and 44.4% respectively but practice was just 29.6% indicating a large gap. Mothers had good knowledge of washing of hands (99.2%), clean surface (95.6%), and use of new blade for cutting the cord. The thread used for tying the cord was not boiled in72% being the negative finding and also the application of antiseptic ointment or powder (33%), ghee/ oil (31.3%) and turmeric in (1.7%). Only 29.6% did not apply anything to the umbilical stump. Though there is a positive change in care of umbilical stump from the use of cow dung and ash, but the belief that something should be applied on has to be countered by proper information. The practices of five clean were better then found in study by Deoki Nandan in western UP⁶ and also in the study by Das Gupta in West bengal⁷ Clean practice regarding application on umbilical stump in hospital delivery was 50.9% then 29% in home delivery. Among the practices of five clean by traditional birth attendant. It was found that at times they used gloves which were not boiled before use. They were repeatedly using same gloves many times in subsequent deliveries with out properly disinfecting them. They just washed them with soap and water. One of the TBA also used scissors at times. It was not boiled always and at times they cleaned it with spirit before cutting the cord. So in totality, effective clean practices are much lowers then shown by data. All the five practices were used in only2.3% showing the large gap between knowledge and practice.

Another negative finding was irrational use of oxytocin during labour to enhance the delivery in 73.9% of home delivery conducted by Traditional birth attendant. They also used it for induction of labour. In one case of intra uterine death oxytocin was used by intravenous infusion home by TBA because at hospital they were explained about the risk of caesarian section. It was mostly given by local practitioner called by TBA. Two of the TBA also used it in drip at times. Injection of tetanus toxoid to the mother and the newborn was not very common but has to be discouraged. Similar finding was also reported by D. Singh⁸. It is a scientific fact that oxytocin injection is not required and also not given as a routine in all women in labour. This drug has to be used in titrated doses as an intravenous drip. Two units are given by infusion over four to eight hours. During this process fetal heart rate has to be continuously monitored. The documented effects of overdose of oxytocin can cause 1. Rupture of uterus leading to death of mother and baby 2. Obstructed labour causing death of the baby and accordingly death of mother too 3. Decreased heart rate of the baby leading to hypoxia and death of the baby

The information campaign for promotion of clean practices during delivery and also the discouragement of the harmful practices should be directed not only towards mothers but also to the mother-in-law / elderly female, TBA and local practitioner.

CONCLUSION

Newborn care practices in deliveries conducted at home are far from ideal in rural India; it is of paramount importance that practical strategies involving behavioral change communication should be adopted in order to realistically reduce neonatal mortality.

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Risk-Disposing Habits of Lowback Pain amongst Welders and Panel Beaters in Owerri, South-East Nigeria

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ABSTRACT

Objective: Low back pain (LBP) incidence among craftsmen is relatively high. This study assessed the risk disposing habits of LBP among metal workers in Owerri, South-east Nigeria.

Study design: A prospective cases-control study design

Method: From August 15th to September 30th, 2012, a surveillance exercise was carried out. 50 cases and 50 non-cases were matched from the identified cases and non-cases. Frequency matching was done. Data analysis was done using descriptive and inferential statistics of chi square and 2by2 contingency table.

Results: Habits of alcohol consumption (OR = 2.45, CI = 1.10 - 5.47; $p < 0.03$), awkward posture at home (OR = 6.12, CI = 2.46- 15.33; $p < 0.001$) were significantly associated with lowback pain. However, habits such as sleeping late, having multiple sex partners, sex frequency, diet, smoking and exercise were not significantly associated with LBP (OR < 1, $p > 0.05$).

Conclusion: The incidence of lowback pain is associated with some risk disposing habits.

Keywords: Low Back Pain, Metal Worker, Welders, Panel Beaters, Cigarette Smoking, Alcohol Consumption

INTRODUCTION

Lowback pain (LBP) being the most common musculoskeletal problem in the work place¹, is a major cause of work- related disability², which is associated with major costs in terms of health resource usage, worker disability and absenteeism³. Lowback pain is the most prevalent musculoskeletal condition and the most common cause of disability in developed nations⁴. Furthermore, the economic, societal and public health effects of LBP appear to be increasing.

Sanya et al⁵ found point and 12 - month prevalence of LBP among industrial workers in a major south-west Nigeria city to be 59.7% and 59.5% respectively. The lifetime prevalence of LBP in developed countries

is reported to be up to 85%⁶. The relative contributions of physical and psychological risk factors to the occurrence of back disorders and back pain remain inconsistent in the literature. Prevention programs frequently focus on the recognized biomechanical factors, workload and organizational issues with minimal or no effort at identifying and controlling the risk disposing habits⁷.

Presently, there is dearth of data on the relationship between habits and incidence of LBP especially among this group of worker - the metal worker, in Nigeria. These groups of craftsmen/workers in our environment often bend/stoop to work. They are thus predisposed to having lowback pain. The primary aim of this study is to determine the risk disposing habits that may contribute or promote the occurrence of low back pain amongst welders and panel beaters.

METHOD

From August 15th to September 30th 2012, a study was conducted into the population of welders and

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panel beaters in Owerri South-east, Nigeria. Owerri is the capital of Imo State and is set in the heart of the Igbo-land. Owerri consists of three Local Government Areas (Owerri Municipal, Owerri North and Owerri West). It currently has a population of over 400,000 and is approximately 40 square miles (100 km²) in area. It is bordered by the Otamiri River to the east and the Nworie River to the south. It occupies the area lying between coordinates 5.484°N and 7.035°E.

A 6-week surveillance exercise was conducted during which cases and non-cases were identified. The non-cases served as the controls. A simple random sampling was used to select 50 cases and 50 non-cases from identified cases and non-cases. Frequency matching was done. After informed consent was obtained, interviews using structured questionnaire were conducted with the help of trained field research assistants. The Questionnaire was prepared in English and it has three sections. Section A focused on socio-demographic information such as age, marital status etc. Section B sought answer to question on LBP history such as present and past lowback history and section C focussed on personal habits such as usual sleeping time, sleeping posture etc, of respondents. Lowback pain case was defined as pain or discomfort in the lowback area between twelfth rib and gluteal fold (lower 1/3 of the back) with or without pain in one or both legs lasting one day or longer or strong enough to make the worker absent from work, in their life time. The control had no history of lowback pain that met the above definition.

The questionnaire was assessed for content and face validity. It was reviewed by two clinical researchers

and two lecturers (one was an epidemiologist) who are knowledgeable in questionnaire design and development to ensure good face and content validity, with clear, unambiguous question. Confidentiality of information was maintained throughout the study. This research was conducted in compliance with the Helsinki Declaration.

Data was analyzed using SPSS computer software version 17 (SPSS, Inc., Chicago, IL). Both descriptive statistics of mean, standard deviation, frequency and Inferential statistics of chi square and 2 by 2 contingency table were used for analysis. The p-value was set at 0.05.

RESULTS

Presented in Table 1 is the summary the socio-demographic characteristics of the respondents. The mean age of respondents was 35.19 years (+/-8.976) with the youngest worker aged 19 years and the oldest aged 58 years. The mean duration of practice was found to be 8.25 years (+/- 4.353). Presented in Table 2 is the relationship between lowback pain and various habits of the welders and panel beaters in Owerri. The findings of this study showed respondents who consume alcohol were more than 2 times more likely to have LBP (OR = 2.45; CI = 1.10 - 5.47; p = 0.03). Those who do not engage in organized exercise were almost 2 times more likely to develop lowback pain compared to those who do not (OR = 1.79; CI = 0.80 - 4.01; p = 0.11). No association was found between usual sleeping time and occurrence of lowback pain.

Table 1: Socio-demographic characteristics of panel beaters/welders in Owerri

General characteristics	Response	Percentage (%)
Age (Years)	16-29	5
	30-39	42
	40-49	44
	50-59	9
Gender	Male	100
	Female	0
Marital status	Single	38
	Married	62
Work Experience (years)	0-5	15
	>5	85
Educational level	Low	3
	High	97
Body mass index kg/m ²	<19	1
	19-25	73
	26-30	22
	>30	4

Table 2: Odds ratios for LBP in relation to risk-disposing habits among welders/panel beaters in Owerri

Habits	Response	Total (n)	Proportion %	p-value	Odd Ratio OR	95% CI
Do you smoke?	No	40	57.5		1.00	0.27 – 1.36
	Yes*	60	45	0.15	0.61	
No of cigarette stick (per day)	0	40	57.5		1.00	0.22 – 1.16
	1-5*	57	42.1	0.07	0.51	
	>5*	4	75	0.48	2.09	
Organized exercise	Yes	41	41.6		1.00	0.80 – 4.01
	No *	59	55.9	0.11	1.79	
Intensity of exercise	Low	21	33.3		1.00	0.57 – 7.06
	High *	10	50	0.22	2.00	
Sleeping time (pm)	9-11	96	50.5		1.00	0.06 – 16.12
	<9*	2	50	0.75	0.98	
	>11*	2	50	0.75	0.98	
Sleeping duration (hours)	8-Jun	92	50		1.00	0.28 – 6.29
	<6*	7	57.1	0.51	1.33	
	>8 *	1	-		-	
Sleeping posture	Lying with the chest/Side lying	49	51		1.00	4.31 – 8.56
	Lying with the back*	9	66.7	0.31	1.92	
	Unsteady*	40	47.5	0.45	0.87	
Sleeping surface	Hard	7	85.7		1.00	0.02 – 1.29
	Soft*	91	47.2	0.56	0.12	
Usual Working posture at workplace	Sitting to work	-	-			
	Bending/stooping to work*	100	50			
	Squatting to work*	-	-			
	Standing to work*	-	-			
Usual Washing or working posture at home	Sitting to wash/work	61	34.4		1.00	
	Bending/stooping to wash/work*	38	76.3	<0.001	6.12	2.46 – 15.33
	Squatting to wash/work*	-	-		-	-
	Standing to wash/work*	-	-		-	-
Do you consume alcohol?	No	49	38.8		1.00	1.10 – 5.47
	Yes*	51	60.8	0.03	2.45	
Consume alcohol (bottles/Day)	0	49	38.8		1.00	0.71 – 10.72
	1-3*	40	60	0.04	2.37	
	>3*	11	63.6	0.14	2.73	
Have sex partner	No	-				
	Yes *	100				
No. of sex partner	1	13	53		1.00	0.35 – 1.25
	>=2 *	87	23.1	0.04	0.26	
Sex frequency (/ week)	1-3	93	50.5		1.00	0.16 – 3.46
	>=4*	7	42.9	0.5	0.73	
Extra activities	No	14	42.9		1.00	0.45 – 4.37
	Yes*	86	51.2	0.57	1.4	
Diet habit	Good	10	80		1.00	0.04 – 1.09
	Poor *	90	46.7	0.04	0.22	
Foot wear	Low heeled	96	47.9	0.1	1.00	0.61 - 48.40
	High heeled*	4	83.3		5.44	
Analgesic consumption	Nil	2	45.5			0.28 – 285.5
	Regularly *	10	90	0.38	9.00	0.35 – 13.75
	Occasionally*	88	50	0.76	0.83	

* =exposure factor . Odd ratio (OR) was obtained following 2 by 2contingency odd ratio analysis

DISCUSSION

An important finding from this study is that only 2% of the sampled population had no formal educational background. This showed the possibility of relatively high literacy level among metal workers in Owerri South-east Nigeria. However it is left to be explored if this high literacy level translates into good knowledge of health promotion and disease prevention among this population including lowback pain prevention.

This study finding showed association between smoking and occurrence of LBP. From this study, the association found between smoking more than 5 sticks of cigarette per day and occurrence of LBP (OR=2.09, CI= 0.20-21.91, p=0.48) compared to non-smoker was not statistically significant. Al-Dubai *et al*⁸ in their study of the prevalence and determinants of lowback pain found significant association between smoking and occurrence of LBP. Alkherayf and Agbi⁹ found LBP proportion to be higher among daily smokers (23.5%) compared to 15.7% recorded among non-smokers. However, the findings of Tomita *et al*¹⁰ who studied risk factors for LBP among seafood workers showed no significant association between smoking and LBP. Sanya and Ogwumike¹¹ found no significant association between smoking and occurrence of LBP (p = 0.96).

In this present study, an association was found (OR = 1.79) between participating in regular exercise and occurrence of LBP. This however was not statistically significant (p>0.05). Nagasu *et al*¹² in their study also found significant association between exercise and LBP occurrence. Vieria *et al*⁷ found that not doing exercise increases the chance of having LBP by 2 times (OR = 2.00). However, Sanya and Ogwumike¹¹ found no significant relationship between doing exercise or not and occurrence of LBP (p = 0.96).

The findings of this study showed there was statistically insignificant association between short sleep (<6hours daily) and occurrence of LBP compared to 6 to 8 hours daily sleeping hours. Short sleep was reported to be a risk factor for LBP in previous studies by Nagasu *et al*²³. Miranda *et al*¹³ concluded in their study that occupation loading, health behavior and sleep disturbance are predictors of LBP. However the finding of Tomita *et al*¹⁰ showed no significant association between sleep duration and LBP occurrence. Also according to this study finding, there

was no association between usual sleeping time and the occurrence of LBP; usual sleeping surface and occurrence of LBP. Association was found between usual sleep posture and the occurrence of LBP. Sleeping with back (face up) increases the risk of developing lowback pain by 1.9 times. Back care experts including Physiotherapists often recommend that patients (though not in all cases) or even healthy individuals endeavour to sleep face down or with sides as sleeping face up could predispose them to have LBP.

As for the usual posture of washing and / or working at home, bending to wash/work at home was significantly associated with occurrence of lowback pain. Habitual bending/stooping to wash at home increases the risk of developing lowback pain by 6 times (OR = 6.12, CI = 2.46- 15.33, p = <0.001). Lotter *et al*¹⁴ in their meta analysis and Gheldof *et al*¹⁵ have shown in their studies that awkward posture increases the possibility of having lowback pain (OR = 1.68). Those who consume alcohol were more than 2 times more likely to develop LBP. The odd ratio increases with higher dose of alcohol. Miyamoto *et al*¹⁶ also found significant association between LBP and alcohol consumption. Tomita *et al*¹⁰ in their study of seafood workers of Thailand found no significant association between alcohol consumption and occurrence lowback pain. The association found in this study between frequent consumption of analgesic and occurrence of lowback pain was not statistically significant. Those who consume analgesic regularly were 9 times more likely to develop lowback pain compared to those who don't take. Regularly consuming analgesics tend to mask the feeling of pain thereby promoting the progression of the original cause of the pain without due attention for repair or possible curative intervention. The finding of this study showed that no significant association was found between having more than one sex partner and occurrence of LBP (OR = 0.26). Furthermore, no association was found between frequency of sexual bout/week and occurrence of lowback pain (OR = 0.73). Also no association was found between poor diet habit and occurrence of lowback pain (OR = 0.22). The general hypothesis in this environment is that engaging in frequent and / or uncontrolled sexual activities lead to occurrence of LBP. This study finding could not support the hypothesis. This study did not however look into how long an individual might have been involved in sexual activities and its possible impact on LBP experiences.

The lack of significance for some of the habits may probably be an indication that they are not serious factors to be considered in acute/sub-acute experience (incidence) of lowback pain. They may however be very important factors in Chronicity of lowback pain or chronic lowback pain. Unlike many other non-communicable diseases which are often not curable and hence prevalence is always considered, lowback pain could be acute or sub-acute with possibility of a total cure depending on the cause and type of care received. Hence we can talk of both incidence and prevalence for low back pain. One limitation of this study is our inability to compare the effect of duration of habits and age at onsets of habit to the occurrence of lowback pain. Another limitation is the limited time set aside for the surveillance exercise. Future study may consider the effect of duration of habits among the craftsmen to the occurrence of lowback pain.

CONCLUSION

The findings of this study showed varying association between some risk disposing habits of panel beaters/welders and occurrence of lowback pain. The findings showed the necessity for preventive measures focusing on habits. The result showed the possibility of reducing the burden of LBP by appropriate training and improvement in habits such as avoidance of alcohol intake, bad sleeping postures, high heeled foot wears, adopting good back posture while washing/working at home and participating in organized exercise.

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Awareness about Cervical Cancer and its Risk Factors among Students of a Women's College in Davangere, Karnataka

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ABSTRACT

Objective: To find out the level of awareness about cervical cancer and its risk factors among the students of women's college in Davangere

Settings and Design: This cross-sectional study was conducted for a period of 2 months (6th January to March 6th 2012) among 307 students of a Government first grade women's college.

Methods and Material: A self-administered, semi-structured questionnaire was applied to assess the various components of awareness about cervical cancer and its risk factors. Statistical analysis used: Descriptive Statistics and chi Square test using SPSS Version 16.0

Results: About 118 (38%) of the students had heard of cervical cancer and among them about 21% mentioned the causative agent as Human Papilloma Virus; only 9% had heard about use of Pap smear test; about 52% were aware of the availability of vaccine for prevention; majority had below average awareness level in terms of age and place of residence (below 20 years 75% and above 20 years 81%) and (76% of the rural respondents and 79% of the urban respondents) respectively.

Conclusions: Majority of the students were unaware of cervical cancer and its risk factor and among those who were aware the knowledge regarding the risk factors was found to be low. Hence as a matter of concern it needs a responsible effort to improve the awareness in them.

Keywords: Awareness, Cervical Cancer, Pap Smear

INTRODUCTION

Cancer of the cervix is the second most common cancer in women worldwide, with about 500,000 new cases and 260,000 deaths each year. Almost 80% of the cases occur in the low income countries where cervical cancer is the most common cancer in women. Virtually all cervical cancer cases (99%) are linked to genital infection with Human Papilloma Virus (HPV) which is the most common viral infection of the reproductive

tract. Cervical cancer also ranks 2nd most frequent cancer in women 15 & 44 years of age as well as women of all ages in Asia.¹

In India, of all the cancers that infect women, cervical cancer outnumbers its counterparts by a mile. More women in India are dying from cervical cancer than breast cancer.² Cervical cancer is the single largest killer of middle aged women in India. India bears about one fifth of the world's burden of cervical cancer.³ A WHO study reveals that every year 132,082 women are diagnosed with this particular kind of cancer and 74,118 die from the disease. The growing risk of cervical cancer in women (0-64 years) in India is 2.4% compared to 1.3% for the world. Human Papilloma Virus (HPV) is the main and necessary cause for this cancer. The risk factors for it being, having sex at an early age; having multiple sexual partners;

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multiple pregnancies; use of birth control pills for 5 or more years and consuming tobacco.⁴The key to reduce cervical cancer morbidity & mortality is establishing awareness regarding cervical cancer and its risk factors among women and early detection and treatment of cervical precancerous lesions.⁵A regular Pap smear can detect the disease at an early stage and a surgery can prevent an untimely death. But in India, despite the grim reality that eight women die every waking hour to cervical cancer, only 5% to 6% of them who are more than 35 years take the diagnostic test. It is important to note that cervical cancer detected at a precancerous stage is 100% curable.⁶

Hence primordial and primary prevention strategies through health education approach need to be focused to improve awareness. So, with all the above information about cervical cancer in view the present study was conducted to understand the prevailing knowledge regarding the disease, its prevention and control among female college students who will be the future mothers of the community.

Objective: To find out the level of awareness about cervical cancer and its risk factors among the students of women's college in Davangere

Materials and methods:

Study design: A Cross sectional observational study.

Duration of the study: 2 months (6th January to March 6th 2012)

Participants: Students of Government First Grade Women's College in Davangere.

Statistical analysis used: Descriptive Statistics and chi Square test using SPSS Version 16.0

METHODOLOGY

A self-administered, semi-structured questionnaire was designed to evaluate their basic awareness on cervical cancer. There are 3 first grade women's college in Davangere. The college for the present study was selected by simple random sampling. All the students present in the college on the day of the study were included in the study. A total of 307 students gave consent for the study. Permission to approach the students was obtained from the college authority after explaining the objectives of the study.

The questionnaire, in its first part included information on age, study stream, place of permanent residence, family income and family size. Remaining part of the questionnaire contained questions regarding awareness of cervical cancer and its risk factors, Pap smear test and Human Papilloma Virus vaccine.

All the students answered the questionnaire voluntarily and independently in their class rooms, Interns assisted them in completing the questionnaire. Under the supervision of Interns, the questionnaire was completed and collected. There were 15 questions, administered to assess the awareness of cervical cancer. Of which if the respondent scored < 50 %, she was considered to have below average awareness level and those who scored > 50% was considered to have above average awareness level regarding cervical cancer.

Ethical clearance

The study was approved by Institutional ethical committee of SSIMS & RC Davangere

RESULTS

Table 1: Distribution of students according to socio-demographic characteristics (n= 307)

Characteristics	Classification	Frequency(%)
Age (in years)	< 20	197(64)
	20 & above	110(36)
Study stream	B.A	178(58)
	B.Com	78 (25)
	BBM	48 (16)
	B Sc	03 (1)
Place of permanent Residence	Rural	134(44)
	Urban	173(56)

Table 1: Distribution of students according to socio-demographic characteristics (n= 307) (Contd.)

Characteristics	Classification	Frequency(%)
Family income per person / annum	Upto 2000	141(46)
	2000 – 4000	150(49)
	> 4000	013 (4)
	Un answered	003(1)

Mean age of the students was 19.18± 1.25 years. Majority of the students were from Arts stream accounting for 58% followed by commerce & BBM accounting for 25% & 16% respectively. About 56% of

the students were from urban area. Most of the students were having family income of below 4000 rupees per person per annum. Only 1% of the students left this question unanswered.

Table 2: Distribution of students according to awareness regarding cervical cancer (n= 307)

Knowledge	Response	Frequency (%)
Heard of cervix cancer (n= 307)	Yes	118(38%)
	No	189(62%)
Heard of Pap smear test (n= 118)	Yes	11(9%)
	No	107(91%)
Aware of HPV vaccination (n= 118)	Yes	61(52%)
	No	57(48%)

Out of 307 students only 118 (38%) had heard of cervical cancer. Proportion of the students among 118 who had heard of Pap smear test was only 11 (9%)

students. However 61 (52%) of the 118 students were aware of the availability of vaccine for prevention of cervical cancer.

Table 3: Distribution of students with respect to awareness regarding risk factors of cervical cancer (n = 118)

Knowledge	Answer	Number (%)
Awareness of HPV as a causative agent	Correct	25(21%)
	Incorrect	93(79%)
	Correct	67(57%)
Usual age of occurrence	Incorrect	22(19%)
	Don't know	29(24%)
Sexually active at early age can cause cervical cancer	Yes	52(44%)
	No	25(21%)
	Don't know	41(35%)
Marriage at an early age is a risk factor for cervical cancer	Yes	39(33%)
	No	37(31%)
	Don't know	42(36%)
Smoking causes cervical cancer	Yes	82(70%)
	No	16(14%)
	Don't know	19(16%)
Low consumption of fruit/vegetable can cause cervical cancer	Yes	34(29%)
	No	49(42%)
	Don't know	35(29%)
Use of intra-uterine device is a risk factor for cervical cancer	Yes	28(24%)
	No	18(15%)
	Don't know	72(61%)
Hereditary factor	Yes	29(24%)
	No	68(58%)
	Don't know	21(18%)

Table 3: Distribution of students with respect to awareness regarding risk factors of cervical cancer (n = 118)
(Contd.)

Knowledge	Answer	Number (%)
	Having sex with multiple partners	Yes
	No	25(21%)
	Don't know	42(36%)
Poor personal hygiene related to cervical cancer	Yes	71(60%)
	No	20(17%)
	Don't know	27(23%)
Use of birth control pills for longer duration	Yes	47(40%)
	No	10(08%)
	Don't know	61(52%)
Having multiple pregnancies	Yes	12(10%)
	No	59(50%)
	Don't know	47(40%)
	Total	307(100%)

Of the 118 students who had heard of cervical cancer only 21% mentioned the causative agent as Human Papilloma Virus. About 57% of the students were aware of the usual age of occurrence of cervical cancer and 44% of the students reported that sexual activity at an early age may be a risk factor for cervical cancer. Marriage at an early age as a risk factor for cervical cancer was reported by 33% of the students.

Majority (70%) of the students recognised smoking as a risk factor and 29% mentioned low consumption of fruits and vegetables can be a risk factor for cervical

cancer. About 15% of the students recognised the protective effect of Intra uterine devices.

Awareness about role of hereditary factor as a risk of cervical cancer was present in 24% of the students and 43% of the students reported that having multiple sexual partners is a risk factor for cervix cancer. About 60% of the students were aware that poor personal hygiene is related to cervical cancer. Awareness about use of birth control pills for longer duration as a risk factor was present in 40% of the students. Only 10% of the students were aware that multi-parity is a risk factor for cervical cancer.

Table 4: Awareness level of cervical cancer among students based upon socio-demographic characteristics

Variable	Awareness Level		Total	P value
	< 50%	> 50%		
Age of the students				
< 20 years	46(75%)	15(25%)	61(100%)	0.638
20 years and above	46(81%)	11(19%)	57(100%)	
Place of Residence				
Rural	34(76%)	11(24%)	45(100%)	0.789
Urban	58(79%)	15(21%)	73(100%)	
Study Stream				
B.A	65(76%)	20(24%)	85(100%)	0.385
B.com	15(75%)	05(25%)	20(100%)	
BBM	12(92%)	01(8%)	13(100%)	

Vast majority of the students i.e.75% of the students in the age group of below 20 years and 81% students in the age group of above 20 years had below average level awareness regarding cervical cancer. This difference of awareness in terms of the 2 age groups was not found to be statistically significant (P value > 0.05)

According to place of residence 76% of the students from rural area and 79% of the students from urban area were having below average awareness level regarding cervical cancer. There was no statistically significant association between place of residence and awareness level which suggests that rural as well as urban females do not differ in the knowledge regarding cervical cancer.

Among B.A students, 76% had below average awareness level. About 75% and 92% of the students belonging to B.com and BBM study stream respectively had below average awareness level about cervical cancer. Even according to study stream the awareness level was below average in majority of the students. There was no statistically significant association between study stream and awareness level.

DISCUSSION

In our study about 38% of the students had heard of cervical cancer and the awareness of Human Papilloma Virus (HPV) as a causative agent was found in only 21% of the students whereas in a study by Joy T et al. 66% of the students were found to have awareness regarding cervical cancer and 49% were aware of HPV as a causative agent.³In a study by Saha A et al. awareness about HPV as a causative agent was found in 15% of the students.⁵

In our study 57% of the students knew the usual age of occurrence whereas in a study by Saha A et al. it was about 43%.⁵Knowledge about multiple sex partners as a risk factor was found in 43% of the students whereas it was only 3 % in a study by Saha A⁵ et al. & 40% in a study by Teresa Joy et al.³ Sexual activity at an early age was recognised as a risk factor by 44% of the students and in a study conducted by Joy T et al. it was found to be 26.1%.³

About 29% of the students reported low consumption of fruits and vegetables can be a risk factor for cervical cancer whereas in a study by Saha A et al. 12% recognised it as risk factor.⁵Smoking as a risk factor was recognised by 70% of the students whereas in a study by Saha A et al. it was about 29% and in a study by Joy T et al. it was found to be 31.8%.³

Hereditary factor as a risk factor for cervical cancer was reported by 24% of the students whereas in a study by Joy T. et al it was only 5.1%.³Poor personal hygiene was recognised as risk factor by 60% of the students whereas in a study by Saha A et al. 14% of the students identified poor personal hygiene as a risk factor.⁵In our study only 9% of the students have heard of Pap smear test. Similar result was found in a study by Saha A et al. where only 11% had heard about Pap smear test.⁵The results of our study and that from other

studies too suggest that the awareness about cervical cancer among the college students appears to be at a lower level. Many of the students have not heard the word cervical cancer which suggests that the students are lacking the basic knowledge of the disease which is so much prevalent in the community and also awareness level about the risk factors of cervical cancer is also low among those who had heard of cervical cancer which is also a matter of concern.

Recommendations: Health education programs in colleges and in community will help in creating awareness about cervical cancer and its risk factors. Female students at college are the vulnerable group for cervical cancer and also they can serve as most important source of information in educating and bringing awareness about cervical cancer in the community.

Limitations: The study was carried out in only one women's college in the city; hence caution needs to be applied before generalizing the results to entire population.

Conflict of Interest: Nil

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A Retrospective Study of Fasting Plasma Glucose Cutoffs against Post Prandial Plasma Glucose

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ABSTRACT

Background: The reduction of the fasting plasma glucose cutoff for diagnosis of diabetes to 126 mg/dl in 1997 improved the sensitivity of the test, but still many diabetic cases diagnosed by the standard 75 grams 2 hour post load plasma glucose were being missed. In the Indian population, it has been suggested that the cutoff should further be lowered to 118mg/dl. Studies to verify this have been few as the oral glucose tolerance test is cumbersome to perform.

Laboratory data on fasting and post prandial plasma glucose is abundant. Hence our study tested different fasting plasma glucose cutoffs against the 2 hour post prandial plasma glucose instead of the standard 75 grams post load plasma glucose.

Method: 1497 test reports of fasting plasma glucose and postprandial plasma glucose were retrospectively analysed by ROC and cross tabulation.

Results: The fasting plasma glucose cutoffs of 118mg/dl showed sensitivity 87.72%, specificity 75.79%, PPV 60.74%, NPV 93.53%, accuracy 79.36%, LR+ve 3.62, LR-ve 1.16 and false positive rate 24.27%. Percentage of subjects diagnosed diabetic by the FPG cutoffs 140mg/dl, 126mg/dl and 118mg/dl were 24.9%, 33.8% and 43.2% respectively.

Conclusions: Lowering the fasting plasma glucose to 118mg/dl improved the sensitivity of the test. However, the variability in the meals of the subjects resulted in higher false positive rate, lower LR +ve and lower specificity.

Keywords: Fasting Plasma Glucose, Post Prandial Plasma Glucose, Sensitivity, Specificity, Positive Predictive Value, Negative Predictive Value

INTRODUCTION

The fasting plasma glucose cutoff value of 140mg/dl for the diagnosis of diabetes recommended first by the National Diabetes Data Group¹ and then by World Health Organisation² was criticized for its sensitivity³. The American Diabetes Association (ADA)

Expert Committee on the Diagnosis and Classification of Diabetes Mellitus⁴ reduced this criteria in 1997 to ≥ 126 mg/dl to increase the sensitivity of the test. This revised criteria was later accepted by World Health Organisation (WHO)⁵.

The two hour post load plasma glucose following a load of 75grams of glucose orally is considered the gold standard in the diagnosis of diabetes mellitus. In 1997, the ADA Expert Committee⁴ recommended that the FPG cut off 126mg/dl alone may also be used for epidemiological studies as it was believed that this reduced criteria corresponds well with the 2 hour post load plasma glucose level of 200mg/dl. However, it acknowledged that even after revising the FPG cut off level, many cases of diabetes may still be missed.

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The revised FPG cutoff was based on epidemiological studies on Pima Indian, Egyptian, Pacific Islander, US adults and other western data⁶⁻⁹. Thereafter, studies were also carried out in the East Asian population¹⁰. In India, such studies have been few, particularly considering that the prevalence of diabetes is high here¹¹. The number of diabetics in India is projected to increase from 39.7 million in 2000 to 79.2 million in 2030¹². The studies reporting rising prevalence of diabetes in India have mostly been in the South Indian population¹³, while same has been rare in Central India, where our institute is located.

A three year retrospective study by Mohan et al¹⁴ in the South Indian population reported that while 46.7% were diagnosed diabetic by the 2 hour post load glucose criteria, only 31.7% of the same cohort were diagnosed diabetic by the revised FPG criteria. It recommended that the optimum cutoff for FPG should be further reduced to 118mg/dl for Indian population.

The Oral Glucose Tolerance Test (OGTT) with 75 grams load of glucose is ideal but cumbersome to perform, limiting the number of studies. In clinical practice, the two hour post prandial plasma glucose (2PPPG) is routinely done along with FPG due to their convenience. Our study attempted to use the laboratory data of FPG and 2PPPG to compare how different FPG cutoffs fared against 2PPPG.

MATERIALS AND METHOD

This study was carried out retrospectively analysing 1497 FPG and 2PPPG test results obtained from the laboratory data of the last one year of our medical college hospital in Bhopal, Central India. These subjects had come 2 hours after a meal for the 2PPPG test. Venous blood samples collected in fluoride oxalate bulb were used for glucose estimations which were carried out using Biosystems Glucose oxidase / Peroxidase kits on Biosystems A25 automated analyser. Permission of institutional ethical committee was obtained for the study vide letter no. LNMC/Dean/2013/14.

Correlation coefficient of FPG with 2hPPPG levels was calculated. Distribution of subjects into 2PPPG < 200mg/dl and 2PPPG ≥ 200mg/dl were described according to sex and age groups (young, middle aged & old). Distribution of subjects into 2PPPG < 200mg/dl and 2PPPG ≥ 200mg/dl were also described in three different FPG cutoff levels; ≥ 140mg/dl, ≥ 126mg/dl and ≥ 118mg/dl. In different ranges of FPG from

100mg/dl to 139mg/dl with 8mg/dl intervals, mean 2hPPPG values were calculated.

Using Receiver operating characteristic (ROC) analysis, the sensitivity and specificity were calculated for each FPG cutoff. Using cross tabulation, the positive predictive value (PPV), negative predictive value (NPV), accuracy (sum of true positives and true negatives divided by the total number of tests), likelihood ratios for positive test (LR+) and negative test (LR-) were determined for FPG cutoff values ≥ 100mg/dl, 110mg/dl, 118mg/dl, 126mg/dl, 133mg/dl, 140mg/dl. Statistical analysis was done by SPSS-16.

RESULTS

The FPG and 2PPPG levels were significantly correlated ($p < 0.001$) with Pearson's correlation coefficient r was 0.847. R square for the scatter plot was 0.718 (Figure 1).

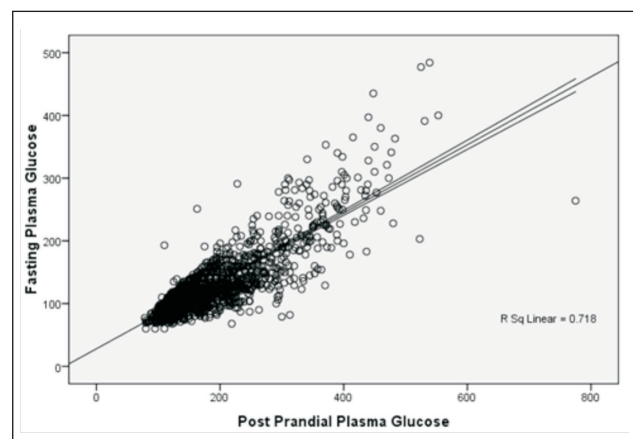


Fig. 1. Scatter plot of Fasting plasma glucose versus 2 hour post prandial plasma glucose

The distribution of subjects according to age group, sex and 2PPPG is shown in Table 1. The subjects were most in the middle aged category (54.9%) and least in the young category (10.6%). Overall, 28.38% of males and 31.84% of females were having 2PPPG ≥ 200mg/dl. In age groups, overall 15.72% of young, 32.44% of the middle aged and 30.29% of the old were having 2PPPG ≥ 200mg/dl.

Distribution of subjects into 2PPPG ≥ 200mg/dl and 2PPPG < 200mg/dl in three different FPG cutoff levels; ≥ 140mg/dl, ≥ 126mg/dl and ≥ 118mg/dl is shown in Table 2. Lowering the FPG cutoff from 140mg/dl to 118mg/dl increased true positives or sensitivity from 66.5% to 87.7%, decreased true

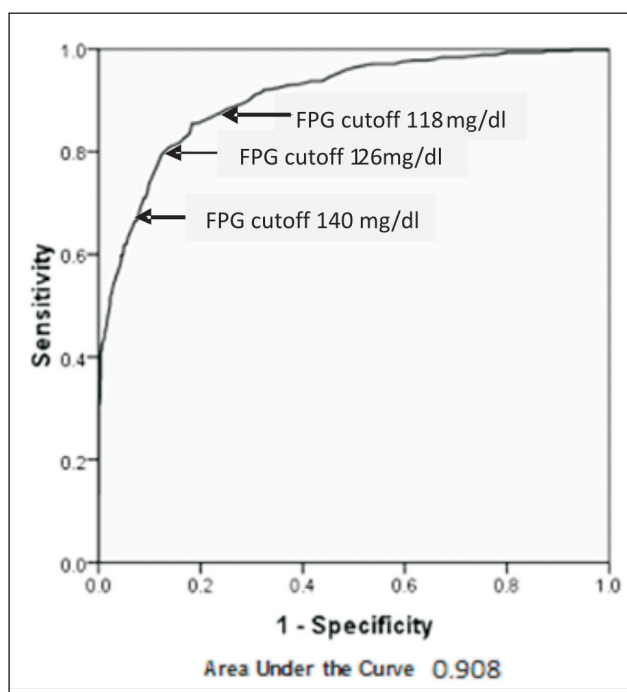


Fig. 2. ROC curve showing sensitivity of different FPG cutoffs

negatives or specificity from 92.9% to 75.8%, increased the false positives from 7.1% to 24.27% and decreased

the false negatives from 33.5% to 12.3%. Overall, the percentage of subjects testing positive by the 2PPPG criteria was 29.92%, while the percentage of same by the FPG cutoffs 140mg/dl, 126mg/dl and 118mg/dl were 24.9%, 33.8% and 43.2% respectively.

Using Receiver operating characteristic (ROC) analysis, area under the curve was 0.908 (Figure 2). The sensitivity, specificity, PPV, NPV, accuracy, LR+ and LR- for different FPG cutoffs is shown in Table 3. The tradeoff on lowering the ADA and WHO recommended FPG cutoff ≥ 126 mg/dl to 118mg/dl as recommended for Indian population increased sensitivity from 80.80% to 87.72%, decreased specificity from 86.27% to 75.79%, reduced PPV from 71.54% to 60.74%, increased NPV from 91.32% to 93.53%, lowered accuracy from 84.64% to 79.36%, lowered LR+ from 5.89 to 3.62, lowered LR- from 0.22 to 0.16.

Mean 2hPPPG in different ranges of FPG from 100mg/dl to 139mg/dl with 8mg/dl intervals is shown in Table no.4. Mean 2PPPG was 204.44 mg/dl in the FPG range of 132-139mg/dl, but in the other ranges of FPG, mean 2PPPG was lower than 200mg/dl.

Table 1. Distribution of subjects according to age group, sex & 2PPPG

Age Groups	SEX	2PPPG < 200mg/dl	2PPPG \geq 200mg/dl
YOUNG(≤ 35 years) n=159 (10.6%)	Male n=79 (49.7%)	n=67 (84.8%)	n=12 (15.2%)
	Female n=80 (50.3%)	n=67 (83.8%)	n=13 (16.2%)
	Total	n=134 (84.28%)	n=25 (15.72%)
MIDDLE AGED(36-60years) n= 823 (54.9%)	Male n=397 (48.2%)	n=273 (68.8%)	n=124 (31.2%)
	Female n=426 (51.8%)	n=283 (66.4%)	n=143 (33.6%)
	Total	n=556 (67.56%)	n=267 (32.44%)
OLD(>60 years) n=515 (34.4%)	Male n=352 (68.3%)	n=253 (71.9%)	n=99 (28.1%)
	Female n=163 (31.7%)	n=106 (65%)	n=57 (35%)
	Total	n=359 (69.71%)	n=156 (30.29%)
TOTAL n=1497	Male n=828 (55.31%)	n=593 (71.62%)	n=235 (28.38%)
	Female n=669 (44.69%)	n=456 (68.16%)	n=213 (31.84%)

2PPPG: 2 hour post prandial plasma glucose

Table 2. Distribution of subjects based on 2PPPG levels in 3 recommended FPG cutoffs

2PPPG level	FPG cutoff 140mg/dl		FPG cutoff 126mg/dl		FPG cutoff 118 mg/dl	
	<140	≥ 140	<126	≥ 126	<118	≥ 118
(2PPPG ≤ 200 mg/dl) n=1049 (70.08%)	974 (92.90%) TRUE Negatives	75 (7.1%) FALSE Positives	905 (86.3%) TRUE Negatives	144 (13.7%) FALSE Positives	795 (75.8%) TRUE Negatives	254 (24.27%) FALSE Positives
(2PPPG ≥ 200 mg/dl) n=448 (29.92%)	150 (33.5%) FALSE Negatives	298 (66.5%) TRUE Positives	86 (19.2%) FALSE Negatives	362 (80.8%) TRUE Positives	55 (12.3%) FALSE Negatives	393 (87.7%) TRUE Positives

Table 2. Distribution of subjects based on 2PPPG levels in 3 recommended FPG cutoffs (Contd.)

2PPPG level	FPG cutoff 140mg/dl		FPG cutoff 126mg/dl		FPG cutoff 118 mg/dl	
	<140	>=140	<126	>=126	<118	>=118
TOTAL n=1497	1124 (75.1%) Total Negatives	373 (24.9%) Total Positives	991 (66.2%) Total Negatives	506 (33.8%) Total Positives	850 (56.8%) Total Negatives	647 (43.2%) Total Positives

FPG: Fasting plasma glucose, 2PPPG: 2 hour post prandial plasma glucose

Table 3. Comparison of different FPG cutoffs on various parameters

FPG cutoff	Sensitivity	Specificity	PPV	NPV	Accuracy	LR +	LR-
100 mg/dl	97.09 %	46.33 %	43.58 %	97.39 %	61.52 %	1.81	0.06
110 mg/dl	92.41 %	64.92 %	52.94 %	95.24 %	73.15 %	2.63	0.12
118 mg/dl	87.72 %	75.79 %	60.74 %	93.53 %	79.36 %	3.62	1.16
126 mg/dl	80.80 %	86.27 %	71.54 %	91.32 %	84.64 %	5.89	0.22
133 mg/dl	71.88 %	90.47 %	76.30 %	88.27 %	84.90 %	7.54	0.31
140 mg/dl	66.52 %	92.85 %	79.89 %	86.65 %	84.97 %	9.30	0.36

FPG: Fasting plasma glucose; PPV: Positive Predictive Value ; NPV: Negative Predictive Value ; LR+/- : Likelihood Ratios for positive/negative tests

Table 4. Mean 2PPPG in different ranges of FPG

Range of FPG	Number of subjects	Mean 2PPPG	Standard Deviation	Standard Error	95% Confidence Interval
100-107 mg/dl	172	146.42 mg/dl	36.62	2.792	140.91-151.93 mg/dl
108-115 mg/dl	153	155.36 mg/dl	35.35	2.858	149.71-161.01 mg/dl
116-123 mg/dl	128	171.23 mg/dl	38.39	3.393	164.51-177.94 mg/dl
124-131 mg/dl	117	189.73 mg/dl	46.38	4.288	181.23-198.22 mg/dl
132-139 mg/dl	55	204.44 mg/dl	51.74	6.976	190.45-218.42 mg/dl

2PPPG: 2 hour post prandial plasma glucose; FPG: fasting plasma glucose

DISCUSSION

The prevalence of diabetes is rising in India and there is a need to carry out more studies on different Indian populations. However, the OGTT being a cumbersome procedure, it is difficult to study a large population using the standard 75grams glucose load. Hence, finding an optimum cutoff of FPG to use it alone or in combination with the more convenient 2PPPG is an option to increase the number of such studies.

The significant correlation between FPG and 2PPPG ($r = 0.847$, $p < 0.001$) in our study compares favorably with studies which used the standard 75grams post load glucose. Clements et al¹⁵ found this correlation coefficient to be 0.71 while Abbasi et al¹⁶ reported it to be 0.86. The 84.6% accuracy (true positives plus true negatives) of our study at FPG cutoff 126mg/dl was almost identical to the 84% reported by Mohan et al¹⁴ in South Indian population using the 75 grams post load glucose. Thus, there was reasonable justification

for using the 2PPPG criteria in place of the standard post load glucose criteria.

Our study found that 29% of the subjects were having 2 PPPG ≥ 200 mg/dl. Mohan et al¹⁴ reported that on giving the standard 75 grams glucose load, 46.7 % subjects were having post load glucose ≥ 200 mg/dl. Their higher yield may have been because their subjects were derived from those attending a diabetes specialties centre in Chennai, South India, while our subjects were from our general hospital in Central India. Likewise in their study, the range of FPG corresponding to a mean 2 hour post load glucose of atleast 200mg/dl was 116-120 mg/dl, while the equivalent range in our study was much higher at 132-139mg/dl. However, in our study the lower detection of diabetics by the 2PPPG criteria could also have been due to the varied glucose load of the patients in their meal. This might have led to a higher false positive rate, decrease of the LR⁺ and decrease of specificity. The specificity of the FPG cutoff at 118mg/dl (75.8%)

in our study was lower compared to that reported by Mohan et al¹⁴ (89 %). The false positive rate was 7.1%, 13.7% and 24.27% at FPG cutoffs 140mg/dl, 126mg/dl and 118 mg/dl respectively. The yield of test positives by FPG cutoffs 140mg/dl, 126mg/dl and 118mg/dl was 24.9%, 33.8 % and 43.2% respectively.

Our study though compared favorably with other studies in the sensitivity of the FPG cutoffs. At 118mg/dl FPG cutoff, the sensitivity of our study was 87.7% compared to 86.7% reported by Mohan et al¹⁴ in the South Indian population. Higher sensitivity (95%) at FPG cutoff 115mg/dl has been reported in the North European Wadena community¹⁵ but that is a more obese population while lower sensitivity (75%) at FPG cutoff 115mg/dl has been reported in the leaner Japanese population¹⁷. At FPG cutoff 126mg/dl, the sensitivity of our study was 80.80% which also compared well with 78% reported by Mohan et al¹⁴ and 83% reported by Ramchandra et al¹³ in the South Indian population. In leaner Chinese population, sensitivity reported at FPG cutoff 126mg/dl was expectedly lower at 57%¹⁸. In our study, lowering the FPG cutoff from 140mg/dl to 126mg/dl increased the yield of test positives by 9% compared to 8% by Mohan et al¹⁴.

In conclusion, our study found that lowering the FPG cutoff to 118mg/dl improved the sensitivity of the test. However, the variability in the meals of the subjects resulted in higher false positive rate, lower LR +ve and lower specificity.

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Conflict of Interest: Nil

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A Clinico-Pathological Study of Solitary Nodule of Thyroid in North Karnataka

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ABSTRACT

Background: Solitary thyroid nodule, defined as a palpable, single clinically detected nodule in the thyroid lobe, is a common clinical entity varying in incidence in different geographical regions. Though often the swelling is noticed accidentally, it may become cosmetically distressing to a patient

Objective: 1.To study the various clinical presentations of solitary nodule thyroid.2.To study the management of solitary nodule thyroid and know the incidence of malignancy in the solitary nodule of thyroid.

Method: All the cases in the department of surgery of district hospital in north Karnataka, which fitted into the definition of solitary nodule of thyroid during the study period of one year were included in the study. About 25 cases of solitary thyroid nodule were admitted and studied All the cases were clinically assessed by taking proper history and performing thorough clinical examination. All the study participants were subjected to investigations like ultrasound, FNAC.

They were differentiated into the benign and malignant swellings and treatment was charted out accordingly.

Results: Most of the participants were in their 3rd decade and many others in the 4th decade. There was a preponderance of females with thyroid nodules in this study with F:M ratio as 23:2. The maximum number of patients (60%) presented within 6 months of the nodule being noticed. Right lobe is the commonest lobe to be involved (64%).

Conclusion: Solitary thyroid nodule occurred predominantly in females (92%) and in the 21-30 years age group (40%). Majority (74%) of the lesions were benign. Papillary carcinoma was the commonest malignancy.

Keywords: Solitary Nodule Of Thyroid, Management, Clinical Presentation

INTRODUCTION

Solitary thyroid nodule, defined as a palpable, single clinically detected nodule in the thyroid lobe, is a common clinical entity varying in incidence in

different geographical regions.⁽¹⁾ Though often the swelling is noticed accidentally, it may become cosmetically distressing to a patient. Less frequently the hyper functioning single nodule may cause hyperthyroidism. Also the major concern relates to the potential malignancy within such a nodule.

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The optimal management of a thyroid nodule continues to be a source of controversy and the operative Intervention recommended by most surgeons is not always considered divine by some

physicians advocating either observation or thyroid suppression.

This basis for this conflict of divergent opinions may stem from the fact that the thyroid nodule undoubtedly has different connotations when considered by the thyroid clinician, thyroid surgeon or the thyroid pathologist. All are concerned with one question and that is the problem of benignancy or malignancy.

The advent of high resolution ultrasound, improved efficacy of FNAC and better understanding of pathology have helped in preoperative identification of the nodule and thus helps in the management of solitary thyroid nodules.⁽²⁾

Thus there is a need to study the various clinical presentations and efficacy of diagnostic investigations and management of solitary thyroid nodules.

It was against this backdrop of importance of solitary thyroid nodules, coupled with lack of studies in this part of India, that prompted us to take up the present study.

AIMS AND OBJECTIVE

1. To study the various clinical presentations of solitary nodule thyroid.
2. To study the management of solitary nodule thyroid
3. To know the incidence of malignancy in the solitary nodule of thyroid.

MATERIALS AND METHOD

All the cases in the department of surgery of district hospital in north Karnataka, which fitted into the definition of solitary nodule of thyroid during the study period of one year were included in the study. About 25 cases of solitary thyroid nodule were admitted and studied. All patients with thyroid swelling other than clinically diagnosed solitary nodule thyroid were excluded from the study. All the cases were clinically assessed by taking proper history

and performing thorough clinical examination. All the study participants were subjected to investigations like ultrasound, FNAC.

They were differentiated into the benign and malignant swellings and treatment was charted out accordingly. Pre-operative evaluation for fitness for surgery was done for all the patients.

Post operative course of the patients was carefully noted till the patient was discharged. All the cases were called for follow up after a week in the OPD and later fortnightly then monthly for review.

The histopathology report was obtained for the final diagnosis. Patient who needed revision surgery as and when indicated by the HPR were referred to higher centers for further management.

Summary figures like rates, proportion and percentage were calculated.

RESULTS

Table 1 : Distribution of study participants according to age, sex and duration of symptoms.

Distribution of study participants according to age		
Age group (years)	Cases	Percentage (%)
<20	01	04
21-30	10	40
31-40	09	36
41-50	03	12
>50	02	08
Total	25	100
Distribution of study participants according to sex		
Sex	Cases	%
Male	2	8%
Female	23	92%
Total	25	100
Distribution of study participants according to duration of symptoms.		
Durations	Cases	%
<1 months	1	4%
1-6 months	15	60%
6-12 months	4	16%
1-2 years	2	8%
>2 years	3	12%
Total	25	100

Most of the participants were in their 3rd decade and many others in the 4th decade. The youngest was 14 year old and oldest was 70 years. There was a preponderance of females with thyroid nodules in this study with F:M ratio as 23:2. The maximum number of patients (60%) presented within 6 months of the nodule being noticed.

Table 2 : Distribution of study participants according to presenting symptoms, location and size of the lesion.

Distribution of study participants according to presenting symptoms		
Symptoms	Cases	%
Swelling	25	100%
Pain	02	08%
Recent increase in size	Nil	Nil
Pressure symptoms	Nil	Nil
Toxic symptoms	Nil	Nil
Distribution of study participants according to location of nodule		
Lobe involved	No. of cases	Percentage
Right lobe	16	64%
Left lobe	07	28%
Isthmus	02	08%
Distribution of study participants according to size of the lesion.		
Size	Cases	%
<3	01	04
3-5	21	84
>5	03	12

All the patients came with the chief complaint of lump in the neck and only 8% had some amount of pain and discomfort attributed to the swelling. Right lobe is the commonest lobe to be involved (64%).

Table 4 : Distribution of study participants according to surgical treatment

Diagnosis	Total	Hemithyroidectomy	Isthmusectomy	Subtotal Thyroidectomy	Total Thyroidectomy
Multinodular goitre	04	04	—	—	—
Benign Nodules	10	09	—	01	—
Follicular Adenoma	05	05	—	—	—
Papillary carcinoma	04	—	—	—	04
Follicular carcinoma	02	02	—	—	—

Surgical procedures undertaken were mainly hemithyroidectomy, subtotal thyroidectomy and thyroidectomy.

DISCUSSION

The solitary thyroid nodule is an entity now referred to by the self-defined term “Clinically isolated swelling of the thyroid” has always remained an

Table 3 : Distribution of study participants according to incidence of malignancy in relation to sex, age and type.

Distribution of study participants according to incidence of malignancy			
HPR	Cases	%	
Malignant	06	24 %	
Benign adenomas	19	76 %	
Toxic adenomas	0	0	
Cyst in the thyroid	0	0	
Distribution of study participants according to incidence of malignancy in relation to sex			
Sex	Total	Benign	Malignant
Male	02	01	1(04%)
Female	23	18	5(20%)
Distribution of study participants according to incidence of malignancy in relation to age			
Age group	No. of malignant	%	
<20	0	0	
20-30	4	16	
30-40	1	4	
>40	1	4	
Distribution of study participants according to incidence of malignancy in relation to type.			
Type	No. of cases	%	
Papillary	04	16	
Follicular	02	08	

Most of the solitary nodules in this study were benign in nature 76 %. The highest incidence of malignancy was in the age group of 20 – 30 years (16%). Papillary carcinoma was the commonest malignancy followed by follicular carcinoma.

Enigma for all thyroid workers. In spite of the extensive literature on this topic some of its part still remain debatable. Controversial issues are under evaluation for conclusive consistent results.

Majority (46%) of study participants were in the age group of 21 – 30 years followed by 31- 40 year age group (36%). The study done by Fenn et al⁽¹⁾, Rao and Rao⁽²⁾, Bhansali et al⁽³⁾ showed similar results. Majority

of participants were females (23 F:2M). This female: male ratio compares well with other studies.

The consistent symptom trait of all patients was the presence of a swelling in the neck as seen also by other workers. The majority of the patients come within the first two years of the noticing the swelling (88%). These patients comprised of the more health consciousness patients coming for cosmeses. No special relationship was found regarding presentation of symptoms and carcinoma. The earliest presentation of symptoms in the present study was twenty days and the latest was ten years. Hence awareness is very important, as early detection of malignancy is essential for better prognosis of the disease.

In the present study, lesions in the right lobe (64%) were 2.5 times higher than the lesions in the left lobe (28%). Similar findings were shown by the study done by Rao and Rao⁽²⁾ (R 68.5% : L 28.6%), G. Messaris et al⁽⁴⁾(R 57.6% : L 36.8%).

According to HPR report, majority of the lesions were benign (76%) in nature and the rest were malignant (24%). Papillary carcinoma was the commonest malignancy followed by follicular carcinoma. Other studies done by Bhansali et al⁽³⁾, Fenn et al⁽¹⁾, Kapur et al⁽⁵⁾, Anantkrishnan et al⁽⁶⁾ had revealed the benign nature of the lesion as 90%, 87.5%, 86%, 84.7% respectively.

All the 25 patients in the present study underwent surgery. All the benign nodules underwent hemithyroidectomy. For all nodular goiter patients were subjected to hemithyroidectomy and one patient underwent subtotal thyroidectomy. 7 patients of follicular neoplasia underwent hemithyroidectomy. All the four papillary carcinoma patients underwent total thyroidectomy. The study done by Fenn et al⁽¹⁾, Nagari et al⁽⁷⁾, Anantkrishnan et al⁽⁶⁾ showed similar findings.

CONCLUSION

Solitary thyroid nodule occurred predominantly in females (92%) and in the 21-30 years age group (40%). Commonest presenting duration of symptom was 1-6 months (60%). Right lobe was involved in majority (64%) of cases and the main presenting complaint was swelling. Majority (74%) of the lesions were benign. Papillary carcinoma was the commonest malignancy. The surgical procedures undertaken were mostly hemithyroidectomy, subtotal thyroidectomy, total thyroidectomy.

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Conflict of Interest: Nil

Source of Funding: Nil

Ethical Clearance: Ethical clearance has been obtained from Institutional ethical committee.

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A Study of Obesity and Associated Factors in a Selected Urban Area of Mysore

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ABSTRACT

Background: Obesity is often defined simply as a condition of abnormal or excessive fat accumulation in adipose tissue, to the extent that health may be impaired. Obesity is often expressed in terms of Body Mass Index (BMI). In the past 20 years, the prevalence rates of obesity have tripled in developing countries that have been adopting a western life style involving decreased physical activity and over consumption of cheap, energy dense food. Although obesity should be considered as a disease in its own right, it is also one of the key risk factors for other non-communicable diseases such as non-insulin dependent diabetes mellitus, cardiovascular diseases, hypertension and cancer. In this study an attempt was made to estimate the prevalence of obesity and to identify the factors associated with obesity.

Objectives: The objectives were to estimate the prevalence of obesity in a selected urban area of Mysore and to identify the factors associated with obesity in the selected study population.

Method: A total of 1551 adults within the age group of 20-60 years constituted the study population. Pregnant women and lactating mothers were excluded from the study. Subjects with BMI ≥ 30 were considered as obese, BMI ≥ 25 -29.9 as overweight (pre obese) and BMI < 25 as non-obese. BMI is defined as weight in kilogram divided by the square of height in meter. Cross-sectional study was done to estimate the prevalence of obesity. Data was collected on certain selected factors such as age, gender, education, occupation, non-communicable diseases like hypertension and diabetes. Height and weight were measured according to the standard procedure and BMI was calculated. Statistical tests used were chi-square test.

Results: Prevalence rates of obesity in relation to selected variables were calculated. Overall prevalence rate of obesity was 6.5% and overweight was 26.2%. Prevalence rate of obesity was; highest in 50-60 years (11.9%), lowest in 20-29 years (1.7%), more in females (10.6%) compared to males (2.4%), low in higher educational status (3.7%) compared to illiterates (6.9%), more in occupation with sedentary type of work (9%) compared to moderate work (1.1%), more in known hypertensives (34.2%) compared to no hypertensives (4.4%) and more in known diabetics (25.6%) compared to no diabetes (5.4%).

Conclusion: Prevalence rate of obesity was 6.5% and overweight was 26.2% and factors found to be associated with obesity/ overweight were age, gender, occupation, diabetes and hypertension.

Keywords: Obesity, Body Mass Index, Factor, Prevalence, Association

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INTRODUCTION

Throughout most of the human history, weight gain and fat storage have been viewed as signs of health and prosperity. Today, however as standards of living continue to rise; weight gain and obesity are posing a growing threat to the health of the people in countries all over the world.¹

In the past 20 years, the prevalence rates of obesity have tripled in developing countries that have been adopting a western life style involving decreased physical activity and over consumption of cheap, energy dense food. The human and financial costs of obesity are also mounting. It has been shown to account for up to 16% of the global burden of disease, expressed as a percentage of disability adjusted life years.²

In India available data on prevalence of obesity from different published studies suggest that prevalence ranged from 10 to 20 percent.^{3,4,5}

Hence a cross-sectional community based study has been undertaken to estimate the prevalence of obesity and to identify the factors associated with obesity.

AIMS AND OBJECTIVES

To estimate the prevalence of obesity in a selected urban area of Mysore and to identify the factors associated with obesity in the selected study population.

MATERIAL AND METHOD

Background information

The study was carried out in the urban field practice area of the Department of Community medicine, J.S.S. Medical College, Mysore. Medar block and Manjunathapura are the areas covered by Urban health centre. In that Medar block was selected randomly.⁶

It was a Cross-sectional community based study conducted over a period of six months. All the adults within the age group of 20–60 years were included in the study. Adults below 20 years and above 60 years and pregnant women and lactating mothers were excluded from the study.

A total of 1551 adults within the age group of 20–60 years constituted the study population.^{7,8}

All the households in the study area, identified by their household number were numbered serially and then a sample of 535 households was drawn using random number table.

Participants satisfying the eligibility criteria of the study were interviewed to get the information on age,

educational status, occupation, and any non-communicable diseases like hypertension, diabetes, and were recorded. Height and weight were recorded and BMI was calculated for each of the individual. BMI is defined as weight in kilogram divided by the square of the height in meter ($BMI = \text{kg}/\text{m}^2$).

RESULTS AND DISCUSSION

Out of 1551 subjects, 780(50.3%) were males and 771(49.7%) were females.

Table 1: Socio-demographic profile of study participants.

Distribution of the subjects according to age	
20 – 29	575 (37.1%)
30 – 39	424 (27.3%)
40 – 49	283 (18.3%)
50 – 60	269 (17.3%)
Total	1551 (100%)
Distribution of the subjects according to education	
Illiterate	317 (20.5%)
Primary and Higher primary	377 (24.3%)
Higher secondary	638 (41.1%)
College	219 (14.1%)
Total	1551 (100%)
Distribution of the subjects according to occupation	
Sedentary work	1072 (69.1%)
Moderate work	479 (30.9%)
Total	1551 (100%)

The overall prevalence rate of obesity was 6.5% and prevalence rate of overweight was 26.2%. In the present study, it was observed that, prevalence rate of obesity increased as the age increases. Prevalence rate was highest (11.9%) in 50–60 years and lowest prevalence rate of 1.7% was observed in the age group of 20–29 years. The difference in the prevalence rates among different age groups was found to be statistically significant (chart 1).^{4,9,10,11,12}

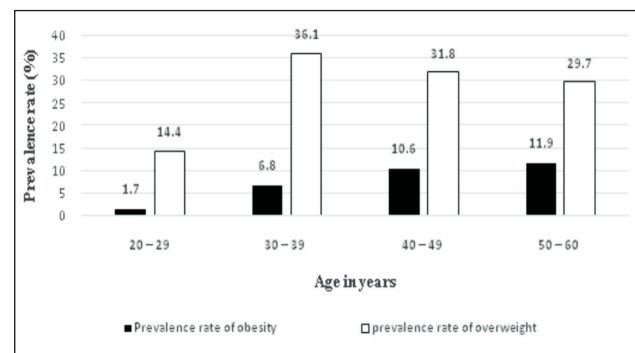


Chart1: Association of overweight and obesity with age

Table 2: Association of overweight and obesity with gender and occupation ^{4, 11, 12}

Gender	No.	Overweight	Obesity
Male	780	228 (29.2%)	19 (2.4%)
Female	771	178 (23.1%)	82 (10.6%)
Total	1551	406 (26.2%)	101 (6.5%)
Test of significance		$\chi^2 = 7.57$; df = 1 ; p < 0.05	$\chi^2 = 42.82$; df = 1 ; p < 0.05
Occupation	No.	Overweight	Obesity
Sedentary work	1072	355 (33.1%)	96 (9.0%)
Moderate work	479	51 (10.6%)	5 (1.1%)
Total	1551	406 (26.2%)	101 (6.5%)
Test of significance		$\chi^2 = 86.49$; df = 1 ; p < 0.05	$\chi^2 = 34.04$; df = 1 ; p < 0.05

It was observed that, prevalence rate of obesity was higher (10.6%) among females compared to males (2.4%). This was found to be statistically significant. Where as prevalence rate of overweight was higher (29.2%) in males compared to females (23.1%). This difference in the prevalence rates was found to be statistically significant (table 2). ^{4, 11, 12, 13}

In the present study, it was observed that, prevalence rate of obesity was low in the higher educational status compared to lower educational status. 3.7% prevalence rate was observed in the group having educational status of college level and prevalence rate of 8% in the group having educational status of primary and higher primary level. However the difference in the prevalence rates of obesity between different educational levels was not statistically significant. ^{10,12,14}

This study also provides information regarding the influence of increased body weight on chronic diseases like hypertension and diabetes. Both hypertension and diabetes were significantly higher among participants who were either overweight or obese (chart2,3). ^{4,12,15,16,17}

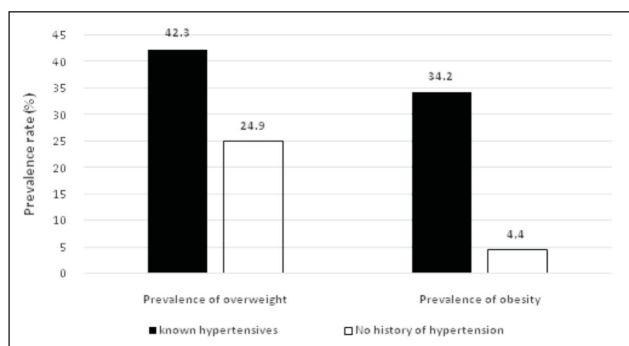


Chart 2: Association of overweight and obesity with hypertension

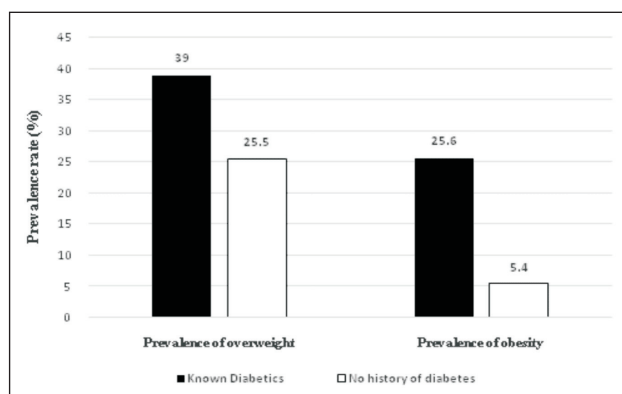


Chart 3: Association of overweight and obesity with diabetes

SUMMARY

A cross-sectional study was carried out in the urban field practice area of the Department of community medicine, JSS Medical College, Mysore. The objectives were to estimate the prevalence of obesity in the selected area and to identify the factors associated with obesity in the selected study population.

The study was conducted over a period of six months with 1551 study participants, which included all the adults within the age group of 20–60 years excluding the pregnant women and lactating mothers. Household was the sampling unit and they were selected by simple random sampling. Data was collected by house to house survey.

- Prevalence rate of obesity was 6.5% and overweight was 26.2%.
- Prevalence rate of obesity and overweight showed an increasing trend with an increase in age. Also obesity was more among females than males and

this was found to be statistically significant. Obesity was significantly associated with those who were having sedentary life style.

- Prevalence rate of obesity was more in those having lower educational status compared to those having educational status of college level and the difference was not statistically significant.
- Prevalence rate of overweight and obesity were significantly higher among participants with hypertension and diabetes.

CONCLUSION

Prevalence rate of obesity in the study population was 6.5% and overweight was 26.2%. Factors which were significantly associated with overweight and obesity were age, gender, occupation, diabetes and hypertension.

- In simple terms, obesity is a consequence of an energy imbalance; energy intake exceeds energy expenditure over a considerable period.
- The 'New World Syndrome' is responsible for disproportionately high levels of morbidity and mortality in newly industrialized countries. Thus, while obesity is viewed by health professionals from a medical perspective, it also needs to be recognized as a symptom of a much larger global social problem.

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Ethical Clearance: We have taken the ethical clearance and consent from study subjects/population also. Study doesn't have any ethical issues as it was a descriptive study.

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A Cross Sectional Study to assess Oxidative Stress, Ceruloplasmin and Physical Activity Status in Healthy Obese Young Adults

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ABSTRACT

Research in obese individuals without co-morbidities is a need of hour. In this study estimation of lipid peroxidation products (TBARS), Total anti-oxidant capacity(TAC), Ceruloplasmin and physical activity score was assessed in obese and non-obese healthy young adults of a urban population in South India with Correlation between the said parameters, and to know whether ceruloplasmin is an oxidant or an anti-oxidant. Study was conducted in 140 healthy young adults, categorised into obese and non-obese (male and female), with BMI > 28 and < 23 respectively. SQUASH questionnaire was filled by the participants to assess their physical activity status. WHR was measured followed by biochemical analysis of TBRS, TAC and ceruloplasmin by standard methods, after Blood pressure , glucose, TSH were found to be normal . Healthy obese and non-obese, aged 22-24 yrs,with BMI , WHR, TBRS, ceruloplasmin, physical activity score increased and TAC decreased, statistically in obese when compared to non-obese. (p<0.05) reflecting inflammatory, and oxidative stress changes .Positive correlation was found between WHR, ceruloplasmin and TBRS, proving ceruloplasmin to be an oxidant, than an antioxidant. Increased physical activity may be the reason for obese yet healthy individuals.

Keywords: Obesity, Oxidative Stress, Ceruloplasmin, Physical Activity Score

INTRODUCTION

Obesity is a complex, multi -factorial disease, caused just not due to genetics, but also due to environmental factors like social, behavioral, cultural, physiological, and metabolic. And also causes for multiple diseases like diabetics mellitus, hypertension, Hormonal imbalances etc. However a group of individuals are obese yet may not develop any complications associated with it. Lot of research in this so called "Healthy obese individuals" is going on in western countries, but no studies in Indian population. Hence study is undertaken in these individuals.

Advances in research since few years help us understand the cause and pathophysiological changes occurring in Obese. Consequence of intense research highlights that Obesity leads to increase in the size of adipocytes, along with the infiltration of the macrophages, leading to a state of inflammation. Into the origin of these pathophysiologies there is imbalance between releasing of free radicals and synthesis of defensive antioxidant capacity systems resulting in oxidative stress. Serious consequences of the oxidative stress include, damage to the lipid, proteins and nuclic acids, leading to lipid, protein and DNA peroxidation ^{1,2}. Measurement of thiobarbituric acid reactive substances (TBARS), even though nonspecific, is commonly used as an indicator of lipid peroxidation and oxidative stress ³. Since many years Antioxidants were estimated individually, as enzymatic and non-enzymatic, then in 1990 a new test which estimated the overall status of the anti-oxidants

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in the body was found by Miller et al, which has been named as Total anti-oxidant capacity⁴. Earlier studies have suggested that obesity is associated with increased oxidant stress^{5,6,7,8,9,10,11,12}, however studies quoted above are done in obesity associated with comorbidities, but whether oxidative stress is due to obesity per se or due to associated co-morbidities is still a query. But in our study we have only considered healthy obese (no co-morbidities), hence we will get to know the direct link between obesity and oxidative stress, so in this study, we have estimated, TBRS, a marker of lipid peroxidation product and TAC.

Ceruloplasmin (Cp) a member of inflammatory response protein is used in clinical practice to measure the degree of inflammation¹³. It is a copper containing alpha 2 glycoprotein with a molecular weight of approximately 151 kDa¹⁴. The known function of CP includes copper transport, iron metabolism, antioxidant defense, and involvement in angiogenesis and coagulation. It has been shown that Cp catalyzes the oxidation of Fe²⁺ to Fe³⁺¹⁵. This activity as ferroxidase is increased during inflammation, infections, and other conditions, and these observations seem to suggest that there is a possibility that Cp acts both as an antioxidant and acute-phase reactant¹⁶.

Keeping this in view the present study is undertaken to know whether ceruloplasmin is an oxidant or antioxidant, and to help us to come to a conclusion we are correlating levels of ceruloplasmin with lipid peroxidation product (TBARS) and TAC.

Physical inactivity has become a major risk factor for chronic non communicable diseases in populations. A sedentary lifestyle plays a significant role in obesity¹⁷. The lack of physical activity has been considered as one of the important pre-disposing factor. Limited data is available on physical activity Score (PAS) amongst obese and non-obese, especially in obese yet healthy.

Hence the present study is undertaken in young adults of urban population in a district of north Karnataka, in a view to understand the status of oxidative stress, ceruloplasmin and physical activity in healthy obese individuals (healthy; in sense obesity not caused or has caused underlying conditions like

Cushing syndrome, thyroid disorders, DM, hypertension etc).

Research question

What is the status of Lipid peroxidation product (TBARS), Total antioxidant Capacity, Ceruloplasmin and physical activity score, in healthy obese young adults residing in a urban community?

OBJECTIVES OF THE STUDY

Estimation of TBRS, Total antioxidant Capacity, Ceruloplasmin and physical activity score (PAS) in obese and non-obese healthy young adults of Belgaum urban population.

Correlation between the said parameters.

MATERIAL AND METHOD

The present, cross sectional study was carried out in department of Biochemistry, JNMC, and Belgaum. Institutional ethical committee clearance was obtained. Following this the graduation college students, were approached and interested students, who fit into inclusion criteria of the study were asked to be the part of the study (sampling technique: convenient and judgmental). Once written informed consent was obtained, they were given a questionnaire to assess their personal and physical activity status. We kept on enrolling the participants until the sample size of 140 was achieved. Of this 140, 70 were males and 70 female subjects, of these 70, 35 were obese and rest 35 with normal BMI (In both males and females). BMI ≤ 23 were considered as normal and BMI ≥ 28 were considered as obese, as per the WHO criteria for the Asian adults¹⁸ we had excluded overweight individuals, pregnant and menstruating women during the time of blood collection, and individuals suffering from acute, chronic diseases, and on any type of treatment for obesity. Participants were selected based on their BMI, their WHR was assessed calculated and, then their, Blood pressure was measured (BP), if, found normal, they were asked to come in a fasting state on the day of their choice then Venous blood was collected from the subjects under aseptic conditions by venipuncture using 2 ml sterile

disposable syringe and needle. About 3 ml of blood was collected, of this 3 ml 2 ml was collected in EDTA vacutainer for the estimation of whole blood TBRS, rest of 1 ml was allowed to clot for one hour. Serum was separated by centrifugation at 3000 rpm for 10 min. at room temperature. The samples were stored at 4°C before analysis and all the samples were analyzed within two days of blood collection. Firstly Blood glucose and TSH estimated and if found within normal limits, then they were considered, if not the participant was not considered as part of study.

Estimation of TBRS

Whole blood TBRS was estimated by precipitating protein by trichloroacetic acid and boiled with thiobarbituric acid which reacts with Malondialdehyde to get pink colour the absorbance of which is read at 535 nm¹⁹.

Estimation of TAC

Serum TAC was estimated by korocevic et.al method. A standardised solution of Fe-EDTA complex reacts with hydrogen peroxide by a Fenton type reaction, leading to the formation of hydroxyl radicals (OH). These reactive oxygen species degrade benzoate, resulting in the release of TBARS. Antioxidants from the added sample of human fluid cause suppression of the production of TBARS. This reaction can be measured spectrophotometrically at 532 nm and the inhibition of colour development defined as the AOA²⁰.

Estimation of serum ceruloplasmin

Serum ceruloplasmin was estimated by Copper Oxidase method

Calculation of Physical activity score

Physical activity was estimated with the help of a questionnaire named "The short questionnaire to assess health enhancing physical activity" (SQUASH). This questionnaire was very participant friendly, as it took just 3-5 minutes to be filled. The questionnaire mainly consisted of 4 major parts namely commuting activity, activity at work/school, household activities and leisure time activities. All the four classes had the

examples, to guide the participants, to successfully fill the SQUASH. Each activity was associated with how many days a week this activity was performed, and every time this activity was, for how many minutes was it performed and with what intensity (whether light, moderate or heavy intensity) was it performed. Once the SQUASH was filled, now we had to consider each activity, multiply how many times this activity was performed with the number of minutes and then with the MET value allocated to that activity based on the intensity. In this way once done to all the activities belonging to all classes, all were added, and this gave us a final score. In this system, a MET value of 1 is associated with the energy expenditure of sitting (1 MET=3.5 mL O₂·kg⁻¹·min⁻¹); MET values of greater than 1 are defined as multiples of the resting metabolic rate²¹

STATISTICAL ANALYSIS

Student "t" test (p value) and pearson's correlation coefficient (r value) performed for determining the results using SPSS version 16 (Statistical package for Social Science, Chicago, USA).

RESULTS

Table 1 shows that, the study consisted of 140 participants, of this 70 were females (normal =35 and obese=35) and 70 males (normal =35 and obese=35). Mean age of the participants was 22- 24 yrs in all the 4 groups, with no statistical significance. BMI, WHR, TBARS, ceruloplasmin, PAS was significantly higher (females and males) and TAC was significantly lower in obese groups when compared to normal individuals.

On performing Pearson's correlation coefficient, In females (Table no 2) WHR was positively correlated with TBARS, ceruloplasmin, and negatively correlated with TAC, in females. ceruloplasmin positively correlated with TBARS and negatively correlated with TAC, while TBARS negatively correlated with TAC.

In males (table 3), the WHR, was positively correlated with TBARS, ceruloplasmin, and negatively correlated with TAC, and TBARS positively correlated with ceruloplasmin and negatively with TAC.

Table 1: Table showing values for different parameters in females and males (normal and obese), as mean ±SD, along with the comparison of the means among normal and obese, with level of significance

140 participants				
	Females (n=70)		Males (n=70)	
Age(yrs)	23.06±1.85	23.08±1.85NS	22.89±2.01	23.28±1.82NS
BMI(kg/m ²)	22.95±1.43	31.7689±2.01*	23.20±2.34	31.01±1.67*
WHR	0.77±.05	0.90±.03*	0.83±.04	0.92±0.03*
TBARS(nmol/ml)	4.91±1.173	6.99±0.75*	4.48±1.420	6.55±1.01*
TAC(mmol/l)	1.63±0.29	0.60±0.41*	1.74±0.38	0.79±0.52*
Ceruloplasmin(u/l)	76.7±21.45	96.51± 16.63*	79.97±18.82	96.11±16.04*
Physical activity score	4737.257±954.80	6147.143±1461.087*	4707.457±1464.656	6600.257±1620.139*

**significantly different at p≤0.01

Table 2: Pearsons correlation coefficients(r value) with significance of the different variables in 35 Obese females

Variables	Ceruloplasmin	TBARS	TAC
WHR	0.394*	0.478*	-0.329*
Ceruloplasmin	1	0.390*	-0.071
TAC	-0.071NS	-0.344*	1

Table 3: Pearsons correlation coefficients(r value) with significance of the different variables in 35 Obese males

Variables	Ceruloplasmin	TBARS	TAC
WHR	0.532*	0.092 NS	-0.030 NS
Ceruloplasmin	1	.076 NS	-1.166 NS
TAC	-1.166 NS	-.405*	1

DISCUSSION

Food scarcity and protein energy malnutrition(PEM) was major concern for centuries with industrialization , urbanization , decreased physical activity with increased food intake , lead to decline of PEM and increase in incidence of obesity at an alarming rate, in developing countries, with an unexpected increase even in developing countries. Obesity leads to many co-morbidities like Hypertension, DM etc. but yet a group of individuals, who are not having any of these co-morbidities, do exist termed them as healthy obese individuals.

In our study TBARS was increased and TAC decreased, indicating oxidative stress. The coexistence of obesity with increased lipid per oxidation has been established in western countries and India ^{5,6,7,8,9,10,11,12} , now we have also come to the same conclusion in Karnataka population too. TAC was decreased in obese when compared to normal ^{22, 23, 24}. So obesity, itself is the cause of oxidative stress, co-morbidities may be accentuating the situation. In normal healthy physiology, free radicals can be combated with endogenous AOX defenses. In obesity, AOX defenses are compromised ^{25,26,27} . In obesity, elevated lipid pools

in the adipose tissue depots or in the blood are targets for free radical attack²⁸.

Serum ceruloplasmin levels were significantly higher in obese young adults compared with age and sex matched healthy participants. Correlation could be established between ceruloplasmin and WHR, but not with BMI. Limited studies have investigated CP activity with obesity. Our study is in accordance with various studies quoted ^{29,30}, but no studies in India. Relationship between excess adiposity and ceruloplasmin were inconsistent in studies done in adults, considering correlation between BMI and ceruloplasmin. ^{31,32}.but we, have correlated WHR with ceruloplasmin , which is significant. Also a positive correlation was established between ceruloplasmin and MDA .showing it to be an oxidant than anti-oxidant.Obesity is associated with just not increase in size and number of adipose tissue but also infiltration of immune cells leading to increased inflammatory changes, and increase in ceruloplasmin. CP carrier of copper, promotes vasculopathic effects that include lipid oxidation. In turn, these effects that are mediated by increased formation of reactive oxygen species (ROS), these ROS disrupt copper binding to CP, thereby impairing its normal protective function while

liberating copper which in turn may promote oxidative pathology³³. So it's a vicious cycle. So in state of inflammation it acts as an acute phase reactant

PAS as determined by SQUASH was increased in obese, when compared to non-obese.our study is in accordance with a study done in Metabolically healthy obese³⁴ As, these individuals are exhibiting more physical activity when compared to non-obese, this may be the cause of these individuals not associated with co-morbidities. However, inflammatory and oxidative changes have been set, but if physical activity is accentuated then, possibly inflammatory and oxidative stress can be reverted.

The limitations in our study were that it was a cross sectional study applied to a small sample size .May be a prospective cohort, where follow up of individuals should have been done, to generalise the results.

CONCLUSION

To, conclude, in obesity some individuals are not associated with any co-morbidites. The changes occurring in these individuals, has to be recognised. In our study oxidative stress changes are evidenced, with increase in ceruloplasmin, proving it acts as an oxidant or inflammatory marker than an anti-oxidant. Also increased physical activity may be the cause for them being healthy, as of now. Further, the chances of these individuals reverting to be unhealthy could be a possibility, if precautions of maintaining or increasing the physical activity, diet management etc are not considered.

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An Epidemiological Study Analyzing Presentation and Oncological Outcome of Primary Malignant Tumors of Femur in Mohan Dai Oswal Cancer Hospital, Ludhiana, Punjab

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ABSTRACT

Introduction: Amputation was generally considered the standard treatment for most primary malignant tumors of femur. In recent years with the significant advances in the management of malignant bone tumors (better understanding of the histological criteria for diagnosis, better clinical staging procedure, improved surgical techniques, neo adjuvant & adjuvant chemotherapy and radiotherapy and improved techniques of Oncological reconstruction), there is increased trend towards limb salvage surgery.

Aims and objectives: 1) To study presentation and oncological outcome of primary malignant tumors of Femur.

Materials and method: This study was a retrospective as well as prospective study involving 25 patients having primary malignant tumour of femur coming to department of Orthopaedics at Mohan Dai Oswal Cancer Treatment & Research Foundation, Ludhiana from January 1999 to December 2005.

All the patients were evaluated in terms of complete clinical presentation (onset of symptoms, progression and duration). Various signs and symptoms (pain, swelling, pathological fracture, deformity, limb length discrepancy) were noted thoroughly.

Treatment included Surgical management (Limb sparing surgery or amputation), Chemotherapy, Radiotherapy wherever indicated.

Once the decisions for surgery were taken, consent was taken from patient in written. If prosthesis is indicated, size of prosthesis was determined pre-operatively using x-ray and CT scan. Prosthesis was then ordered as required. Patients were followed for a minimum period of one year. These patients were called every month for the first 3 months and then every three monthly for next 9 months and 6 months thereafter. At each visit evaluation of these patients was done for :-

1. Any signs of radiological/clinical union.
2. Any signs of local recurrence/distant metastasis.
3. Any implant/graft related problem.

Conclusion: 25 patients of primary malignant tumours of femur were studied in the Department of Orthopaedics at Mohan Dai Oswal Cancer Hospital, Ludhiana from January 1999 to December 2005. Average age was 22.68 years. There were 21 male patients and 4 female patients. The major histopathological diagnosis was osteosarcoma (84%) followed by spindle cell sarcoma (8%) and chondrosarcoma (8%). Distal end of femur was predominantly involved (84%) and pain was the commonest presenting complaint (92%). Majority of patients (68%) presented after 60 days of onset of symptoms.

Keywords: Primary Malignant Tumors, Femur, Oncological Outcome

INTRODUCTION

Amputation was generally considered, the standard treatment for most primary malignant tumors of femur. In recent years with the significant advances in the management of malignant bone tumors (better understanding of the histological criteria for diagnosis, better clinical staging procedure, improved surgical techniques, neo adjuvant & adjuvant chemotherapy and radiotherapy and improved techniques of Oncological reconstruction),

there is increased trend towards limb salvage surgery.¹³

Important factors in making this decision are the age, skin condition, functional status of the patient, the nature & grade of the lesion, the presence or absence of metastasis, status of neurovascular bundle, extent of osseous destruction & the extent of soft tissue involvement.

The following modes of treatment either alone or in combination are used.

Surgery	Radiotherapy	Chemotherapy
Curettage	Linear accelerator	Alkylating agents
Curettage and bone grafting	Deep X-ray kilo-voltage	Anti-metabolites antibiotics
Resection & Reconstruction	Cobalt 60	Adrenocorticosteroids
Amputation	Megavoltage	Nitrosoureas
Palliative surgical measure	Orthovoltage	Radioisotopes
Cryosurgery	Electron-beamGamma x-ray	Immunotherapy

Major complications that have been reported in association with limb sparing procedure includes infection, nerve palsy, wound dehiscence and loosening of the prosthesis. The most serious of these is infection. The loosening of the implant can be greatly minimized by paying careful attention to the selection of patient and to operative technique. Relative contraindications to a limb sparing resection includes pathological fracture with large hematoma, poorly placed biopsy scar with extensive contamination, neuro-vascular involvement, infection, fungating tumors and extensive soft tissue involvement.¹⁶

General physical examinations of these patients, which included anemia, general build up of patient, pulse rate, blood pressure, respiratory rate, temperature was noted. Any signs of cyanosis, clubbing or oedema was also noted.

Local examination of affected limb was done in terms of inspection, palpation, percussion, movements and measurement. Complete evaluation of the patient was done and staging of these tumours was done using ENNEKING staging system.

AIMS AND OBJECTIVES

- 1) To study presentation and oncological outcome of primary malignant tumors of Femur.

Histopathological evaluation was done using FNAC and incisional biopsy. Treatment included:

1. Surgical management(Limb sparing surgery or amputation)
2. Chemotherapy
3. Radiotherapy wherever indicated.

MATERIALS AND METHOD

This study was a retrospective as well as prospective study involving 25 patients having primary malignant tumour of femur coming to department of Orthopaedics at Mohan Dai Oswal Cancer Treatment & Research Foundation, Ludhiana from January 1999 to December 2005.

Once the decisions for surgery were taken, consent was taken from patient in written. If prosthesis is indicated, size of prosthesis was determined pre-operatively using x-ray and CT scan. Prosthesis was then ordered as required. Patients were followed for a minimum period of one year. These patients were called every month for the first 3 months and then every three monthly for next 9 months and 6 months thereafter. At each visit evaluation of these patients was done for

All the patients were evaluated in terms of complete clinical presentation (onset of symptoms, progression and duration). Various signs and symptoms (pain, swelling, pathological fracture, deformity, limb length discrepancy) were noted thoroughly.

1. Any signs of radiological/clinical union.

2. Any signs of local recurrence/distant metastasis.
3. Any implant/graft related problem.

OBSERVATION

Table 1: Age Incidence

Age	No. of patients	Percentage of patients
10 – 20 years	14	56%
20 – 30 yrs	7	28%
30 – 40 yrs	-	-
40 – 50 years	2	8%
50 – 60 years	2	8%
60 – 70 years	-	-
> 70 years	-	-
Total	25	100

Table 2: Localization

Site	No. of patients	Percentage
Diaphyseal	3	12%
Metaphyseal	-	-
Metaphyseal- Diaphyseal Proximal Femur Distal Femur	121	4%84%

The maximum no. of patients were having primary malignant tumors of distal metaphyseal-diaphyseal femur (84%). This was followed by diaphyseal area of femur (12%).

Table 3: Histopathological diagnosis

Histopathological Diagnosis	No. of patients	Percentage
Osteosarcoma	21	84%
Chondrosarcoma	2	8%
Spindle cell sarcoma	2	8%

Osteosarcoma was the histopathological diagnosis in majority of patients (84%), followed by chondrosarcoma and spindle cell sarcoma in 2 patients (8%) each.

Table 4: Distant Metastasis

Distant metastasis	No. of patients	Percentage
Yes	7	28%
No	18	72%

18 patients (72%) had no distant metastasis and 7 patients (28%) had distant metastasis.

- One patient had distant metastasis in spine for which radiotherapy was given.
- Six patient had metastasis in lung. Out of which 3 patients recieved chemotherapy and remaining

three patients refuse to take any form of treatment due to financial constraints and they were lost to follow up in one year duration.

Table 5: Enneking grading

Stage	No. of cases	Percentage
IA	5	20%
IB	7	28%
IIA	-	-
IIB	10	40%
IIIA	-	-
IIIB	3	12%
Total	25	100%

- 5 cases (20%) presented at stage IA for which limb salvage surgery using autogenous graft was done.
- 7 cases (28%) presented at stage IB for which limb salvage surgery using endoprothetic implant was done.
- 10 cases (40%) presented at stage IIB for which disarticulation of hip joint was done.
- 3 cases (12%) presented at stage IIIB (with metastasis) for which mutilating surgery was done (palliative care).

Table 6: Survival

Survival	Duration of Survival		
	<1 year	1-3 years	> 3 year
Disease free survival	3	14	
With disease survival	2	6	

- 14 patients had a disease free survival of more than 1 year duration (56%).
- 6 patients had a survival of more than 1 years with disease (24%).
- 3 patients had disease free survival of less than one year (12%)
- 2 patients had a survival with disease of less than one year (8%)

Table 7: Complications

Complication	Previous surgery	No. of cases	Management
Wound gaping	LSS	3	Flap surgery
Vascular Injury	LSS	1	Primary vascular repair
Recurrent haematoma	LSS	2	Repeated aspiration, compression bandage, stopping Fragmin

Table 8 Oncological results

Oncological result	No of patients
Disease free survival so far	16
Died of disease	1
Survival with disease	6
Lost to follow up	2

DISCUSSION

In our series of 25 patients; the average age ranged from 13 years of age (youngest patient) to 55 years of age (oldest patient), average age being 22.68 years. R. Capanna et al (1994) reported average age of 23 in a series of 95 patients.¹

In our series of 25 patients, 21 patients were male (84%) & 4 patients were female (16%). In series of Dahlin et al. male incidence was 61% and female incidence was 39%. In series of S.V Sharma, there were 2 females(20%) and 8 males(80%). Our series were comparable..

In our series distal femur (Metaphyseal-diaphyseal area) was the most common site of lesion (84%) followed by (Metaphyseal-diaphyseal) area of proximal femur (12%). In study of Fredrick R. Eliber (1984) 100% patients presented with tumors involving distal femur. In study of George Quill et al (1940) 45 patients had tumor of lower limb out of which 45% patients were in distal femur & 22% in proximal femur.²

In our series of 25 patients with primary malignant tumour of femur, 3 patients (12%) had palpable inguinal lymph nodes. FNAC was done in these 3 patients, which showed a reactionary hyperplasia in 1 patients who was subsequently treated by limb salvage surgery & tumor positivity in 2 patients who were treated by hip disarticulation surgery with inguinal lymph node dissection. In series of ⁸⁻¹⁰Dahlin et al; they have shown that lymph node involvement is usual but these lymphnode must be assessed histopathologically.

In our series all 25 patients were subjected to open incisional biopsy. No patient in our series had to compromise from limb salvage because of biopsy incision.

In our series osteosarcoma was the major histopathological diagnosis (84%) followed by chondrosarcoma and spindle cell sarcoma in (8%) each ³Frederick R Elber et al (1984) in their series reported

69% intra medullary high-grade osteosarcoma ,13.5% patients with chondrosarcoma, 2.4% patients with Ewing’s sarcoma & 8.4% patients with miscellaneous sarcoma Our study was almost comparable with the consensus stating that most common prevalent primary malignant tumor of femur is osteosarcoma.

In our series 5 patients (20%) presented at stage 1A for which limb salvage surgery using autogenous cortico-cancellous graft was done. 7 cases (28%) presented at stage 1B for which resection of tumor & limb salvage using endoprosthesis was done (40%) 10 cases presented at II B stage for which disarticulation of hip joint was done. 3 cases (12%) presented at III B stage (with metastasis) for which mutilating surgery was done(Palliative care). In the series of Franklin .H.Sim⁴, all patients who had primary malignant skeletal tumour in stage 1A & stage 1B were treated by limb saving resection. While stage 111-B patients had undergone palliative cure.

In our series of 25 cases of primary malignant tumors of femur, 12 cases were treated by limb salvage surgery, 9 patients had a histopathological diagnosis of osteosarcoma and 3 patients had a histopathological diagnosis of chondrosarcoma. All the salvage surgery patients who had a histopathological diagnosis of osteosarcoma had received neo adjuvant chemotherapy and they responded well to chemotherapy as shown by there pre-chemotherapy MRI and post-chemotherapy MRI. Post-operatively adjuvant chemotherapy was given.

Remaining 13 patients were treated by primary amputation surgery. They were either non-responder to neo-adjuvant chemotherapy or had fungation of growth or had distant metastasis at initial presentation due to which limb salvage surgery was not possible in these 13 patients.

In our series 11 patients had taken neo adjuvant chemotherapy, 10 of which were osteosarcoma 1 was spindle cell sarcoma. Drugs used were Cisplatin, Adriamycin & Ifosfamide . 3 cycles at 21 days interval were given. Out of these 11 patients, eight patient were subsequently treated by limb salvage surgery using either an autograft or an endoprosthetic implant. These patients responded well to neo-adjuvant chemotherapy as shown by comparison studies of there pre- chemotherapy M.R.I. & post- chemotherapy M.R.I. There was marked reduction in tumour size & hence a limb salvage surgery was possible

One patient with histopathological diagnosis of spindle-cell sarcoma of femur also did not respond to neo-adjuvant chemotherapy & hence hip disarticulation was done in that patient.

In our series only 1 patient (4%) had local recurrence in femur after eleven months. This patient was treated by re-wide excision and chemotherapy. Remaining 24 patients (96 %) had no local recurrence. In the series of Florian-Wolf, 3 patients out of 70 developed local recurrence (4.2%). In the series of Adesegu Abudu & Nicholas, local recurrence developed in 10%. Our study results were comparable.⁵⁻⁷

In our series 18 patients (72%) had no distant metastasis while 7 patients (28%) had distant metastasis. All the 7 patients who had distant metastasis had a diagnosis of osteosarcoma. All these 7 patients presented late to cancer hospital (>60 days) after onset of symptoms. 4 patients had skin ulceration at initial presentation. So these can be significant contributory factors for distant metastasis.

Till date 14 patient are having a disease free survival of 2-3 year

- 6 patients are having survival with disease of 2-3 year
- 2 patients who were having survival with disease were lost to follow up after 1 year.
- 2 patient were lost to follow up < 1 year
- 1 patient died of disease

In our series 6 patients had complications other than metastasis. All 6 patients had undergone limb salvage surgery with fully constrained type endoprosthesis

- 1 patient had vascular injury during surgery & has undergone primary vascular repair by vascular surgeon at time of surgery. This patient had wound gaping at a later stage & was treated by cutaneous rotational flap.
- 2 patients had recurrent haematoma following limb salvage surgery, out of which 1 patient was treated by stopping Fragmin, repeated aspiration & compression bandage, 2nd patient was treated by re-exploration in operation theatre, obtaining adequate hemostatis & resuturing
- 3 patients in our series had gaping of wound

following limb salvage surgery.

RECOMMENDATIONS

With evolution of surgical skills and better understanding of behavior of malignant tumors, limb salvage is a rational, well accepted mode of treatment. It can potentially offer excellent functional, psychological and cosmetic results. Reconstruction must be durable and not subject the patient to multiple surgical interventions. Late presentation with skin ulceration, N-V bundle involvement, improperly placed biopsy scar and pathological fracture may preclude a successful limb salvage procedure. In these cases amputation is still the best module of treatment. The availability of neo-adjuvant and adjuvant chemotherapy and radiotherapy has significantly influenced the oncological results in patients with primary malignant bone tumors.

Ethical Approval: Ethical approval was obtained from National Board of Examination, New Delhi wide letter no. PR/NBE/MDOCTRF/5520 and accepted by National Board of Examinations wide letter no. NBE/83/June-07/20966 dated 16.5.07

Competing Interests: The authors declare that they have no competing interests

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Study of Television Viewing Habits and their effects among High School Children in Khammam Town

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ABSTRACT

Background: Television viewing is a boon/bane is an ongoing controversy. Though it is an important current area of research, studies in this aspect are limited. To fill up the lacunae in the current knowledge in this regard, the present study has been undertaken with the following objectives.

Aim: To study the television viewing habits among high school children, to know the beneficial and harmful effects of television viewing.

Method: 450 children in between 13 and 15 years of age, of both sex, studying in different schools were selected by simple random technique. Information was collected in a prestructured proforma by interview method. The data thus obtained was subjected for analysis by using appropriate statistical tests.

Results: Out of 450 children 251 were Male and 199 were Female. Average time for TV viewing was 1.96 hours \pm 1.0 /day with a range from 1 to 6 hours /day. Headache (12.6%), eye strains (11.5%), sleep disturbances (10.8%), neck pain (0.4%), nail biting (8.6%), etc were the health disturbances due to Television viewing.

Conclusion: Duration of TV viewing had direct role in causing headache and eye strain; but it had no significant effect on sleep disturbances and school performance.

Keywords: Headache, Programmes, Eye strain, Social Mixing

INTRODUCTION

In the last few years participative Television (TV) has seen the upward growth trend with innovative technologies being deployed by broadcasters (www.voicendata.com). Of the modern day inventions, I think the advent and spread of television channels across the globe has subtly changed the contours of

social relationship. Man is a social animal and socialising plays an important role in keeping ourselves concerned about others in neighborhood and close relations. Television is the window of the world. The glamour and glory of television has attracted all sectors of society. It has literally hypnotized the children. Today the beneficial and adverse effects of television is a matter of great concern. The harmful effects have been often postulated and reported. But no serious scientific attempts have been made to confirm this. Television viewing is quite random these days. People are more addicted to it rather than giving time to their dear ones. Its getting quite serious and people should understand, it is affecting their social life and thus, they should limit their viewing

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(www.merineews.com). The number of TV owning homes has come a long way, more than 100 million TV households have been accounted for so far. The cable operators have done a good job by building up a cable and satellite penetration of 90 million homes all over India. Most viewers in future will, however, be watching their TV mainly via cable, terrestrial and direct to home television delivered via satellite. Cable TV infrastructure will have improved (www.voicendata.com).

From the past few decades television has crawled to Indian homes. Now the television has its firm roots in many houses across the length and breadth of the country. Accessibility to television is on increase day by day and has been accepted by the society. Varieties of programmes viz News, Sports, Educative, Entertainment, Cartoon, etc are available round the clock. These are especially designed to attract all sectors of society. Many targeted programmes and commercials in television are drawing more number of children to its folds. Adolescent high school children are spending more time in front of TV by foregoing their routine activities. The impact of television, a powerful media, used by very large number of children is a matter of great concern to psychologists, community health personnel, pediatricians, educationalists, parents, planners and social scientists worldwide (Gupta RK 1994). Change in lifestyle, low school performance, behavioral abnormalities, sleep disturbances have been associated with the television viewing. Baseline data regarding television viewing habits like time spent in viewing, distance from the television, programme selection etc are crucial which need to be understood to formulate effective awareness strategies. With the intention of contributing new scientific factors regarding Television viewing habits and their effects among high school children, the present study has been undertaken. No such studies have been done on the children of Adolescent age group till now Khammam district, regarding the impact of television. This situation has prompted to undertake this study in Khammam town, where large number of educational institutions are established.

METHODOLOGY

It is a Cross-sectional observational study. Source of Data: High Schools of Khammam town. Study period: 1st November 2010 to December 2010.

Educational Department authorities were consulted to obtain the data regarding high schools in Khammam town. The purpose of the study was explained and their co-operation was solicited. According to the sources from the Educational department of Khammam town, there were 45 High schools which were categorized as Government, Aided, and Unaided schools. From each category three schools each of Government, Aided, and Unaided High school was selected based on simple random sampling procedure. From each school 50 children were selected for the study by systematic random sampling procedure. All the selected students were in between 13 and 15 years studying from 8th to 10th standard. So a total of 9 schools were selected for the study. Thus the sample represents the schools of Khammam town, categories and students of both sex. Inclusion Criteria: All the children aged between 13 to 15 years, of both sexes, studying in high school of Khammam district. Children who are exposed to TV viewing for at least 3 years. Exclusion criteria: All children below 13 years and above 15 years. Children who are suffering from proved ophthalmic and psychological problems. Children who are not at all exposed to television viewing. Children who were not willing to participate in the study. Selected schools were visited and the consent and co-operation for the study was solicited from the concerned authority. Before starting the actual study, a pilot study was conducted. With the experience of pilot study actual proforma used in the study was standardized. Each selected student was interviewed in detail regarding TV viewing. The data collected was entered into a pre tested, pre structured proforma which was especially designed for this study.

RESULTS

A total of 450 children in between 13 and 15 years, of both sex were the subjects of this study. Out of 450 children studied, 251 children were male and 199 were female. Male female ratio was 1.26:1. Of the enrolled students 136, 160 and 157 students were of 13, 14 and 15 years respectively.

When duration of TV viewing is analysed and it is observed that 83.33% (Male: 200 ; Female: 175) of children are viewing TV for ≤ 2 hours / day and 17% for more than 2 hours / day. Since p value is 0.839 there is no significant association between duration of TV viewing and gender. [Table 1]

Table 1: Duration of tv viewing

Duration of TV viewing (in hrs /day)	Male (251)		Female (199)		Total (450)	
	n	(%)	n	(%)	n	(%)
≤2 hours	200	(79.68)	175	(87.94)	375	(83.33)
> 2 to 4 hours	36	(14.34)	16	(8.04)	52	(11.56)
> 4 to 6 hours	15	(5.98)	8	(4.02)	23	(5.11)
Mean ± SD	2.03±1.06		1.86±0.92		1.96±1.0	
Male Vs Female	t= 0.217, p= 0.839, NS					

Figures in parenthesis indicate column percentages

A large number (69.78%) of children were viewing TV with their family members. However (26.89%) children were viewing TV in isolation. [Table 2]

Table 2: TV viewing practices of children

Practises	Male		Female		Total	
	n	(%)	n	(%)	n	(%)
In Isolation	67	(26.69)	54	(27.14)	121	(26.89)
With Family members	174	(69.32)	140	(70.35)	314	(69.78)
With friends	10	(3.99)	5	(2.51)	15	(3.33)
Total	251(100)		199 (100)		450 (100)	

Nearly 75% (336) of children are missing one or the other daily routine activities because of TV viewing. A large number (34.44%) of children told that they are missing outdoor games. While a few (7.78%) are

missing the schools / tuitions. Children missing social mixing (15.78%) and even skipping the meals on time (16.67%) because of TV viewing in this study is a matter of concern. [Table 3]

Table 3: Daily activities missed because of t v viewing

Activities	Male		Female		Total	
	n	(%)	n	(%)	n	(%)
School/Tuitions	24	(9.56)	11	(5.53)	35	(7.78)
Meals On Time	44	(17.53)	31	(15.58)	75	(16.67)
Games	79	(31.47)	76	(38.19)	155	(34.44)
Social Mixing	44	(17.53)	27	(13.57)	71	(15.78)
Don'T Miss	60	(23.91)	54	(27.13)	114	(25.33)
Total	25	1(100)	199	(100)	450	(100)

Figures in parenthesis indicate column percentages

A good number of students had physical problems like headache (12.6 %), eye strain (11.5 %), over weight (1.8%), neck pain (0.4%). Social and behavioural problems are observed here in very less number of

children. All these observations warrants to focus on this issue which is a matter of concern for sociologists, psychologists, parents, educationalists, and community health personnel. [Table 4]

Table 4: Health disturbances in relation to tv viewing

Problems	n	%
Physical Problems		
Frequent Headaches	57	12.6
Eye Strain	52	11.5
Overweight	8	1.8
Neck Pain	2	0.4

Table 4: Health disturbances in relation to tv viewing

Problems	n	%
Social Problems		
Paucity of time	28	6.2
Lacking in school performance	15	3.3
Behavioral Problems		
Inferiority Complex	9	2.0
Dreams	56	12.4
Nightmares/Screaming Spells	1	0.2
Imitating/Mimicking	18	4.0
Nail Biting	39	8.6
Emotional Outbursts	33	7.3
Sleep Disturbances	49	10.8

Duration of TV viewing by children varied from 1 to 6 hours/day (average 1.96 hours/day). The problems like headache, eye strain and sleep disturbances are studied on the background of duration of TV viewing. Headache and eye strain were increasing with the corresponding increase in duration

of TV viewing. But surprisingly sleep disturbance was independent with duration of TV viewing. There is highly significant association between duration of TV viewing and Headache ($p < 0.001$), Eye strain ($p = 0.001$) and Sleep disturbance ($p < 0.001$). [Table 5]

Table 5: Relationship between duration of television viewing and health problems

Duration of TV viewing (Hrs/Day)	Total		Headache		Eye Strainn		Sleep Disturbances	
	n	(%)	n	(%)	n	(%)	n	(%)
≤2 hours	375	(83.33)	23	(6.1)	34	(9.0)	30	(7.9)
> 2 – 4	52	(11.56)	25	(48.1)	12	(23.1)	8	(15.4)
> 4 – 6	23	(5.11)	9	(39.1)	6	(26.1)	11	(47.7)
Total	450		57	(12.6)	52	(11.5)	49	(10.8)
X ²			88.88		14.0		37.0	
p value			<0.001	HS	=0.001	HS	<0.001	HS

Figures in parenthesis indicate column percentages

Changes in academic performance of children was assessed from past 3 years. This was correlated with their duration of TV viewing. It can be seen that performance showed decreasing tendency with the

increase in duration of TV viewing. However there is no significant association between performance of a student and duration of TV viewing ($p = 0.32$). [Table 6]

Table 6: Effect of television on school performance

Duration of TV viewing (Hrs/Day)	Total	Performance		
		Decreased	Increased	no Change
≤2 hours	375	53	20	302
> 2 – 4	52	6	5	41
> 4 – 6	23	6	2	15
Total	450	57	52	49

DISCUSSION

In Children’s view beneficial and harmful effects of TV was quite interesting. Large number of children viewed TV as beneficial. 82% opined that TV has both

beneficial and harmful effects. For only 4% (18 children) TV was harmful. Restriction of TV viewing was more for males. This may be due to the fact that parents want male children to divert their time on studies. Health problems encountered can be casually

associated with TV viewing. This may be related with the factors like distance from TV, duration of viewing, etc. Here an attempt has been made to view the problems on some of these backgrounds. In order to get uniform representation from different types of schools, equal number of children are selected from 3 types of schools. So 150 students were selected from Government, Aided and Unaided schools.

A study in Pakistan shows average TV viewing time of 2.2 hours per day. (3) An Indian study shows average TV viewing time of 2.5 hours per day. (4) These observations suggests the possibility of variation in time spent in front of TV by children from place to place. Such observations are helpful in formulating appropriate intervention strategies. Duration of TV viewing was more in males than in females. However the difference was insignificant.

Casual association between TV viewing and physical, social, behavioural problems in children are in literature. In this study the respondents expressed different physical, social and behavioural problems. When children were asked what they feel after watching their favorite telecasts, 43.7% (198) told that their mind will be diverted from studies towards the programmes. Emotional feelings was the experience of 52.3% of children. It is interesting to note that in 54% of children TV strongly motivates them to accept blindly, whatever is telecasted. In a similar study like this researcher have found 10% of children having headache and 0.8% having eye strain. (4)

This study establishes the association between the duration of TV viewing and the problems enhanced accordingly. In a similar study there was no significant correlation between increase in duration of TV viewing hours and disturbed sleep.

There was no difference in the average amount of time spent on studying by children who had and who did not had television in their homes in a study. To view their favourite programmes those children who had television adjusted their study timings accordingly indicating that television does not have a displacing effect on children's study. (5)

When the distance of TV viewing in relation with the headache and eye strain is analysed, it was found that headache was more (14.5%) in children who are viewing TV in non-recommended distance, as against 14 children (8.9%) who were viewing at recommended distance. However there was no much difference in eye strains between, the viewers viewing at

recommended and non recommended distance. The relation between the distance of viewing and headache, eye strains need to be confirmed by large scale studies which is highly helpful to give the guidelines regarding proper distance of TV viewing. In Children's view beneficial and harmful effects of TV was quite interesting. Large number of children viewed TV as beneficial. 82% opined that TV has both beneficial and harmful effects. For only 4% TV was harmful.

Despite overall close monitoring of television-viewing habits, one quarter of the parents reported the presence of a television set in the child's bedroom. The television-viewing habits associated most significantly with sleep disturbance were increased daily television viewing amounts and increased television viewing at bedtime, especially in the context of having a television set in the child's bedroom. (6)

Out of 450 children responded about 64% revealed that they had parental objection for TV viewing. Parental objection was encountered by 66% boys as against 61% girls. Restriction of TV viewing was more for males. This may be due to the fact that parents want male children to divert their time on studies. When a sex wise reaction was analysed, it was interesting to note that 35.2% males and 22.9% females become wild. 45.2% males and 50% females get depressed as a reaction for parental objection for TV viewing. However only 22.8% had no mood changes. In this study more than 77% of children showed extremes of mood changes as a reaction to parental objection for TV viewing. This situation calls for a necessity to formulate guidelines to the parents regarding counseling in de-abusing their children from TV in a proper manner. Parental objection towards TV viewing habit of children is a well known matter. Even the educationalists and sociologists advise less TV viewing for children. In this study 56.3% children are determined and willing to reduce TV viewing in future. Contrarily 14.3% have determined to increase TV viewing. While 29.4% want to continue at same level. Entertainment and general knowledge along with the time pass was the reason for determining to increase TV viewing for children. While TV related health problems and parental objection and giving more attention to studies were the reasons to reduce TV viewing. The most affected sleep behaviors were bedtime and awakening time on the weekends, the duration of sleep during the weekdays, and sleep disorders of bedtime resistance and sleep anxiety. Television viewing > or = 2 hours/day on weekends,

with a prevalence of 48.8%, was the predominant risk factor for all sleep disorders with the exception of the sleep duration disorder. (7)

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An Epidemiological Study Analyzing Social-Economic Problems and effect on Life among Adults Osteoarthritic Patients in a Rural Area of Amritsar

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ABSTRACT

Introduction: In India Osteoarthritis (OA) is the most frequent joint disease with radiological prevalence of 22% to 39%. Change in socio-economic status adversely affects the individual's way of life in older age. Predominantly Punjab state economy is dependent upon farming and recent change in lifestyle and dietary habits has brought a significant change in epidemiology of osteoarthritis in community. Hence, this study was planned with the aim to study the social-economic problems faced by the adults suffering from osteoarthritis

Materials and method: The proposed study was carried over a period of 1 year from January 2011-December 2011 in the adult population in the village Balkalan aged 30 years and above.

A pre-designed and pre-tested questionnaire was used in form of proformas to record the information in the local language. The data was collected, compiled and analyzed statistically, and valid conclusions were drawn.

Conclusion: The present study showed 16% prevalence of symptomatic OA among adult population of village Balkalan. Majority of patients (32.1%) with symptomatic Osteoarthritis were in age group of 60-70 years while 27.8% were in 50-60 years of age and 15.4% were in 70-80 years age group.

Osteoarthritis was noticed more in the lower income group, 37% patients were in Rs 1407-4203 income group, which corresponded to higher prevalence in class 4 socioeconomic status group (upper lower) having 63% prevalence of OA.

Majority of patients (91.4%) said that OA has lead to increased consumption of analgesic drugs while 14.8% told that it has lead to increased consumption of narcotics & 17.9% told it had lead to increased consumption of habit forming drugs like proxyn tablets for OA pain relief No statistically significant association was found between place of first consultation and socio-economic status.

Keywords: Adult Osteoarthritic, Social-Economic Problems, Rural Area of Amritsar City, Punjab

INTRODUCTION

Musculoskeletal disorders are among the most prevalent chronic conditions in the developed and developing world. In India Osteoarthritis (OA) is the most frequent joint disease with radiological prevalence of 22% to 39%¹.

Change in socio-economic status adversely affects the individual's way of life in older age. Urbanization, mechanization, nuclearisation of family, migration, and dual career families are making care of the elderly more and more of a personal and social problem in India. The increasing number of older people and the

changes in lifestyle throughout the world mean that the burden on people and society will increase dramatically. Increasing life span and poor health care add to the degree of disability among the elderly and compound the problem of care giving. A feeling of low self-worth may be felt due to the loss of earning power and social recognition.²

Social activities including recreational life, work life, family life, and social life were affected in patients with OA of the knee. Depending on the severity, the impact varied from no impact, to cutting down the participation in social activities, to total abstinence. With disease progression, going out became difficult for some patients and taking public transport was usually a problem. Patients often needed to limit their choice of social activities, depending on the availability of suitable transport facilities and the walking distance to the destinations, or to give up their recreational or social activities altogether. Working patients were sometimes forced to change their jobs or even to opt for resignation or early retirement. Grandparents might have to give up looking after their grandchildren. Patients were often reliant on support from the family.³

Predominantly Punjab state economy is dependent upon farming and recent change in lifestyle and dietary habits has brought a significant change in epidemiology of osteoarthritis in community. Very few community based studies have been conducted in the rural area to assess the social-economic problems faced by the adults suffering from osteoarthritis. Hence, this study was planned with the aim to study the social-economic problems faced by the adults suffering from osteoarthritis

MATERIALS AND METHOD

The proposed study was carried over a period of 1 year from January 2011- December 2011 in the adult population in the village Balkalan aged 30 years and above.

A pre-designed and pre-tested questionnaire was used in form of proformas to record the information in the local language. The purpose of the study was explained and informed consent was taken. The modified version of the Kuppaswamy socio-economic status scale was used for measuring socio-economic status.

The data was collected, compiled and analyzed statistically, and valid conclusions were drawn.

OBSERVATION AND DISCUSSION

Table 1: Distribution of adult Osteoarthritic population of Balkalan according to age

Age(in years)	Frequency	Percentage
30-40	4	2.5
40-50	25	15.4
50-60	45	27.8
60-70	52	32.1
70-80	25	15.4
80-90	9	5.6
>90	2	1.2
Total	162	100.0

Table 1 shows that majority of cases of Osteoarthritis (32.1%) were in age group of 60-70 years while 27.8% were in 50-60 years of age and 15.4% were in 70-80 years age group. 17.9% of patients with symptomatic Osteoarthritis were younger than 50 years of age and 6.8 % of subjects were older than 80 years.

Table 2: Distribution of adult Osteoarthritic population of Balkalan according to sex

Sex	Frequency	Percentage
Male	73	45.1
Female	89	54.9
Total	162	100

Table 2 shows that prevalence of OA was higher in females (54.9%) as compared to males (45.1%).

According to statistical data from the World Health Organization (WHO), the worldwide age-standardized prevalence rate per 100,000 world standard population in 2000 was 1,770 for males and 2,693 for females. Worldwide estimates also show that females are found to have higher prevalence of OA, more severe OA, more number of joints are involved, and have more symptoms and increased hand and knee OA.

Table 3: Distribution of adult Osteoarthritic population of Balkalan according to education

Level of education	Frequency	Percentage
Illiterate	76	46.9
Primary school	59	36.4
Middle school	20	12.3
High school	7	4.3
Total	162	100

Table 3 shows that prevalence of symptomatic OA was highest among illiterate people (46.9%) followed by primary class literate (36.4%), middle school literate

(12.3%) and high school literate (4.3%). Prevalence of symptomatic osteoarthritis decreased as education increased.

According to a study by Shalika Sharma et al in 2012 at Chandigarh 64.7% of the respondents were illiterate and they concluded this might be reason for non-compliance with treatment.⁶

Lower formal education level has been reported to be a risk factor for both radiographic and symptomatic knee OA. This supports other reports that low educational attainment, particularly less than 8 years of formal education, is associated with increased reporting of knee pain, even after adjustment for major risk factors such as age, knee injury, obesity, and radiographic severity⁸. A low level of education also predicts disability^{9,10}. Knee OA thus resembles many other chronic diseases in which education appears to affect prevalence, morbidity, and mortality. The mechanism for this is unclear. It may be that increasing education gives patients more insight into their disease and allows advantage to be taken of a greater number of pain-reducing modalities.

Table 4: Distribution of adult Osteoarthritic population of Balkalan according to socio-economic status

Socio-economic class	Total score	Frequency	Percentage
Upper(I)	26-29	1	0.6
Upper Middle(II)	16-25	13	8.0
Lower Middle(III)	11-15	20	12.3
Upper Lower(IV)	5-10	102	63.0
Lower (V)	<5	26	16.0
Total		162	100

Table 4 shows that maximum (63%), of adult OA population of Balkalan belonged to upper lower socio economic class, as per Kuppusswamy scale, while 16% belong to lower socioeconomic status and 12.3% belong to lower middle socio economic status. Only 8% of adult OA patients were in upper middle class category and only 0.6% were in upper socio economic class.

According to a study by U T Kadam et al¹²¹, socio economic group 4 and 5, 33% developed OA compared to professional and managerial group (29%). This corresponded with our study that, group 4, 63% had OA and 0.6% in group1 had OA.

Table 5 Distribution of adult Osteoarthritic population of Balkalan according to effect on life*

Affect on life	Frequency	Percentage
Daily routine work is affected	152	93.8
Income capacity is decreased	94	58.0
Social life is disturbed	109	67.3
Daily recreation is affected	73	45.1

*Multiple responses were allowed in this question

Table 5 shows that out of 162 patients the commonest problem caused by OA was that there daily routine works were disturbed (93.8%) followed by disturbance in social life (67.3%) as they could not walk upto Gurudwara or visit to relative house. OA has lead to decrease income capacity in 58.0% of rural population.

Social well-being, including relationships, leisure activities and community involvement may be affected by osteoarthritis (CDC 2003).

The pervasive nature of arthritis symptoms and their effect on physical, social and occupational activities can be demoralizing. People with arthritis are more likely to self-identify as 'disabled' compared to those with other chronic conditions (Verbrugge and Juarez 2001). They may experience psychological symptoms, including anxiety, depression and helplessness (Keefe and Bonk 1999).

Table 6 Distribution of adult Osteoarthritic population of Balkalan according to co-operation given by family

Co-operation given by family	Frequency	Percentage
Yes	145	89.5
No	17	10.5
Total	162	100.0

Table 6 shows that out of 162 patients 89.5% of patients said they got complete co-operation from family members while 10.5% got no co-operation from family members.

Table 7 Distribution of adult Osteoarthritic population of Balkalan according to type of co-operation given by family*

Type of co-operation given by family	Males	Females	Percentage
Provide a helping hand in daily routine works	65	82	90.7
Bring medicines regularly	55	72	78.4
Take you to a doctor for regular check-ups	46	62	66.7
Does not help	7	9	9.9

*Multiple responses were allowed in this question

Table 7 shows that, majority 147 patients (90.7%), had a helping hand from family members to perform daily routine works. 127 patients (78.4%) family members brought medicines regularly for adults suffering from OA, and 108 patients (66.7%) were taken to a doctor for regular check up. Only 9.9% had no cooperation from their family. On differentiating OA patients according to gender it was seen that female

patients were given preference in all type of co-operation. They were provided more helping hand in daily routine works and more domestic help was provided. There medicines were bought more often by other members of family and they were more helped while going to a doctor for regular check-ups.

Table 8 Distribution of adult Osteoarthritic patients of Balkalan regarding attitude towards complication in relation to socio-economic status.

In case of complication	Frequency	Socio-economic status				
		Upper (I)	Upper Middle (II)	Lower Middle (III)	Upper Lower (IV)	Lower (V)
Nothing	9	.0%	.0%	.0%	8(7.8%)	1(3.8%)
Go to a doctor	112	1(100.0%)	11(84.6%)	17(85.0%)	67(65.7%)	16(61.5%)
Go to a faith healer	25	.0%	2(15.4%)	1(5.0%)	14(13.7%)	8(30.8%)
Start self treatment	16	.0%	.0%	2(10.0%)	13(12.7%)	1(3.8%)

Pearson Chi-Square= 20.556; df = 16; p value= 0.196

Table 8 shows that 100% of people belonging to upper socio economic status, will go to a doctor for their health problem. Among the upper middle class 84.6% would still visit a doctor and 15.4% would go to a faith healer for taking future treatment. Lower middle class patients, 10% may wish for self treatment also. Among the upper lower class, the number of patients visiting a faith healer would be more to 13.7% and 12.7% would start self treatment. Among the last

group initially 57.7% went to a local faith healer but when asked about their preference in case of a complication, they wished to go to a doctor. This shows that, with progress of time, there is a change in the thought process among people of lower socio economic status. Also, there may be an improvement in their affording capacity. Hence for taking future treatment, the preferred place of consultation remains, is a recognized doctor in urban area.

Table 9 Distribution of adult Osteoarthritic population of Balkalan according to increased consumption of drugs*

Increased consumption of drugs	Frequency	Percentage
Analgesics	148	91.4
Narcotics	24	14.8
Habit forming drugs	29	17.9

*Multiple responses were allowed in this question

Table 9 shows that out of 162 patients, majority of patients (91.4%) said that OA has lead to increased consumption of analgesic drugs while 14.8% told that it has lead to increased consumption of narcotics & 17.9% told it had lead to increased consumption of habit forming drugs like proxyn tablets for OA pain

relief. This also shows that the effectiveness of primary care treatments needs to be established as judged by their long term impact in reducing the community burden of pain and disability and the need for surgery. This is particularly important given likely future rise in demand for joint replacement.¹⁵

Table 10: Distribution of patient according to place of consultation in first instance in relation to socio-economic status.

First consulted place of treatment	No. of patients	Socio-economic status				
		Upper (I)	Upper Middle (II)	Lower Middle (III)	Upper Middle (IV)	Lower (V)
Government hospital	37	.0%	2(15.4%)	5(25%)	24(23.5%)	6(23.1%)
CHC						
PHC	1	.0%	.0%	.0%	1.0%	.0%
SHC	6	.0%	.0%	3(15.0%)	3(2.9%)	.0%
Private set-up	37	1(100.0%)	7(53.8%)	6(30.0%)	18(17.6%)	5(19.2%)
Local faith healer	71	0(.0%)	4(30.8%)	6(30.0%)	46(45.1%)	15(57.7%)
Any other	6	.0%	.0%	.0%	3(2.9%)	.0%
No consultation	4	.0%	.0%	.0%	4(3.9%)	.0%

Pearson Chi-Square= 28.485; df = 24; p value= 0.240

Table 10 shows that 57.7% of patients with lower socio-economic status consulted local faith healer while .None of patients with upper socio-economic status consulted local faith healer. All the 4 patients who took no consultation belonged to lower middle socio-economic status. The association between place of first consultation and socio-economic status was not found to be statistically significant.

CONCLUSION

The present study showed 16% prevalence of symptomatic OA among adult population of village Balkalan. Majority of patients (32.1%) with symptomatic Osteoarthritis were in age group of 60-70 years while 27.8% were in 50-60 years of age and 15.4% were in 70-80 years age group.

Osteoarthritis was noticed more in the lower income group, 37% patients were in Rs 1407-4203 income group, which corresponded to higher prevalence in class 4 socioeconomic status group(upper lower) having 63% prevalence of OA.

Regarding effect on life, daily routine work was affected in 93.8%, while income capacity was decreased in 58% and social life was disturbed in 67.3%.

89.5% received cooperation from their family members out of which 90.7% received a helping hand in daily routine works, 66.7% took their OA affected family member to a doctor for regular checkups, while 78.4% had family members who brought medicines for them regularly. 9.9 % did not receive any form of help from their family.

Majority of patients (91.4%) said that OA has lead to increased consumption of analgesic drugs while 14.8% told that it has lead to increased consumption of narcotics & 17.9% told it had lead to increased consumption of habit forming drugs like proxyn tablets for OA pain relief No statistically significant association was found between place of first consultation and socio-economic status.

RECOMMENDATIONS

Osteoarthritis represents a particularly strong argument for a primary care perspective on needs assessment. A programme needs to be developed to provide facilities in the form of early diagnosis, counseling, both community based and hospital based strengthening of geriatric health care service and family support in addition to treatment.

Conflict of Interest: Nil

Ethical Approval: Ethical approval was obtained from Baba Farid University of Health Sciences wide letter no BFUHS/2K11/p-TH/7977 dated 18.8.11

Competing Interests: The authors declare that they have no competing interests

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A Randomized Control Trial of Partial Middle Turbinate Resection in Functional Endoscopic Sinus Surgery

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ABSTRACT

Introduction: Middle turbinate is a dynamic structure which is in a crucial position that plays a significant role in pathogenesis of rhino sinusitis and headache. The goal of treating sinus disease with surgery has evolved from removing all diseased sinus mucosa to specific exenteration of the tissue causing obstruction. Once ventilation is restored, it is postulated that the mucosa may regain near normal appearance and function. This study was conducted to evaluate and observe the benefits following partial middle turbinate resection during FESS on various symptoms of rhino sinusitis.

Methodology: This is a random control trial. All the patients with chronic rhino sinusitis, was selected, studied, and subjected for FESS with partial middle turbinate resection for 50 patients and 50 patients subjected for FESS with middle turbinate preservation. All the patients were observed in post operative follow up for five months and the data was subjected for statistical analysis.

Results: In our study there was strongly significant p value of 0.000, 0.000, 0.000, 0.002 and 0.004 for nasal obstruction, nasal discharge, sense of smell, overall symptoms and facial pain. There was good improvement of 80% in nasal obstruction, 70% in nasal discharge, 50% in sense of smell, 60% in facial pain and 40% in overall symptoms in the patients with partial middle turbinate resection compared to those patients with middle turbinate preservation.

Conclusion: Partial Middle turbinectomy appears to be a positive variable and an adjuvant technique in patients with inflammatory disease of paranasal sinus, in terms of the improvement and maintenance of ventilation of osteomeatal complex, especially if anatomical anomalies present. Partial middle turbinectomy is recommended whenever exposure is compromised.

Keywords: Chronic Rhino Sinusitis, Partial Middle Turbinectomy, Functional Endoscopic Sinus Surgery

INTRODUCTION

Chronic rhino sinusitis is considered to be a disease secondary to obstruction caused by anatomic anomalies and a reactive mucosal edema. Subsequent to obstruction, inflammation occurs, and with this the morphology of the lining mucosa of the nasal sinuses changes¹. Middle turbinate is a dynamic structure which is in a crucial position that plays a significant role in pathogenesis of rhino sinusitis and headache. Anatomical variations like pneumatization,

paradoxical middle turbinate may also be contributing factors to disease causation and recurrence. The goal of treating sinus disease with surgery has evolved from the previous concept of removing all diseased sinus mucosa to present procedure of specific exenteration of the tissue causing obstruction². Once ventilation is restored, it is postulated that the mucosa may regain near normal appearance and function. Homeostasis of the large maxillary and frontal sinuses, with their Ostia located within the anterior ethmoidal complex, is dependent on proper physiological condition of this region. The anterior part of the middle turbinate, lying just medial to this area, may exhibit anatomic deformity and mucosal hyperactivity, exacerbating restrictions to sinus ventilation and drainage. After surgery to ostiomeatal complex, adhesion or synechiae formation between the middle turbinate and lateral

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nasal wall is a common complication and may lead to re-stenosis of the region and recurrent disease. The middle turbinate is often carefully preserved at Functional Endoscopic Sinus Surgery (FESS). However there is no clear understanding of its importance and its presence may prevent good access to the middle meatus which could be sometimes detrimental to the surgical result. Various techniques of managing the middle turbinate have been suggested, but it is still controversial whether the middle turbinate should be resected as a part of functional endoscopic sinus surgery. It is therefore important to find out a safe and effective surgical procedure for proper management of sinonasal disease. Due to the paucity of studies in assessing the safety, efficacy, advantages, disadvantages and complications of middle turbinate resection in FESS and to determine the clinically indications of this approach the present study was undertaken with the following objectives.

1. To study the effects of partial middle turbinate resection in Functional Endoscopic Sinus Surgery (FESS) and its effect on various symptoms and signs.
2. This study is to assess the basis for decision for performing middle turbinate resection in routine FESS.

METHODOLOGY

This is a random control trial carried out over a period of 2 years at ENT department of a tertiary hospital. Institutional ethical committee permissions were taken and informed consent was taken from all the participants of the study. Patients who are suffering from chronic rhino sinusitis and who had to undergo Functional endoscopic sinus surgery were selected and divided into 2 groups randomly. Group1 comprising of 50 patients with Partial Middle turbinate resection and Group2 (control group) comprising of 50 patients with Middle turbinate preservation. The inclusion criteria of the study were Patients with sinonasal disease not responding to medical treatment and age of the patients between 15 and 60 years belonging to both sexes. The Exclusion criteria of the study were Patients with any previous sinonasal surgery, Immuno compromised patients, Patients with acute inflammatory sinonasal disease and Patients with granulomatous lesions, benign and malignant neoplasms. Detailed history and clinical examination of each patient is done. All patients are subjected to

diagnostic nasal endoscopy, CT scan of paranasal sinuses, both coronal and axial cuts taken. Surgical procedure was carried out and recorded carefully. Symptoms after surgery were noted periodically at intervals of 2 weeks, 2 months and 5 months.

The symptoms such as Nasal obstruction, Nasal discharge, Headache, Sense of smell, Facial pain/pressure and Overall symptom of patient were noted before surgery and scoring was done based on Lund-Mackay scoring system^{3,4}. Scoring was done based on visual analogue scale for each symptom from 0-10 with 0 as absence of symptom, 1-3 as mild, 4-7 as moderate, 8-9 as severe, 10 as most severe. The symptoms of 2 groups were compared with difference between two groups and difference in the same group at end of 2nd week, 2nd month and 5th month. All the results of study are presented qualitatively. Results on categorical measurements are presented in number %. Significance is assessed at 5% level of significance, 2x2, 2x3, 2x4, Chi square test has been used to find significance of study parameters on categorical scale between two groups. EPI INFO statistical software was used.

OBSERVATIONS AND RESULTS

All the patients in our study underwent diagnostic nasal endoscopic examination and CT scans, both axial and coronal cuts before surgery. In group 1, 10% of patients had polyp and in group 2 also only 10% patients had polyps on DNE assessment. In group 1, 90% and in group 2, 80% of the patients had nasal discharge. In group 1, 80% of the patients had complete meatal edema and obstruction. In group 2 all the patients had meatal edema. All patients were examined with 0° and 30° endoscopes and following findings were observed that In group 1, 5 patients had polyps, out of which 2 patients had polyps in the middle meatus and 3 patients had polyps beyond the middle meatus. In group 2 also only 5 patients had polyps, out of which 2 patients had polyps in the middle meatus and 3 patients had polyps beyond the middle meatus. In group 1, 45 patients had discharge, out of which 15 patients had clear thin discharge and 30 patients had thick purulent discharge. In group 2, 40 patients had discharge, out of which 20 patients had clear thin discharge and 20 patients had thick purulent discharge. In group 1, 40 patients had severe edema. In group2 all the 50 patients had edema, out of which 35 patients had mild edema and 15 patients had severe edema.

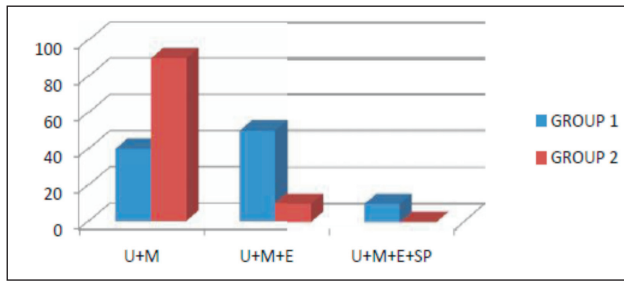


Fig. 1. Types of surgery performed

In group1, 20 patients and in group 2, 45 patients had undergone uncinectomy and middle meatal antrostomy. In group 1, 25 patients and in group 2, 5 patients had undergone uncinectomy, middle meatal antrostomy and ethmoidectomy. In group 1, 5 patients and in group 2, none had undergone uncinectomy , middle meatal antrostomy ,ethmoidectomy and sphenoidotomy (fig 1).

Table 1: Comparison of symptom score between two groups at post op follow up

Symptoms	Group	N= 50	Symptom score (2 wks)				P value	Symptom score (5 months)				P
			Nil	Mild	Moderate	Severe		nil	mild	Moderate	Severe	
Nasal Obstruction	Group 1	50	0	50	0	0	0.056	40	10	0	0	0.001
	Group2	50	5	45	0	0		25	25	0	0	
Nasal Discharge	Group 1	50	5	45	0	0	0.056	40	10	0	0	0.000
	Group 2	50	0	50	0	0		15	35	0	0	
Headache	Group 1	50	5	45	0	0	0.056	40	10	0	0	0.029
	Group 2	50	0	40	10	0		30	20	0	0	
Sense ofSmell	Group 1	50	5	45	0	0	1.000	30	20	0	0	0.002
	Group 2	50	5	45	0	0		15	35	0	0	
Facial pain/pressure	Group 1	50	0	50	0	0	0.056	30	20	0	0	0.314
	Group 2	50	5	45	0	0		25	25	0	0	
Over all	Group 1	50	0	40	10	0	0.001	20	30	0	0	0.029
	Group 2	50	0	25	25	0		10	40	0	0	

At 2nd week analysis there was no much statistical difference in symptoms as nasal obstruction, nasal discharge, headache, sense of smell and facial pain. Overall symptom score is strongly significant with p value 0.001 confirming that group 1 patients had good symptom recovery when compared to group 2 at the end of 2 weeks. (Table 1)

At the end of 5th month there were strongly significant p values of 0.001, 0.000, 0.002 for nasal obstruction, nasal discharge and sense of smell respectively. Moderately significant p values of 0.029, 0.029 for headache and overall symptoms.(Table 1)

Table 2: Percentage of improvement in Symptom Score between two groups

Symptoms	Group 1	Group 2	P Value
	% of Improvement		
Nasal obstruction	80 %	40%	0.000
Nasal discharge	70%	30%	0.000
Headache	70%	60%	0.138
Sense of smell	50%	20%	0.000
Facial pain/pressure	60%	40%	0.004
Overall	40%	20%	0.002

There was strongly significant p value with nasal obstruction, nasal discharge, sense of smell, facial pain and overall symptoms. There was not much significant p value for symptom headache.(table 2)

No major surgical complications occurred in this study. There was no case of blindness, diplopia, Cerebrospinal fluid leak, epiphora. Blood loss was not much significant and no patient required blood transfusion.

DISCUSSION

In our study there was strongly significant p value of 0.000, 0.000, 0.000, 0.002 and 0.004 for nasal obstruction, nasal discharge, sense of smell, overall symptoms and facial pain. There was not much significant p value of 0.138 for headache. There was 80% improvement in group 1 patients and 40% improvement in group 2 patients; with respect to nasal obstruction. There was 70% improvement in group 1 patients and 30% improvement in group 2 patients; with respect to nasal discharge. There was 50% improvement in group 1 patients and 20% improvement in group 2 patients; with respect to sense of smell. There was 60% improvement in group 1 patients and 40% improvement in group 2 patients; with respect to facial pain. There was 40% improvement in group 1 patients and 20% improvement in group 2 patients; with respect to overall symptoms. In a study by Thomas E. Havas and Lowinger reported that out of 531 patients who had undergone middle turbinate preservation 47 patients had headache and facial pain, 19 patients had nasal obstruction and discharge. And out of 444 patients who had undergone middle turbinate resection, 49 patients had facial pain and headache, 16 patients had nasal obstruction and discharge⁵. A study by Friedman et al showed that in 785 patients available for 1 year follow up with all stages of disease, 90.75% reported complete resolution of nasal obstructive symptoms, whereas purulent post nasal discharge and mid facial cephalgia were eliminated in 83.3% and 84.4% patients respectively⁶. A study by S.P. Gulati et al showed that patients with partial middle turbinate resection had 88% improvement in nasal obstruction compared to patients with middle turbinate preservation, who had only 50% improvement⁷. A study by Beidlingmaier showed that 93.5% patients with partial middle turbinate resection had good improvement in symptoms after surgery compared to the patients with middle turbinate preservation⁸. Our study shows that here was good improvement in post operative symptoms and

diagnostic nasal endoscopy in patients with partial middle turbinate resection compared to the patients with middle turbinate preservation. Partial middle turbinectomy seems to be reasonable because it probably prevents adhesions between the remaining middle turbinate and freshly incised lateral nasal wall. Chances of recurrent polypoidal rhino sinusitis is less with group 1 (MTR) patients and synechia, crusting, edema were statistically significant. Our results also

concur with Kennedys finding the most important predictive factor and success of FESS is the extent of rhino sinusitis before surgery. In both the groups about 7 patients (15.8%) were having higher stage of disease initially and were more likely to have slow healing and recurrence of disease in long term. Patient with polyp and seasonal allergy have increased rate of closure of middle meatal antrostomy and recurrence of polyp and synechia. There was statistically significant difference in edema, synechia, crusts, nasal obstruction, nasal discharge and sense of smell. Partial middle turbinectomy appears to be a positive variable and an adjuvant technique in patients with inflammatory disease of paranasal sinus, in terms of the improvement of maintenance of ventilation of osteomeatal complex, especially if anatomical anomalies are present. Partial middle turbinectomy is recommended whenever exposure is compromised. It also enhanced the access for endoscopic examination and cleaning of maxillary sinus, ethmoidal infundibulum, and frontal recess can be achieved. However long term follow up, as more than 1 year is required to assess the postoperative outcome of the above surgical study. No significant short or long term complications have resulted from partial resection of middle turbinate. In addition to usual patients having benefit from middle turbinate resection other patients with anatomic changes like high septal deviation of perpendicular plate of ethmoid, obstructing middle meatus. Patient with narrow nasal vault, a septal spur impinging on middle turbinate, large conchabullosa and paradoxically turned middle turbinate also had significant improvement with this above procedure. Partial middle turbinectomy did not impair nasal function. Indeed the procedure significantly enhances these parameters of nasal function. In small series of patients, there was significant improvement with respect to symptoms like nasal obstruction and nasal discharge. The surgical results were enhanced, where as disruption of nasal physiology and subsequent

Atrophic rhinitis was avoided. By leaving superior and posterior part of middle turbinate we had preserved important landmarks for future surgery. As per the study following are indications of partial middle turbinate resection are elimination of source of middle meatus obstruction, prevention of postoperative synechia, pneumatised middle turbinate or polypoidal degeneration of mucosa and improved access to posterior ethmoidal and sphenoidal sinuses.

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

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Breast Feeding Practices in District Ghaziabad, U.P.

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ABSTRACT

Background: The importance of breast feeding has been immortalized in the ancient Indian Literature. According to an analysis, breast feeding was identified as the single most effective preventive intervention which could prevent 13-16% of all childhood deaths in India. According to WHO, exclusive breast feeding for first six months provides continuing protection against diarrhea and respiratory tract infection.

Objectives: to find the proportion of mothers practicing exclusive breast feeding for 6 months, prevailing breast feeding practices and influence of socio-cultural factors on breast feeding practices.

Method: Taking 51% as prevalence (NFHS 3), sample size was calculated as 400 with 10% relative precision. Cluster sampling technique was used in the study. 10 subjects each were interviewed from 14 urban and 26 rural clusters to cover a sample size of 400. Their responses were recorded on a pretested questionnaire and results drawn. Data were analysed using Epi-info and SPSS and chi-square test applied.

Results: 68.6% of mothers had started breast feeding within 4 hours of delivery (only 31.9% within the first hour). 30% of mothers had practiced exclusive breast feeding for at least 6 months. 75% of mothers had fed colostrum to the babies and 48.2% had given prelacteal feeds. Breast feeding practices were significantly influenced by socio-economic status, literacy status, number of ANC visits and place of delivery.

Conclusion: Early initiation of and exclusive breast feeding is still low in the area with a large proportion of mothers giving prelacteal feeds.

Keywords: Exclusive Breast Feeding, Colostrum, Prelacteal Feeds, Socio-Cultural Factors

INTRODUCTION

From the time immemorial, nature in its wisdom has provided for the newborn, specialized nutrient by way of breast milk. According to an analysis, breast feeding was identified as the single most effective preventive intervention, which could prevent 13-16% of all childhood deaths in India. Adequate complementary feeding between the age of 6-24

months could prevent an additional 6% of all such deaths.¹ The Baby Friendly Hospital Initiative launched by UNICEF recommends initiation of breast feeding within half an hour of normal delivery and 4hrs of Caesarean Section. WHO and UNICEF recommend exclusive breast feeding for the first 6 months of life.² The government of India also advocates exclusive breast feeding through the RCH and the NRHM programs.

In India, 25% of mothers start breast feeding within the first hour and only 46% exclusively breast feed their child and situation in Uttar Pradesh is even more grim with only 7% mothers starting breast feeding within first hour and only 51% following exclusive breast feeding³.

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In 1991, Breast Feeding Promotion Network of India (BPNI) was born to protect, promote and support breast feeding. Delayed initiation of breast feeding, deprivation of colostrums and improper weaning are significant risk factors for under-nutrition among under fives. Hence, there is a need for promotion and protection of optimal feeding practices for improving nutritional status of children. World Breast Feeding Week is celebrated from 1st -7th August every year to re-emphasize key issues related to breast feeding. Recently, UNICEF in collaboration with the government of India has launched a massive nationwide campaign to control and prevent malnutrition among the under fives called "Free India from Malnutrition campaign". One of the salient features of this campaign is the mass education of the people regarding exclusive breast feeding for six months⁴. Keeping all these things in mind, this study was planned to find the prevalence of exclusive breast feeding in the population, the various practices related to breast feeding and the factors influencing it.

MATERIAL AND METHOD

Study Design: Cross-sectional study.

Organization of Study: Santosh Medical College, Ghaziabad.

Sampling Frame: Colonies in the urban areas and villages in the rural areas of Ghaziabad.

Sample Size: According to NFHS-3, about 51% of mothers practice exclusive breast feeding in Uttar Pradesh. So, taking 95% confidence level and a relative precision of 10%, the required sample size was calculated to be 356 mothers (having children within the age group of 6-24 months).

METHODOLOGY

Cluster sampling method was used to cover the whole population of the district based on probability

proportional to size. 40 clusters were selected from the total population (26 in rural and 14 in urban) and 10 subjects each were interviewed from the selected clusters. So, 400 mothers (260 in rural and 140 in urban) having children between the age group of 6-24 months were interviewed and their responses recorded on a pre-tested questionnaire. Data thus collected was coded and analysed using SPSS version 11.5.

OBSERVATIONS

It was found that breast feeding was practiced by 98% of the women, and exclusive breast feeding for atleast 6 months by 35.5% (29.4% rural and 46.7% urban). Only 31.9% women had initiated breast feeding within 1 hour of birth. Majority of rural mothers had initiated breast feeding in 1-4 hrs after birth while majority of urban mothers had initiated breast feeding after 4 hours of birth. 70.6% of rural mothers had exclusively breast fed their babies for less than 6 months while the proportion was almost equally distributed in urban mothers (53.3% vs 46.7%) (Table 1). Three quarters of the mothers had fed colostrums to their babies and approximately half of the mothers (48.2%) had given prelacteal feeds to their babies at some point of time. (Table 2). Those who did not give colostrum gave various reasons like it was customary to discard colostrum (47.2%) while 34% did not know why they discarded it and 15% thought that it was not good for health. Similarly, those who fed their babies prelacteal feeds mainly did it due to the custom in the family (63%) and almost 21% did it on the advice of elders. Time of initiation of breast feeding and duration of exclusive breast feeding were found to be significantly associated with educational status and the socio-economic status of the women in both rural and urban areas ($P < 0.0001$). (Table 3 and 4). Duration of exclusive breast feeding was also significantly associated with the number of AnteNatal Care (ANC) visits and place of delivery but not with the parity of the women. (Table 5).

Table 1. Prevalence, time and duration of breast feeding.

Breast feeding	Rural (260)	Urban (140)	Total (400)
Yes	255 (98.1)	137 (97.9)	392 (98)
No	5 (1.9)	3(2.1)	08 (2)
Time of initiation	n= 255	n=137	N=392
<1 hr	80(31.4)	45(32.8)	125(31.9)
1-4 hrs	116(45.5)	28(20.4)	144(36.7)
>4 hrs	59(23.1)	64(46.7)	123(31.4)
Duration of breast feeding	N=255	N=137	N=392
<6 months	180 (70.6)	73(53.3)	253(64.5)
>= 6 months	75(29.4)	64(46.7)	139(35.5)

Table 2. Breast feeding Practices

	Rural (255)	Urban (137)	Total (392)
Colostrum given	180(70.6)	114(83.2)	294(75)
Colostrum not given	75(29.4)	23(16.8)	98(25)
Prelacteal feed given	123(48.2)	66(48.2)	189(48.2)
Prelacteal feed not given	132(51.8)	71(51.8)	203(51.8)

Table 3. Influence of Sociodemographic factors on initiation of breast feeding.

Educational status	Initiation of breast feeding				P value
	<1 hr	1-4 hrs	>4 hrs	Total	
Illiterate	20[27.4]	22[30.1]	31[42.5]	73	P<0.0001
Primary	45[44.6]	44[43.6]	12[11.9]	101	
Middle	19[31.2]	37[60.7]	5[8.2]	61	
High school	11[33.3]	11[33.3]	11[33.3]	33	
Intermediate	0	13[86.7]	2[13.3]	15	
Graduate	6[11.8]	6[11.8]	39[76.5]	51	
Post graduate	24[41.4]	11[18.9]	23[39.7]	58	
Total	125	144	123	392	
Socio-economic status	Initiation of breast feeding				P value
	<1 hr	1-4 hrs	>4 hrs	Total	
Class I	24[28.6]	12[14.3]	48[57.1]	84	P<0.0001
Class II	19[35.8]	20[37.7]	14[26.4]	53	
Class III	47[31.3]	88[58.7]	15[10]	150	
Class IV	35[36.1]	24[24.7]	38[39.2]	97	
Class V	0	0	8[100]	8	
Total	125	144	123	392	

[] denote row-wise percentages.

Table 4. Influence of Sociodemographic factors on duration of breast feeding.

Educational status	Duration of exclusive breast feeding				Total	P value
	<6 months		>=6 months			
	rural	urban	rural	urban		
Illiterate	68	5	0	0	73	P<0.0001
Primary	79	3	13	6	101	
Middle school	56	5	0	0	61	
High school	28	5	0	0	33	
Intermediate	5	10	0	0	15	
Graduate	1	50	0	0	51	
Post graduate	5	53	0	0	58	
Total	242	131	13	6	392	
Socio-economic status						
Class I	0	84	0	0	84	P<0.0001
Class II	6	39	2	6	52	
Class III	131	8	11	0	150	
Class IV	97	0	0	0	97	
Class V	8	0	0	0	8	
Total	242	131	13	6	392	

Table 5. Effect of ANC visits, place of delivery and parity on duration of exclusive breast feeding.

Number of ANC	Duration of exclusive breast feeding				Total	P value
	<6 months		≥6 months			
	rural	urban	rural	urban		
<3 visits	81	0	8	0	89	P<0.001
≥ 3 visits	161	131	5	6	303	
Place of delivery						
Home	37	0	11	6	54	P<0.001
Institutional	205	131	2	0	338	
Parity						
Primiparous	139	68	7	0	214	P>0.05
Multiparous	103	63	6	6	178	
Total	242	131	13	6	392	

DISCUSSION

It was found that breast feeding was practiced by 98% of women which was almost similar to the findings of NFHS 3 survey (99.2%)³. In the present study, only 31.9% of mothers had initiated breast feeding within one hour of birth. Similar results were found by Das N et al⁵ in rural West Bengal (34.2%) and Baqul AS et al⁶ in urban slums of Nagpur (32.6%), but lower rates were observed by Meshram II et al⁷ in rural Madhya Pradesh (22%). According to NFHS-3⁴, Uttar Pradesh ranks 27th amongst the 28 states surveyed, with only 7.3% of mothers initiating breast feeding within one hour of birth. But the All India average for 1st hour initiation was 23.5%. However, Jennifer HG et al⁸ in rural Tamil Nadu found the rate of early initiation of breast feeding to be 97.5%.

35.5% of women practiced exclusive breast feeding for atleast 6 months which almost matches the findings of Baqul AS et al (36.8%)⁶. But the rate of exclusive breast feeding ranged from 7.8% in urban slums of Gwalior⁹ to 68% in rural Tamil Nadu⁸ (26.8% by Banapurmath CR et al¹⁰, 41% by Meshram II et al⁷, 46.4% in NFHS 3 survey⁴ and 58.3% by Das N et al⁵).

In our study, almost a quarter of mothers had rejected colostrum and almost half of the mothers had given prelacteal feeds. Similar rejections of colostrum were seen in studies by Singh PMP et al (26.9%)¹¹, Banapurmath CR et al (29%)¹⁰ and Tiwari R et al (26.2%)⁹ but a lower rate was found by Kumar D et al (15.9%)¹² and a much higher rate by Chatterjee S et al (96.4%)¹³ and Baqul AS et al (78.62%)⁶. Regarding the prelacteal feeds, Meshram II et al⁷ and Kumar D et al¹² found similar rates (44.7% and 40%) but much higher rates of prelacteal feeding were found by Chatterjee S et al (54.5%)¹³, Mandal PK et al (71.7%)¹⁴, Tiwari R et al (63.8%)¹¹ and Banapurmath CR et al (100%)⁹.

Studies by Kameshwarao A et al¹⁵, Saha JB et al¹⁶, Kumar D et al¹², Patel A et al¹⁷, Baqul AS et al⁶ and Tiwari R et al¹¹ reiterate the findings of this study that duration of exclusive breast feeding and timely initiation of breast feeding were significantly negatively influenced by the socio-economic status and the literacy of the mothers. More number of ANC visits were found to be significantly associated with higher exclusive breast feeding rates and timely initiation of breast feeding as supported by studies of Tiwari R et al¹¹, Patel A et al¹⁷ and Baqul AS et al⁶.

Delivery in an institution negatively affected the exclusive breast feeding practice in this study. The NFHS 3⁴ data also supports this finding. While in a study conducted in 2000 in India, delivery in health facilities had a positive effect on breast feeding practices¹⁸.

CONCLUSION AND RECOMMENDATIONS

Though breast feeding is practiced by almost all women, only a third of them practice it correctly with respect to timely initiation and continuation of exclusive breast feeding till 6 months. A quarter of the women reject colostrum and approximately half of them give prelacteal feeds to their babies. Lower socio economic status and literacy levels and a higher number of ANC visits favourably affect the exclusive breast feeding practices while delivery in a health facility has an unfavourable effect. Keeping these findings in mind, it is suggested that knowledge regarding the beneficial effects of early initiation and continuous 6 months exclusive breast feeding should be given to all the women specially those belonging to higher socio-economic group and the more educated ones. This can be done by utilizing mass media and as a long term measure, by including a chapter on healthy

feeding of babies in the school curriculum of children. More efforts are needed on the part of health institutions to promote and encourage correct practices of breast feeding. This can be done by making a small documentary on breast feeding highlighting the importance of early initiation of breast feeding, effects of feeding colostrum to the new born's disease fighting abilities and the ill effects of prelacteal feeds on the nutritional status of the children. This documentary can be run in the waiting areas of all maternity homes and clinics as well as the aanganwadi centres. Post natal advice should essentially include advice on breast feeding and for this, we need to sensitise the health professionals involved with this activity. The fact that poor feeding practices in infancy have a major impact on childhood health should be emphasized and publicized.

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Impact of STP on Food Hygiene in Terms of Knowledge and Practice among Food Handlers

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ABSTRACT

Introduction: Food hygiene is a broad term used to describe the preservation and preparation of foods in a manner that ensures the food is safe for human consumption. Food safety is a scientific discipline describing handling, preparation, and storage of food in ways that prevent food borne illness. Major risk of food contamination lies with the food handlers. Pathogenic organisms present in or on food handler's body multiply to an infective dose when come in contact with food and could be a potential source of food poisoning to its clients. One of the possible causes of food borne illness is unsafe preparation of food for sale or delivery to public by food businesses.

Method: A total of 34 samples were selected by simple random sampling. Samples were divided into experimental and control group. Data was collected by taking structured interview schedule and a structured teaching program was organized for experimental group. Data analysis was done by descriptive and inferential analysis.

Result: The knowledge and practice level of the experimental group was increased after structured teaching programme regarding food hygiene.

Conclusion: Health education programme should be organized by nursing personnel to provide the knowledge on food hygiene to improve their practice and knowledge level among food handlers.

Keywords: Impact, STP(Structured Teaching Programme), Knowledge, Practice, Food Hygiene, Food Handlers. Dietary Unit

INTRODUCTION

Food hygiene is focused on maintaining the quality of the food. Food handlers are the most important sources for the transfer of microorganisms to the food from their skin, nose, and bowel and also from the contaminated food prepared and served by them. A significant proportion of diarrheal cases are food-borne in origin, and the more than 3 million resultant deaths per year are an indication of the magnitude of this problem. Moreover, in developing countries, up to an estimated 70% of cases of diarrheal disease are associated with the consumption of contaminated food. By seeing the result of many studies it was found that the food handlers having less knowledge regarding various aspects of food hygiene, so the study was conducted to determine the impact of structured

teaching programme in terms of knowledge and practice on food hygiene.

OBJECTIVES

1. To assess the knowledge and practice regarding food hygiene among the food handlers
2. To evaluate the effectiveness of structured teaching program among the food handlers.
3. To determine the association of the increased posttest knowledge and practice score with the demographic variables.

REVIEW OF LITERATURE

Soon JM, et. al. (2012) done a meta-analysis to assess the extent to which food safety training or intervention strategies increased knowledge of and

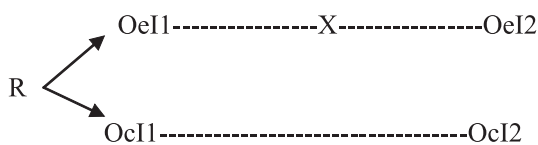
attitudes about hand hygiene. All pooled analyses were based on a random effects model. Food safety training increased knowledge and improved attitudes about hand hygiene practices.

Vemula, R.S et al (2012), conducted a study to review the nature and extent of foodborne diseases in India due to chemical and microbial agents. The study revealed that a total of 37 outbreaks involving 3,485 persons who were affected due to food poisoning have been reported in India.

Malhotra R et.al (2008) carried out an Evaluation of a health education intervention on knowledge and attitudes of food handlers working in a medical college in Delhi, India. Baseline self-reported hand-washing practices revealed low figures for washing hands after maturation (82.4%) and smoking (52.8%) and consistent use of soap at the workplace (24.3%) and after maturation (14.0%), which improved after health education.

METHODOLOGY

Pre-test Post-test control group design was adopted for the study. The study was carried out in different dietary units of Swami Vivekanand Subharti University, Meerut. The total no of 34 samples were selected by simple random technique and were divided into experimental and control group. Data collected by structured interview schedule. Data analysis was done by descriptive and inferential analysis.



PROCEDURE FOR DATA COLLECTION

A formal written permission was obtained from Head of the Food Committee, Mess in-charges and canteen in-charges; study was discussed with the Food Committee head.

Selected dietary units were divided into experiment group and control group. Samples were selected as per inclusion and exclusion criteria. A total of 34 samples, i.e. 17 in each experimental and control group were selected. A written consent was taken from each participant. Pre test data was collected by using

structured interview schedule from both the experimental as well as control group. This interview schedule took 20-25 minutes of time.

On the same day the structured teaching program regarding food hygiene was organized for experimental group only. On the 5th day post test was taken from both groups and the data was recorded and further evaluation was done.

FINDINGS AND INTERPRETATION

Findings on the demographic characteristics of the subjects

Majority of the subjects i.e. 35% lies in age group below 21 year, 29% are educated till primary and 6 out of 34 subjects are illiterate, 46% of subjects are earning below Rs.5000 while 4 out of 34 subjects (13%) are having monthly income above Rs. 10,000, 35% samples are cook, 29% are Helpers and 8 out of 34 are in in-charge post, 35% have working experience of 1-3 years (35%). 5 out of 34 subjects are having working experience more than five years, 65% of samples are not having any previous knowledge or training regarding food hygiene.

Findings related to the knowledge of food handlers regarding food hygiene.

The knowledge level of the experimental group in terms of knowledge was increased after structured teaching program (STP) as it is evident by the mean pre test score of experimental group which was 15.17 and the mean post test score was 19.29. The mean difference between the two scores was found to be statistically significant. While the mean difference between the mean pre test score (12.11) and mean post test scores (14.47) of control group was not found to be significant.

Findings related to the impact of STP on knowledge

The mean post test score of experimental group (19.29) in terms of knowledge regarding food hygiene was higher than the mean post test knowledge score of control group (14.47). The mean difference was found to be statistically significant as evident from the t-value of 3.100 which was greater than the table value of 2.034 at 0.05 level of significance.

Table no. 1: Regarding impact of STP on post test knowledge scores of food handlers in experimental and control group regarding food hygiene.

Post test Knowledge Scores	Mean	Median	Standard deviation (S.D.)	Mean Difference	t value
Experimental	19.29	19	0.91	4.82	3.100
Control	14.47	14	2.34		

Maximum score = 28, 't' (33) at 0.05 level = 2.0345

Findings related to the practice of food handlers regarding food hygiene.

The mean pre test score of the experimental group in terms of practice was increased after STP as it is evident by the mean pre test score of experimental group which was 13.11 and mean post test score was 19.94. The mean difference between the two scores was found to be statistically significant. While the mean difference between the mean pre test score (11.23) and mean post test scores (11.29) of the control group was not found to be statistically significant.

Findings related to the impact of STP on practice

The mean post test score of experimental group (19.94) in terms of practice regarding food hygiene was higher than the mean post test practice score of control group (11.29). The mean difference was found to be statistically significant as evident from the t-value of 8.25 which was greater than the table value of 2.034 at 0.05 level of significance

Table no. 2: Regarding impact of STP on post test practice scores of food handlers in experimental and control group regarding food hygiene.

Post test practice Scores	Mean	Median	Standard deviation (S.D.)	Mean Difference	t value
Experimental	19.94	20	1.56	8.65	8.25
Control	11.29	11	1.40		

Maximum score = 25, 't' (33) at 0.05 level = 2.0345

Findings related to impact of STP on knowledge and practice regarding selected components of food hygiene

- The increase in knowledge was seen in all the components. The highest improvement in the knowledge was observed in food storage (20% approx.) and personal hygiene (15% approx.)

- The highest scores (40%) were obtained in the questions related to preparation of food and second component with highest post test scores was kitchen condition (20%).

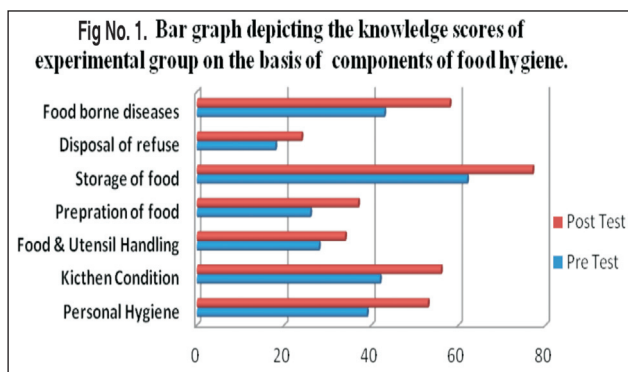


Fig. 1.

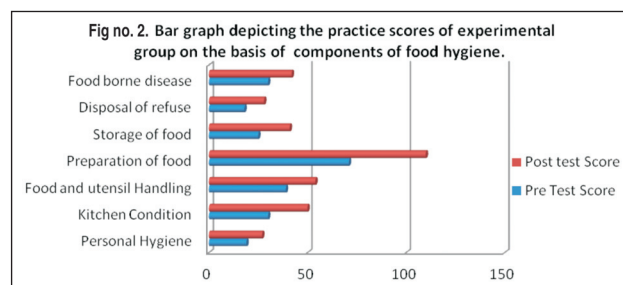


Fig. 2.

Findings related to significant association between of post test knowledge and practice scores of experimental group and demographic characteristics.

The computed chi-square values between the gain in the post test knowledge scores of the subjects in the

experimental group and their selected demographic variables was not found to be statistically significant. This shows that there is no significant association between the post test knowledge scores of experimental group and demographic characteristics.

Table no. 3: Association between the post test knowledge scores of experimental group and demographic characteristics.

Selected variable	Knowledge scores		Chi – square Calculated value	Practice score		Chi-square Calculated value	Table value	df	Significant/ not significant
	Below median	Above median		Below median	Above median				
Age									
<21years	1	5	5.18	1	5	7.5	7.81	3	Not significant
21-30yrs	3	2		4	1				
31-40yrs	2	1		2	1				
>41yrs	0	3		0	3				
Education status									
Illiterate	1	2	4.45	2	1	5.16	9.49	4	Not significant
Primary	3	2		3	2				
Metric	0	4		0	4				
Secondary	2	2		2	2				
Graduate	0	1		0	1				
Monthly Income									
<Rs.5001	4	4	4.96	4	4	5.65	7.81	3	Not significant
Rs. 5001-8000	0	4		1	3				
Rs. 8001-10000	0	3		0	3				
>Rs. 10000	1	1		2	0				
Job Responsibility									
Cook	1	5	3.14	1	5	5.51	7.81	3	Not significant
Helper	2	3		3	2				
Manager/In-charge	3	1		3	1				
Waiter	0	2		0	2				
Working Experience									
0-1years	2	2	0.58	2	2	0.468	7.81	3	Not significant
1-3years	2	4		2	4				
3-5years	1	3		2	2				
>5years	1	2		1	2				
Previous Training on food hygiene									
Yes	1	5	1.41	1	5	2.3	3.84	1	Not significant
No	5	6							

CONCLUSION

In the present study, the knowledge and practice level of the experimental group was increased after structured teaching programme. Knowledge level and practice level of the experimental group was increased because of the STP only which has statistically proven. The highest improvement was observed in the section of food storage (20% approx.) and personal hygiene (15% approx.). None of the selected demographic variable was found to be associated.

RECOMMENDATIONS

- The study can be done on larger sample to validate the findings and make generalizations.
- A survey study can be done to assess the practice level of the food handlers.
- A descriptive study can be done to assess the attitude regarding food hygiene practice

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A Community Based Study on Infant and Young Child Feeding Practices in Bhadravati Taluk, Shivamogga

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ABSTRACT

Introduction: The nutritional well-being of a population is both an outcome and an indicator of national development. Child is the chief victim of interplay of nutrition, socioeconomic and health factors that cause malnutrition. Nutritional status of children under 5 years is one of the most sensitive indicator of development of a particular area. Infant feeding practices comprising of both the breastfeeding as well as complementary feeding have major role in determining the nutritional status of the child.

Objective: To assess the prevailing infant and young child feeding practices in the study area.

Materials and Methods: Community based cross sectional study was conducted in Bhadravati taluk, Shivamogga. 210 children of either sex in the age group of 12 - 36 months were included in the study. Data was collected from mothers/ guardian using a pretested and semi- structured questionnaire after taking an informed consent.

Results: The study findings revealed that breastfeeding was almost universal (99.6%). Initiation of breastfeeding within one hour was practiced in majority i.e. 69.3% of children. Prolactal feeds were given to 27.6% and colostrum was discarded in only a few (3.3%). Exclusive breastfeeding for the first six months was given to 71.5% of the children. Breast milk was fed on demand in 44.3% of the subjects.

Keywords: Breastfeeding, Complementary Feeding, Prolactal Feeds, Commercial Infant Foods

INTRODUCTION

The nutritional well-being of a population is both an outcome and an indicator of national development. Nutrition, is therefore, an issue of survival, health and development for current and succeeding generations. Child is the chief victim of interplay of nutrition, socio-economic and health factors that cause malnutrition. Nutritional status of children under 5 years is one of the most sensitive indicator of development of a particular area. Appropriate feeding is crucial for the

healthy growth and development of the infant. Growth during the first year of life is greater than at any other time after birth and infant feeding practices comprising of both the breastfeeding as well as complementary feeding have major role in determining the nutritional status of the child.¹

Breast milk is the natural first food for babies. It continues to provide up to half or more of the child's nutritional needs during the second half of the first year, and up to one third during the second year of life. Breast feeding is the safest, least allergic and best infant feeding method. It has nutritional, immunological, behavioral and economic benefits and also provide desirable mother infant bonding.² After six months of age, breast milk alone is not enough to make an infant grow well, other foods are also needed. Adequate complementary feeding from six months of

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age while continuing breastfeeding is extremely important for sustaining growth and development of the infant.¹

India has the largest share of global childhood malnutrition. Nearly 48% of children under five years of age are stunted, 20% are wasted and 43% are underweight in India.³ Malnutrition was shown to be an underlying cause in 3.4% of all deaths in young children and associated cause in no less than 46%.⁴ The steep rise in malnutrition in children during the first two years of life is indicative of poor infant feeding practices.¹

Infant feeding practices vary among different regions and communities. In India, these practices appear to be shaped by the beliefs of the community, which are further influenced by social, cultural and economic factors.⁵ With this background, the following study was done to assess the prevailing infant and young child feeding practices in the study area with a view to use the results as baseline for nutritional intervention programs in the future.

MATERIALS AND METHOD

The present cross sectional study was conducted in Bhadravati taluk, Shivamogga district, Karnataka from June 2013 to August 2013 for a duration of 3 months. Bhadravati taluk is situated nearly 230 km from Bangalore, capital of the Karnataka state and has a population of around 3,80,000 residing in 266 villages (rural) and 78 wards (urban). Study subjects were selected using Cluster sampling technique. All the villages and wards of Bhadravati taluk were considered as clusters and the same constituted sampling units for our study. 30 clusters were selected by population proportional to size sampling. Minimum sample size calculated is 200 with absolute precision of 10% and significance level of 0.05 and design effect of 2, taking 50% prevalence of exclusive breastfeeding for 6 months from NFHS-3 data.⁶ In each of the cluster, house to house visit was done and 7 children of either sex in the age group of 12-36 months were included, thus making a total of 210 children. Data was collected from mothers/ guardian using a pretested and semi- structured questionnaire after taking an informed consent. Exclusion Criteria were 1) Temporary visitors to the house 2) Children not present in the house at the time of visit and 3) Child residing in the study area for a period of less than 6 months. The information thus obtained was compiled,

tabulated and analyzed statistically to draw out observations and meaningful conclusions.

RESULTS

Out of the 210 subjects in our study, 104 (49.5%) were males and 106 (50.5%) were females. Majority of the children i.e. 134 (63.8%) were in the age group of 12-23 months and the remaining 76 (36.2%) were in 24-35 month age group.

Mean age of respondents was 24.91 ± 3.252 years. They ranged from 20 years to 38 years. 168 (80%) were Hindus, 37 (17.6%) were Muslims and remaining 5 (2.4%) were Christians. Only 15 (7.1%) were illiterates. 132 (62.9%) were from rural locality. Majority i.e. 180 (85.7%) were housewives. Maximum number i.e. 175 (83.3%) were from BPL families. 76 (36.2%) were from nuclear families, 56 (26.7%) and 78 (37.1%) were from joint and three generation families respectively. Majority i.e. 193 (91.9%) had a family size of two and the rest more than that.

In our study, breast feeding was almost universal except for only one child who was never given breast milk; reason being there was no milk production in the mother. Colostrum was fed to majority of the children i.e. 203 (96.7%) in our study. Prolactal feeds in the form of honey and sugar water were given to 58 (27.6%) of the children. Out of the 210 children in our study, majority i.e. 145 (69.3%) were put to breast within the first hour of life, in 56 (26.7%) of children breastfeeding was started after one hour but within 24 hours and initiation of breastfeeding was delayed beyond 24 hours in rest of the children i.e. 9 (4.3%).

Exclusive breastfeeding for first six months was given to majority i.e. 150 (71.5%) of the children in our study. Mean duration of exclusive breastfeeding among children in our study was found to be 5.81 ± 1.77 months. Breast milk was fed on demand in 93 (44.3%) of children and the rest i.e. 117 (55.7%) were fed by clock. Out of the 134 children who were in the age group of 12-23 months, majority i.e. 72 (53.9%) were breastfed till the date of the survey and in the rest breastfeeding was already stopped. Out of 76 children who were in the age group of 24-35 months, only 21 (27.6%) were breastfed for 2 years or more.

Complementary feeds at appropriate age was introduced in majority of children i.e. 114 (54.3%), introduced too early in 60 (28.6%) of children and delayed in the rest i.e. 36 (17.1%). Most commonly used

foods were preparations made from Ragi (40%) followed by commercially available infant feeds (26.7%) and preparations of rice (21.4%).

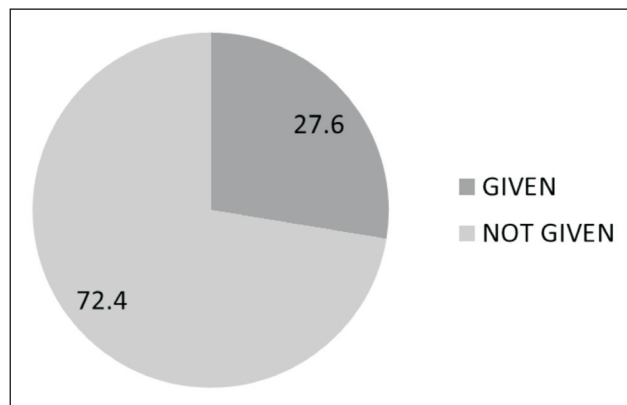


Fig 1: Distribution of subjects according to prelacteal feeds.

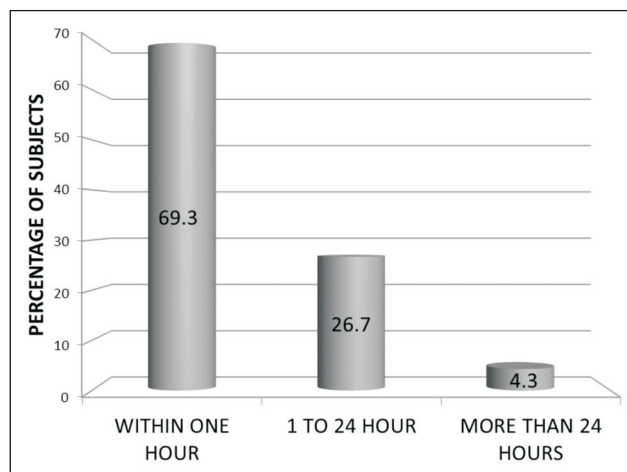


Fig 2: Distribution of subjects according to time at initiation of breast feeding.

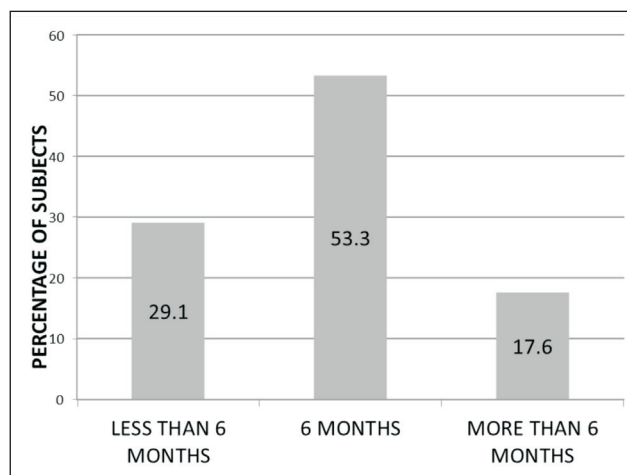


Fig 3: Distribution of subjects according to duration of exclusive breast feeding.

DISCUSSION

According to NFHS-3,⁶ the percentage of children who were ever breastfed is almost universal in every state, which matches well with our study in which 99.6% children were ever breastfed. Another study by Madhu K et al. in Karnataka found that 97% of the children were breastfed which is slightly lower compared to our study.⁵

In our study, 96.7% of babies were fed with colostrum which matches well with the findings of Madhu K et. al.⁵ and Roy S et al.⁷ In contrast to our findings, study done in U.P revealed that out of the 6 districts surveyed, colostrum was fed to less than 50% of the children in three districts.⁷ These differences may be due to different types of customs prevalent in India.

Prelacteal feeds were given to about 27.6% of the children in our study which matches well with the findings by Roy S et al.⁷ Contrary to our findings, NFHS-3 data revealed that 60% of newborns received Prelacteal feed.⁶ This shows that there has been improvement in the knowledge of mothers regarding infant feeding practices over the years.

According to National guidelines on Infant and Young child feeding 2004,¹ breastfeeding should begin immediately after birth, preferably within one hour. In our study, 69.3% of the babies were put to breast within the first hour of life and nearly 96% within the first 24 hours. Our findings are comparable to those found by Madhu K et. al.⁵ NFHS- 3 report on the contrary reveals that almost half (45 percent) did not start breastfeeding within one day of birth.⁶ Similarly, another study by Kumar D et al. revealed that initiation of breastfeeding within 1 hour was noticed in only 6.3% of children and within 24 hours in 67.7%.⁹ This study was conducted in urban slums which could be the reason for difference in values compared to those found in our study.

In our study, 71.5% of the children were exclusively breastfed for first six months as per national guidelines whereas slightly less than half of children under six months of age were exclusively breastfed according to NFHS -3.⁶ Similarly, another study done in rural Karnataka found that only 40% of the mothers did the exclusive breastfeeding for first 6 months.⁵ It shows that there has been increasing awareness regarding the importance of exclusive breastfeeding over the years.

CONCLUSION

Thus it can be concluded from results that there has been a lot of improvement in the infant feeding practices over the years. Breast feeding was popular among mothers though their knowledge about the same needs to be improved. The information regarding the advantages and duration of breastfeeding needs to be provided for the community as a whole. Practices such as giving prelacteals and early/late weaning should be discouraged. Effective communication for behavior change should therefore be the prime objective for ensuring optimal infant feeding.

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Conflict of Interest: No.

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Distribution and Antimicrobial Susceptibility Pattern of Blood Stream Pathogens in a Tertiary Care Hospital from Suburban, Mumbai

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ABSTRACT

In the era of multidrug resistance it is essential to know the exact organisms causing blood stream infections (BSI) with its antimicrobial susceptibility pattern for effective management of BSI. Blood cultures from clinically diagnosed BSI cases were processed by BacT/ALERT microbial detection system. Pure isolates were identified by mini API system and antimicrobial susceptibility test was done by ATB Reader. Out of 552 blood culture samples, 81(14.67%) were culture positive. Predominant isolates were gram positive cocci (GPC) 43 (53.09%) followed by enteric gram negative bacilli (GNB) 28 (34.57%). Coagulase negative Staphylococci (CONS) 29 (35.80%) was the most significant pathogen. All the CONS were sensitive to Vancomycin and Linezolid and resistant to commonly used drugs like Penicillin 4 (13.79%), Vancomycin and Linezolid sensitivity was 100% in GPC. Among GNB 100% sensitivity was seen to Imipenem followed by Piperacillin-Tazobactam 34 (97.14%). Both GPC and GNB were multidrug resistant.

CONS was the most common organism associated with BSI. Vancomycin and Linezolid should be used as reserve drugs for multidrug resistant GPC and Imipenem for GNB.

Keywords: Blood Stream Infection, CONS, Antimicrobial Susceptibility

INTRODUCTION

Blood stream infections (BSI) is a major cause of morbidity and mortality all over the world and associated with longer hospital stay and elevated cost.¹ Severely ill patients with potentially BSI are usually treated empirically before laboratory culture reports are available. Initial treatment with proper antimicrobial agent can make the difference between life and death.

A pattern of causative organisms has been constantly changing and frequent emergence of bacterial resistance has worsened the disease outcome.^{2,3} Hence rapid and timely detection of

microbial spectrum of BSI with its antimicrobial susceptibility pattern is pivotal.⁴

There appears to be the paucity of the surveys from developing countries. Hence the study was undertaken to analyze the causative agents of BSI and their current antimicrobial susceptibility pattern in our hospital set up.

MATERIAL AND METHOD

Study design: A retrospective study carried out on the patients during January to December 2011.

Sample collection & analysis: Blood samples were collected from patients with sign and symptoms of BSI at the request of the clinician under strict aseptic precautions and were loaded into BacT/ALERT 3D 120 microbial detection system as per manufacturer's instructions (Biomérieux Ltd France). A growth from positive culture bottle was sub-cultured on Blood agar, MacConkey agar & Chocolate agar plates. A single microbial growth per patient was included. Poly-

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microbial growth was excluded and anaerobic blood cultures were not done in this study. A culture tube showing a green color signal after 5 days on the screen were reported as negative.

Pure isolates were identified by ATB instrument (Biomerieux Ltd France) using ID 32 E identification strip for Enterobacteriaceae and nonfastidious gram negative bacilli (GNB), ID 32 GN identification strip for Pseudomonas and other Nonfermenters and ID 32 STAPH identification strip for Staphylococci.

Antimicrobial susceptibility of the isolate was determined by Minimum Inhibitory Concentration

(MIC) breakpoint using rapid ATB E4 for Enterobacteriaceae, ATB PSE 5 for nonfermenters and ATB STAPH 5 for Staphylococci with the help of ATB Reader according to CLSI guidelines.⁵

RESULTS

Out of 552 inoculated blood cultures bottles 81 (14.67%) showed confirmed growth either of aerobic bacteria or fungus. Majority of the isolates were from pediatric ward 34 (41.97%) followed by neonatal intensive care unit 22 (27.16%). Isolates from females were 49 (60.49%) and remaining 32 (39.51%) were from male patients. (Table -1)

Table 1. Gender wise distribution of Blood borne pathogens in ICU and ward

Organisms n = 81	ICU n=10		SICU n=5		NICU v		Pediatric Wardn=34		Medicine Wardn=4		Gynaeward n=2	OPD n=4		Total
	M	F	M	F	M	F	M	F	M	F	F	M	F	
GPC	1	1	0	0	9	7	8	11	1	0	2	3	0	43(53.09%)
Enteric GNB	3	3	1	2	0	2	3	11	0	2	0	0	1	28 (34.57%)
NFGNB	1	1	0	1	0	3	1	0	0	1	0	0	0	7 (8.64%)
Candida	0	0	1	0	0	1	0	0	0	0	0	0	0	3 (3.7%)
Total	5	5	2	3	9	13	12	22	1	3	2	3	1	81

GPC = Gram positive cocci, GNB = Gram negative bacilli, NFGNB = Non fermentative Gram negative bacilli.

Of 81 positive blood cultures, predominant isolates were Gram positive cocci 43 (53.09%) followed by enteric Gram negative bacilli 28 (34.57%). (Table 1) Coagulase negative Staphylococcus (CONS) 29 (35.80%) was observed to be the most significant pathogen followed by S. Typhi 13 (16.05%).

Predominant GNB isolated in this study were E.coli followed by S. Paratyphi and Acinetobacter (Figure - 1).

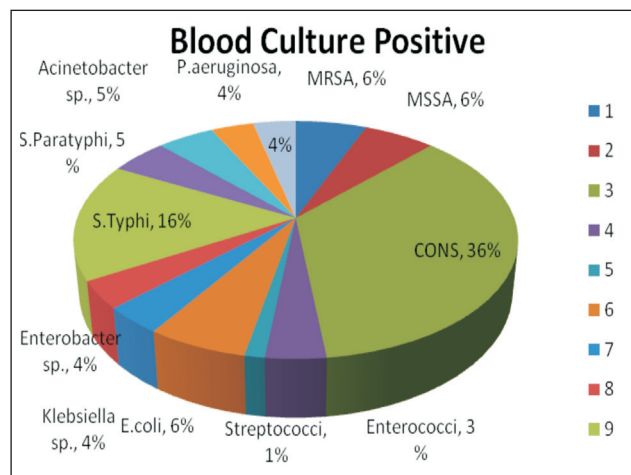


Fig. 1. Blood Culture Isolates

All the CONS were found to be sensitive to Vancomycin and Linezolid. CONS were found to be highly resistant to Penicillin 4 (13.79%), Erythromycin 4 (13.79%), and Cotrimoxazole 12 (41.38%). S. aureus were greatly resistant to the commonly used antimicrobials like Penicillin (0% sensitivity) and Cotrimoxazole 3 (30%). Methicillin resistance was found in 50% of S. aureus. Other useful antimicrobials for MSSA were Amoxicillin - Clavulanic acid 4 (80%) and Erythromycin 4 (80%). All MRSA were sensitive to Vancomycin, Linezolid and Clindamycin. All Enterococci were sensitive to Vancomycin.(Table - 2)

In this study GPC were 100% sensitive to Vancomycin & Linezolid and highly resistant to the commonly used antimicrobials like Penicillin 7 (16.27%) and Erythromycin 12(27.9%). (Table - 2)

Table 2: Antibiotic susceptibility pattern of GPC

Sr.No	Antimicrobial	MRSA n=5	MSSA n=5	CONS n=29	Enterococci n=3	Streptococci n=1	Total GPC n= 43
1	Penicillin	0	0	4 (13.79 %)	2	1	7 (16.27 %)
2	Erythromycin	1	4	4 (13.79 %)	2	1	12 (27.90 %)
3	Amoxycillin- Clavulanic acid	0	4	19 (65.52 %)	1	1	25 (58.13 %)
4	Clindamycin	5	5	22(75.86 %)	1	NT	33 (78.57 %) #
5	Linezolid	5	5	29(13.79 %)	NT	NT	39 (100.0 %)*
6	Oxacillin	0	5	17 (58.62 %)	NT	NT	22 (56.41 %)*
7	Vancomycin	5	5	29(100.0 %)	3	1	43 (100.0 %)
8	Cotrimoxazole	1	2	12 (41.37 %)	NT	NT	15 (38.46 %)*
9	Gentamicin	2	3	16 (55.17 %)	2	NT	23 (54.76 %) #
10	Ciprofloxacin	4	3	15 (51.72 %)	1	NT	23 (54.76 %) #

NT= NOT TESTED,

*4 isolate i.e. 3 Enterococci and 1 Streptococci were not tested for Linezolid, Oxacillin and Cotrimoxazole.

#1 isolate of Streptococci was not tested for Clindamycin, Gentamicin and Ciprofloxacin.

For all E. coli both Imipenem and Piperacillin-Tazobactam were effective, however E. coli was resistant to Ampicillin, Amoxicillin - Clavulanic acid, Cotrimoxazole, Gentamicin, 3rd generation Cephalosporin. For NFGNB like Acinetobacter and

P. aeruginosa, Imipenem, Piperacillin- Tazobactam, Ceftazidime and Cefipime were effective however both Acinetobacter and Pseudomonas were resistant to Ampicillin 1 (14.29%), Amoxicillin - Clavulanic acid 1 (14.29%) and Ciprofloxacin 2 (28.57%).(Table - 3)

Table 3: Antibiotic susceptibility pattern of Gram Negative Bacilli

Sr. No.	Antimicrobials	E.coli n=5 (%)	Klebsiella n=3	Enterobacter n=3	S.Typhi n=13 (%)	S.Paratyphi A n=4	Acinetobacter n=4	Pseudomonas n=3	Total 35(%)
1	Ampicillin	1 (20.00%)	0	0	11(84.61%)	0	1	0	13(37.14 %)
2	Amoxy-Clav	1(20.00%)	0	0	11(84.61%)	4	1	0	17(48.57 %)
3	Cotrimoxazole	1(20.00%)	3	0	11(84.61%)	0	2	2	19(54.28%)
4	Gentamicin	1(20.00%)	2	1	13 100.0%)	4	2	1	24(68.57 %)
5	Ciprofloxacin	2 (40.00%)	0	2	7 (53.85%)	3	2	0	16(45.71 %)
6	Chloramphenicol	1(20.00%)	0	0	10(76.92%)	3	2	1	17(48.57 %)
7	Amikacin	3(60.00%)	2	2	13(100.0%)	4	2	1	27(77.14 %)
8	Cefuroxime	1(20.00%)	0	0	13(100.0%)	4	1	NT	19(59.37%) §
9	Ceftriaxone	1(20.00%)	0	1	13(100.0%)	4	2	NT	21(65.62%) §
10	Ceftazidime	1(20.00%)	0	1	13(100.0%)	4	4	3	26(74.28 %)
11	Cefipime	2 (40.00%)	0	1	13(100.0%)	4	4	3	27(77.14 %)
12	Pip- Taz	5(100.00%)	2	3	13(100.0%)	4	4	3	34(97.14 %)
13	Imipenem	5(100%)	3	3	13(100.0%)	4	4	3	35(100.0 %)
14	Piperacillin	NT	NT	NT	NT	NT	NT	2	2
15	Ticar- Clav	NT	NT	NT	NT	NT	NT	2	2

NT=NOT TESTED, §3 isolates of Pseudomonas were not tested for Cefuroxime and Ceftazidime. Amoxy-Clav = Amoxicillin - Clavulanic acid, Pip- Taz = Piperacillin- Tazobactam,

Ticar- Clav = Ticarcillin- Clavulanic acid

All GNR isolated in this study were sensitive to Imipenem. Other effective antimicrobials were Piperacillin- Tazobactam 34 (97.14%) followed by Amikacin and Cefipime 27 (77.14%) each. GNR were highly resistant to the commonly used antimicrobials

like Ampicillin 13 (37.14%), Ciprofloxacin 16 (45.71%), Amoxicillin - Clavulanic acid 17 (48.57%), Chloramphenicol 17 (48.57%) and Cotrimoxazole 19 (54.29%). (Table - 3)

DISCUSSION

Microbial invasion of blood stream is a threat to every organ of the body and can have serious immediate consequences including shock, multiorgan failure, DIC and death.⁶ Hence prompt management with appropriate antimicrobials is crucial to improve the prognosis and to avoid the emergence of antimicrobial resistance.

In this study, 14.67% blood samples yielded significant pathogens. In Indian studies, prevalence of isolation of blood pathogens ranges from 8.39% to 39.5%^{1,7-8} and in western studies from 5.6 to 16.6%.⁹⁻¹⁰ It indicates that blood culture is essential for the precise etiology and definitive diagnosis of septicemia. The low positivity rate in the present study is because of the multiple factors like use of antimicrobials before collection of blood, exclusion of poly-microbial growth and anaerobic culture. Majority of the isolates were from pediatric cases which corresponds to the earlier study by Garg et al.⁸ However in this study, more isolates were from the hospitalized patients especially from those who were admitted in ICU areas. This is because many therapeutic and diagnostic interventions in critical care units i.e. ICU are invasive and predispose patients to infective complications.

GPC were the leading organisms isolated in this study like study by Asghar et al¹¹ however many studies^{7,8,12,13} revealed a dominance of GNB especially in the hospital setting. This may be an indication of the shifting of the organisms of BSI from GNB to GPC. It is attributed to the geographical area. As comparable with other studies^{4,7,11} Candida isolated in this study were 3.7% from ICU areas from immunocompromised hosts and pediatric ward may be because of widespread use of broad spectrum antimicrobials.

CONS once considered to-be the commensal and less pathogenic has topped the list in this study with 29 (35.8%). With the current literature available and changing concept of pathogenic microorganisms, CONS is strongly associated with septicemia. CONS is related with plastics, IV catheters, CSF shunts, prosthetic valves and dialysis etc. may be because of its special property of slime production.¹² Our results are in coordination with other studies^{4,11,14} CONS seem to be emerging as the dominant pathogen in BSI. CONS were isolated mainly from pediatric ward and NICU; it suggests that infection by these agents constitute a major threat to child survival in this area.

Striking feature of this study was isolation of Salmonella 17 (20.99%) from BSI cases. Such escalating incidence of Salmonella septicemia is also reported by other authors.^{7,8,14-15} A close watch needs to be kept on increasing incidence of this organism.

Various authors^{11,16} have documented NFGNB as an emerging pathogen in BSI. In this study NFGNB isolated were Acinetobacter and P. aeruginosa. Septicemia because of Acinetobacter and Pseudomonas is an important cause of morbidity and mortality particularly in admitted patients with debilitating disease.⁶ Rational and proper use of these drugs requires an understanding of drug resistance pattern in the particular region. Keeping in mind the high morbidity and mortality associated with septicemia, right selection of empirical therapy is of utmost importance.

Present study revealed that all the CONS were fully susceptible to Vancomycin and Linezolid which is in conformity with other authors.⁹⁻¹⁰ Hence these drugs should be kept as reserve drugs for complicated septicemia. Clindamycin and Amoxicillin - Clavulanic acid were highly effective against CONS. So these drugs can be used as empirical therapy in our set up. Like other studies^{9,11} CONS was multi drug resistant (MDR to 2 or more drugs) to commonly used drugs like Penicillin 4 and Erythromycin 4 (13.79%). It is because of frequent use of antimicrobials for both prophylactic and therapeutic purpose for hospitalized patients.

It is clear that Vancomycin and Linezolid were the highly effective drugs against GPC while MDR to Penicillin, Cotrimoxazole, and Erythromycin was found in this study which in accordance with other studies.¹⁰

S. Typhi were resistant to commonly used drugs like Chloramphenicol and Ciprofloxacin however many drugs i.e. Imipenem, Piperacillin-Tazobactam, 3rd generation Cephalosporins and Amikacin were found to be highly effective in our set up. Our reports are in agreement with the study by Tambekar et al.¹⁵

Like other studies^{7,18} none of the E coli were resistant to Imipenem and Piperacillin - Tazobactam because these drugs are not easily accessible and relatively expensive compared to others, however around 5% resistance is reported by other authors.¹¹ MDR to commonly used drugs like Ampicillin,

Amoxicillin- Clavulanic acid, Cotrimoxazole, Gentamicin, 3rd Generation Cephalosporin was observed for E. coli. It is because earlier exposure of these isolates to these drugs might have increased resistance.

In this study, all NFGNB were susceptible to Imipenem, Piperacillin-Tazobactam, Ceftazidime and Cefepime, however MDR was observed for the drugs like Ampicillin, Amoxicillin- Clavulanic acid and Ciprofloxacin like other authors.^{14,16} In case of GNB it is clear that in our set up, Imipenem can be kept as reserve drug and Piperacillin-Tazobactam, Amikacin, Ceftriaxone can be used for empirical therapy. For GNB, MDR seen to commonly used antimicrobials Like Ampicillin, Amoxicillin-Clavulanic acid, Cotrimoxazole, Ciprofloxacin etc. may be due to indiscriminate and overuse of antimicrobials because most patients get antimicrobials before they reach to the tertiary care hospital and due to self medication because of easy availability of these drugs at the counter.

CONCLUSIONS

Coagulase Negative Staphylococcus was the most common organism associated with BSI. Vancomycin and Linezolid were the highly effective drugs against GPC. In case of GNB, Imipenem can be kept as reserve drug and Piperacillin-Tazobactam, Amikacin, Ceftriaxone can be used for empirical therapy. Because of alarming increase in multidrug resistant bacteria periodic study of microbial spectrum causing BSI with its antimicrobial susceptibility pattern in each region is a prerequisite for rational use of antibiotics.

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Comparison of efficacy of Active Release Technique with Ultrasound and Strain- Counterstrain Technique with Ultrasound on Upper Trapezius Trigger Points

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ABSTRACT

Aim: The purpose of this study was to compare the efficacy of Active Release Technique (ART) with ultrasound with Strain Counterstrain technique (SCS) with ultrasound on latent trigger points on upper trapezius muscle on Pressure pain threshold, Trapezius muscle length & Cervical range of motion.

Study design: Experimental

Materials and Methodology: 60 subjects with latent trigger points on Upper Trapezius muscles were randomly assigned to one of the 3 groups, 20 subjects in Group A (ART & Therapeutic Pulsed Ultrasound), 20 subjects in Group B (SCS and Therapeutic Pulsed Ultrasound), 20 subjects in Group C (Control Group - Therapeutic Pulsed Ultrasound). Outcome measures were taken pre-treatment and 7th day post treatment.

Results: Statistical significance was accepted at $p < 0.05$. Within group analysis showed that there was significant improvement post treatment in pressure pain threshold, trapezius muscle length and cervical ROM (ipsilateral rotation, contralateral sideflexion) in all 3 groups. When between group analysis was performed, it was found that 1) There was more statistically significant improvement in Group A & Group B when compared with Group C on all outcome measures. 2) There was no difference in improvements between Group A and Group B.

Conclusion: The present study demonstrates that all 3 treatments ie. US, ART with US and SCS with US are effective in treatment of trigger points in Upper Trapezius.

There was no difference between the efficacy of ART with US and SCS with US in treatment of latent trigger point in upper trapezius muscle. However both the techniques were more effective than only US treatment.

Keywords: Latent Trigger Points, Upper Trapezius Muscle, Active Release Technique, Strain Counterstrain Technique, Therapeutic Pulsed Ultrasound

INTRODUCTION

Neck pain is a common problem in general population with prevalence between 10%-15%⁽¹⁾. The neck and shoulder often require performing static work as the hands perform a skilled task. Working in a posture with the shoulder flexed or abducted

increases the activity in the upper trapezius, cervical and thoracic erector spinae muscles. Jull et al. found that patients with neck pain put higher demands on their superficial neck muscles than do healthy people, to compensate for weakness of the deep muscles. In the upper extremity, a typical pattern of tightening can

be seen in upper trapezius, levator scapulae and pectoralis muscles with weakening of deep neck flexors and lower scapular stabilizers. The upper trapezius and levator scapulae being the postural muscles constantly act to support the shoulder against the downward pull of gravity. The upper trapezius was found by Travell and Simons to be the muscle most often affected by trigger points due to overuse. Myofascial trigger point is a hyperirritable spot, located within the taut band of a skeletal muscle that is painful on compression or stretch that can give rise to a typical referral pain pattern, motor dysfunction and autonomic phenomenon. A Latent myofascial trigger point is known as "A myofascial trigger point that is clinically quiescent with respect to spontaneous pain. It is painful only when palpated."⁽³⁾ The most frequently occurring trigger point in the trapezius muscle is found along the upper border of the shoulder girdle about half way between the spine and the tip of the shoulder. Trigger point activity at this site is the cause of pain being referred up the side of the neck to the base of the skull, and on occasions around the side of the head to reach the temple and back of the eye⁽²⁾. There are various techniques in physiotherapy used in the treatment of trigger points like ultrasound⁽⁴⁾ & soft tissue mobilization techniques.

Active release technique (ART) developed by Dr. Micheal Leahy. ART is a myofascial release technique which involves ischemic compression of trigger points with active stretching of the muscle. Strain-counterstrain (SCS) technique is also called Positional Release Technique It was developed by Lawrence Jones D.O and is classified as an indirect technique. The objective is to relieve painful dysfunction through a reduction in inappropriate afferent proprioceptive activity⁽⁵⁾.

Although a number of studies investigating the effect of various treatments for latent trigger point release prevail, there is paucity of studies to comparing the efficacy of Strain counter-strain technique and Active release technique on latent trigger points of upper trapezius muscle. So the purpose of this study was to compare the two techniques.

METHODOLOGY

Study Participants

Inclusion Criteria: Males/ females having latent trigger points on upper trapezius muscle in the age group of 18- 30 years

Exclusion Criteria: Cervical Prolapse Intervertebral Disc, Benign Paroxysmal Positional Vertigo, Cervical Fractures & Instability, Neurological symptoms in upper extremity, Active trigger points, Use of Analgesic drug in last 24 hrs.

PROCEDURE

A sample of 60 subjects with latent trigger points on upper trapezius were included in the trial.

The trial was explained & an informed written consent was taken from all subjects. Consent was taken from the ethics committee, IEC number PDDYPU/0276/2011/4

OUTCOME MEASURES

- 1) Cervical Range of motion (Contralateral Lateral flexion, Ipsilateral Rotation) was measured using a measuring tape method⁽⁶⁾,
- 2) Pressure pain threshold was measured using a Pressure Algometer ^(10,11),
- 3) Trapezius muscle length was measured using a Vernier caliper⁽⁷⁾

Subjects were randomly assigned to one of the 3 treatment groups, Group A [Active Release Technique & Therapeutic Pulsed Ultrasound], Group B [Strain-Counterstrain and Therapeutic Pulsed Ultrasound], Group C [Control Group - Therapeutic Pulsed Ultrasound] each consisting of 20 subjects.

Subjects in (Group A) were treated using Active Release Technique (ART) & Ultrasound. For Active Release Technique, the starting position of the subject was sitting on a chair. The therapist stood behind the patient & tender point was palpated and compressed until pain is experienced by the subject. The subject is then asked to actively contract the upper trapezius muscle by performing cervical ipsilateral lateral flexion, contralateral rotation and elevation of the shoulder. The patient is then asked to actively stretch the muscle by laterally flexing the neck on the opposite side, rotating it to the same side and depressing the shoulder, while the therapist maintains the compression on the trigger point⁽⁸⁾. This is repeated 10 times. 3 sets of 10 repetitions were performed during a single treatment session followed by US. The treatment was given for 6 sessions.

Fig. 1. Treatment of trigger point with Active Release Technique



a) Ischemic compression of trigger point



b) Active contraction of upper trapezius



c) Active stretching of upper trapezius

Subjects in (Group B) were treated with strain-counterstrain (SCS) technique and Ultrasound. For strain-counterstrain technique, the starting position of the subject is supine. The therapist stands at the head end of the table. The trigger point is then palpated and the muscle is compressed till the maximum pain is experienced by the subject. The subject's head is then passively laterally flexed and rotated towards the same side till the sensitivity reduces. The ipsilateral shoulder is taken into abduction and external rotation and fine tuning (finding pain free position) of the release is done through movement of either the neck or the shoulder. The tune position is held for 90 seconds. After the release the subject is put back to the normal position⁽⁵⁾. This was repeated 3 times during a single session. This procedure was followed by US. The treatment is given for 6 sessions.

Fig. 2. Treatment of trigger point with Strain-counterstrain technique



a) Ischemic compression of trigger point in neutral



b) passive ipsilateral cervical sideflexion and rotation



c) shoulder abduction & external rotation in the position of release

Subjects in Group C (Control condition) were given ultrasound for six days (Pulsed mode) at an intensity of 1.4 watts per cm^2 for 5 mins. This dosage for US remained constant for all the 3 treatment groups.

The subjects were assessed on the outcome measures pre-treatment & Post treatment (i.e. after 6 sessions).

DATA ANALYSIS AND RESULTS

The data was analysed using Graph Pad Instat software. Statistical significance was accepted at $p < 0.05$.

Table 1: Pre-treatment & Post-treatment means of all groups

	Pressure Pain threshold (kg)	Trapezius muscle length (cm)	Ipsilateral Cervical Rotation ROM (cm)	Contralateral Cervical Side Flexion ROM (cm)
Group A				
Pre-Treatment (Mean \pm s.d.)	1.425 \pm 0.2789	19.16 \pm 1.677	7.79 \pm 1.867	9.91 \pm 1.796
PostTreatment (Mean \pm s.d.)	3.295 \pm 0.6057	21.24 \pm 1.566	5.19 \pm 1.639	6.12 \pm 1.535
P Value	<0.0001**	<0.0001*	<0.0001*	<0.0001**
Group B				
Pre-Treatment (Mean \pm s.d.)	1.365 \pm 0.2907	18.995 \pm 1.152	7.91 \pm 1.616	9.46 \pm 1.572
PostTreatment (Mean \pm s.d.)	3.615 \pm 0.5441	21.425 \pm 1.14	5.27 \pm 1.255	6.255 \pm 1.27
P Value	<0.0001**	<0.0001**	<0.0001**	<0.0001**
Group C				
Pre-Treatment (Mean \pm s.d.)	1.54 \pm 0.4297	19.145 \pm 1.685	7.445 \pm 1.591	8.715 \pm 1.045
PostTreatment (Mean \pm s.d.)	2.38 \pm 0.5043	20.11 \pm 1.571	6.68 \pm 1.69	7.995 \pm 1.158
P Value	<0.0001**	<0.0001**	<0.0001**	<0.0001**

*Wilcoxon matched pairs test

**Paired t Test

Inference : When within group comparison was done, there was statistically significant improvement post

treatment in all the three groups seen as an increase in all outcome measures.

Table 2: Comparison of pre & post treatment

	Pressure Pain threshold (kg)	Trapezius muscle length (cm)	Ipsilateral Cervical Rotation ROM (cm)	Contralateral Cervical Side Flexion ROM (cm)
Mean \pm S.D Pre-Treatment Of Group A	1.425	19.16	7.79	9.91
Mean \pm S.D Pre-Treatment Of Group B	1.365	18.995	7.91	9.46
Mean \pm S.D Pre-Treatment Of Group C	1.54	19.145	7.445	8.79
p-value	0.2629	0.931	0.6688	0.0757
Mean \pm S.D Post-Treatment Of Group A	3.295	21.24	5.19	6.12
Mean \pm S.D Post-Treatment Of Group B	3.615	21.425	5.27	6.255
Mean \pm S.D Post-Treatment Of Group C	2.38	20.11	6.68	7.995
p-value	<0.0001*	0.011*	0.0046*	< 0.0001*

*Statistically significant

Inference: When between group comparisons was done using ANOVA it was found that there was no difference between group's pre-treatment means

whereas there was a statistically significant difference between the post treatment means.

Table 3: Post-hoc analysis

	Pressure Pain threshold (kg)	Trapezius muscle length (cm)	Ipsilateral Cervical Rotation ROM (cm)	Contralateral Cervical Side Flexion ROM (cm)
GROUP A v/s GROUP B				
Mean difference	-0.32	-0.185	-0.08	-0.135
p value	P>0.05	P>0.05	P>0.05	P>0.05
GROUP B v/s GROUP C				
Mean difference	1.235	1.315	-1.41	-1.875
p value	p<0.001	P<0.05	P<0.05	P<0.001
GROUP A v/s GROUP C				
Mean difference	0.915	1.13	-1.49	-1.74
p value	P<0.001	P<0.05	P<0.01	P<0.001

On further Post Hoc Analysis (Tukey-Kramer Multiple Comparisons Test), Group A (ART + US) and Group B (SCS +US) showed statistically greater improvement in Pressure Pain threshold trapezius muscle length and cervical range of motion (ipsilateral rotation, contralateral sideflexion) when compared to the Group C (Control – US). However, when Group A and Group B were compared, there was no statistically significant difference between them.

DISCUSSION

The main purpose of this study was to compare the effects of six sessions of treatment on Active Release Technique with Ultrasound and Strain counterstrain technique with therapeutic ultrasound on Upper trapezius trigger point pain. The third group ie only US was taken as control group.

As per the statistical analysis, GROUP A (Active Release Technique with Ultrasound) and GROUP B (Strain counterstrain technique with Ultrasound) & Group C (Only with Ultrasound) all showed statistically significant improvement on all outcome measures (i.e. pressure pain threshold, trapezius length and cervical ranges).

The improvements in Group A (Active Release Technique with Ultrasound) could be attributed to the following reasons:

Active release technique involves pressure release along with active contraction and stretching of the muscle. During stretch both longitudinal and lateral force transduction occurs. When initial lengthening

occurs in the series elastic (connective tissue) component, tension rises sharply. After a point, there is mechanical disruption (influenced by neural and biomechanical changes) of the cross bridges as the filaments slide apart, leading to abrupt lengthening of the sarcomeres, referred to as 'sarcomere give'. When the stretch is released, the individual sarcomere returns to its resting length. Rhythmic contracting and stretching of the muscle causes optimal lengthening of muscle by lengthening the sarcomeres thereby increasing the cervical ROM which could be restricted due to trapezius muscle tightness. It also causes a pumping action of the muscle increasing the circulation in the muscle washing away the metabolites and stimulating the mechanoreceptors reducing the pain and increasing the Pressure Pain threshold. The alternating and reciprocal contraction & relaxation of the muscles helps to restore the normal state of relaxation. ⁽⁹⁾

Simons suggested that Pressure release may cause pain reduction and might remove the involved Myofascial Trigger Points by modifying the length of sarcomeres. After pressing the MTP, ischemia may be created, and when that pressure was released, a sudden increment in local blood flow was inevitable. Consequently, increasing local blood flow may clean out pain-producing substances from the area, and stimulation of pain receptors may be reduced accordingly. Finally, by returning the condition of the area to normal, sarcomeres might be relieved from the short position and pain, and poor blood flow may be decreased or eliminated⁽¹⁴⁾. Releasing anesthesia (antipain) hormones such as endorphin and

enkephalin after removing pressure from the MTP site neurologic inhibition, and gate control theory might be other mechanisms proposed for pain reduction and removal of relative symptoms after using Pressure Release.

The probable reason for improvements in Group B (Strain counterstrain technique with Ultrasound) could be as follows:

Strain counterstrain technique (SCS) addresses the neuromuscular hyper irritability and muscular hyper tonicity as mediated by the proprioceptive system. It also appears to reduce tissue tension, allowing for the resolution of the inflammatory response and the release of the electro chemical bonds associated with fascial restrictions. The application of Strain Counterstrain technique is thought to decrease tissue tenderness by altering nociceptor activity in the soft tissues. Bailey & Dick proposed a nociceptive hypothesis that tissue damage in dysfunctional muscles can be reduced by the positional release mechanism. They suggest that relaxation of the damaged tissues may be achieved by placing patients in a position of ease which may advance local perfusion of fluids (i.e. blood, and lymph) and enhance the removal of sensitizing inflammatory mediators. Positioning beyond the ideal range places the antagonist muscles or opposing fascial structures under increased stretch, which in turn causes a proprioceptive neural spill over, resulting in reactivation of the facilitated segment. In SCS, by moving away from the restriction barrier and in the direction of greatest ease, essentially reduces the tension on the affected tissues and minimizes the stimulation of the affected tissues and arrest the inappropriate proprioceptive activity. The 90 seconds hold in the position of ease neutralizes the non adapting reflex arc which is responsible for the continuing hypertonicity / tightness of the muscle. By using PRT, the affected muscles and fascial tissues relax. which allows it to move more freely. Therefore proper biomechanical movement is restored to the joint^(12,13).

When between group comparison was done, it was found that

The improvements in Pressure Pain threshold, trapezius muscle length, cervical ranges found in both the group A & Group B were statistically more significant than those found in Group C.

Ultrasound is found to increase the Pressure Pain threshold by microsteaming, micromassage and pain gate mechanism⁽⁴⁾. Ultrasound has localized effect on the trigger point however there is no active or passive movement that stretches the tissues to its full length. US has no effect on sarcomere length thus it was less affective in improving the trapezius muscle length & cervical ROM (ipsilateral rotation, contralateral side flexion).

There was no statistically significant difference in pressure pain threshold, trapezius muscle length and cervical ranges (ipsilateral rotation, contralateral side flexion) on latent trigger points of upper trapezius muscle between group A (Active Release technique with Therapeutic Ultrasound) & Group B (Strain counterstrain technique with Therapeutic US). The possible explanation for this could be that both techniques work to reduce pain through application of ischemic pressure technique or a reduction in inappropriate afferent proprioceptive activity⁽⁵⁾ and increase muscle length by either active or passive stretching of the muscle hereby increasing the cervical ROM by modifying the length of the sarcomeres and relieving the tissue tension.

CONCLUSION

There was no difference between the efficacy of Active release technique coupled with Therapeutic Ultrasound and Strain counterstrain Technique coupled with Therapeutic Ultrasound in treatment of latent trigger point of upper trapezius muscle. However both the techniques were more effective than only Ultrasound treatment.

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Outcome Following Transvaginal Unilateral Sacrospinous Fixation in Advanced Utero Vaginal Prolapse- a Prospective Study

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ABSTRACT

Genital prolapse is a common problem encountered in gynaecological practice. Vaginal hysterectomy with repair of pelvic floor as a treatment option for uterovaginal prolapse has an increased risk of post hysterectomy vault prolapse. Transvaginal sacrospinous fixation is one such procedure which prevents subsequent vault prolapse.

An institutional based prospective study was conducted from October 2009 to July 2011. Thirty women with advanced uterovaginal prolapse were treated with unilateral (right sided) sacrospinous fixation during vaginal hysterectomy. The outcome was analysed in terms of effectiveness of fixation for vault prolapse, intra and post-operative morbidity and recurrence.

Transvaginal sacrospinous fixation is a safe and effective procedure indicated in advanced uterovaginal prolapse with an advantage of less anaesthetic risk and allowing for simultaneous repair of other defects. Operative time is less. Complications and recurrence are minimal. Blood loss is minimally increased which can be managed by timely blood transfusion.

Keywords: Sacrospinous Colpopexy, Vault Prolapse, Genital Prolapse

INTRODUCTION

The worldwide incidence of genital prolapse is around 40%¹. Prolapse is caused by failure of supporting mechanism of genital tract². It is much complex and common in India due to catastrophes of childbirth, manual labour in early puerperium, nutritional deficiency and successive pregnancies without adequate spacing. Vaginal hysterectomy and repair procedures done for prolapse are unlikely to achieve effective and sustained vault support leading to vault prolapse. There is a need to appreciate the importance of recreating effective support for the vault after vaginal hysterectomy.

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Vault prolapse after hysterectomy has a reported incidence of 0.2% to 43%³. A number of abdominal procedures have been described for treating vault prolapse which require extensive dissection, longer operative time and unwanted abdominal scar. The transvaginal sacrospinous ligament fixation first described by Richter⁴ (1968) had a good result with success rate exceeding 90%³. It involves fixing the vaginal vault to the sacrospinous ligament with permanent or delayed absorbable suture material.

In the last several years, suspension of the prolapsed vaginal vault to the sacrospinous ligament has gained popularity in this country having previously been described in the European literature. It is an effective method to prevent vault prolapse superior to pelvic floor repair with lower failure and complication rates. Although the older articles described a bilateral fixation, most of the authors prefer unilateral (right sided) fixation due to shorter operative time, less morbidity and equal satisfactory results.⁵

This procedure was originally developed for therapeutic purpose only, as a method of treating patients with post hysterectomy vaginal vault prolapse. More recently, Cruikshank⁶ and Nichols⁷ included its prophylactic use as an adjuvant to vaginal hysterectomy in patients with advanced uterovaginal prolapse with poor cardinal and uterosacral ligaments. Gynecological surgeons should be familiar with the technique as it is safe, requires less dissection and can be done along with vaginal hysterectomy in a single sitting for prevention of vault prolapse.

METHODOLOGY

Source of data

A prospective study was conducted on 30 cases of advanced uterovaginal prolapse admitted in gynaecology ward in the Dept. of OBG, JJM Medical College, Davangere, Karnataka, from October 2009 to July 2011.

Inclusion Criteria:

- Grade III uterovaginal prolapse⁸ and Procidentia
- Failure of uterine conservative surgery for prolapse.

Exclusion Criteria

- Grade I and II uterovaginal prolapse⁸
- Vault prolapse.

Technique of transvaginal sacrospinous fixation

All women were evaluated pre-operatively, treated for UTI and decubitus ulcer. Vaginal hysterectomy^{8,9} was done followed by high ligation of enterocele sac. Cystocele and rectocele repair was done as per the case.

During colpoperineorrhaphy, rectovaginal space was reached after separating the vagina from rectum. The rectal pillar was approached by blunt dissection which is medial to levator ani muscle. Penetration of the rectal pillars leads to pararectal space. The rectum was carefully displaced by an appropriate retractor to the patient's left. The right coccygeus muscle and right sacrospinous ligament were identified using ischial spine as a landmark. Sacrospinous ligament is a flat triangular ligament extending from the ischial spine to the lateral margin of sacrum and coccyx (Fig 1 A). The sacral plexus and sciatic nerve are located above the superior border of the ligament. The pudendal vessels and nerve course around the ischial spine.

The curved tip of the Deschamps ligature carrier with prolene (nonabsorbable) suture is used to take a bite on the sacrospinous ligament at a point 2 to 3 cm medial to the ischial spine (fig 1 B). As the tip of the ligature carrier is rotated in a clock wise direction, a significant resistance is encountered. The resistance indicates that the carrier has been placed through the ligament, not superficial or deep to it. (This latter error could injure the sciatic nerve, pudendal vessels and nerves). If a gentle tug to the suture, which has been grasped by a hook, actually moves the patient a small degree on the table indicates proper placement of the suture through the substance of the sacrospinous ligament.

The second stitch was taken 1 cm medial to first one. These permanent stitches should be placed in submucosal space in the vagina so that they are buried in the fibromuscular wall. The long colpopexy stitches are then held in haemostats to be tied later in the operation. At the end of the operation, rectal examination confirms the integrity of the rectum and a vaginal pack is left for 24 hours to stop any bleeding from pararectal space.

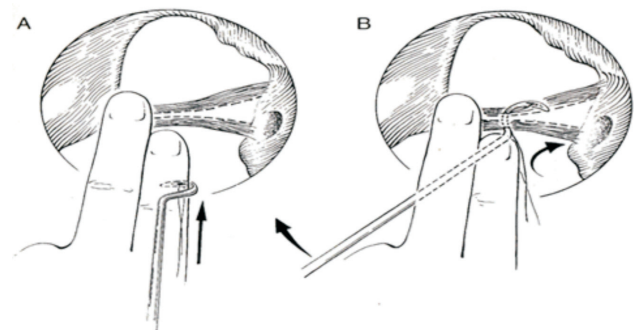


Fig. 1. A) Anatomy of sacrospinous ligament.

B) Deschamps ligature carrier is passed through ligament

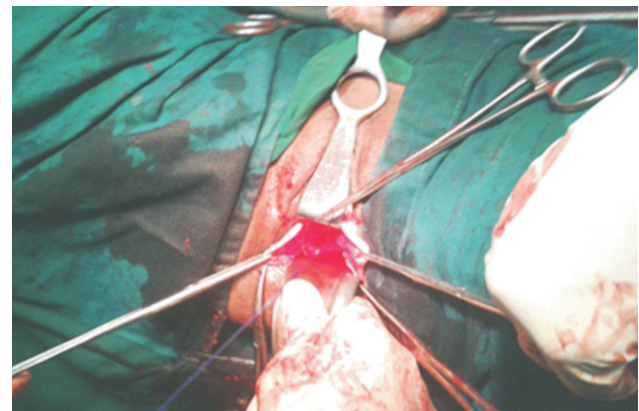


Fig. 2. Prolene suture material passed through sacrospinous ligament

OPERATIVE COMPLICATIONS

Rectal injury ,Pudendal nerve or sciatic trauma, haemorrhage(injury to the hypogastric venous plexus, inferior gluteal vessels, and internal pudendal vessels),Stress urinary incontinence (due straightening of the posterior urethrovesical junction) ,Marginal stenosis (due to removal of excessive vaginal tissue before closing the vaginal incisions) and Recurrence(cystocele or rectocele).

Patients were evaluated for complications, treated and later discharged. Post-operative follow up was done at 1, 2, 6, 12 and 18 months after surgery.

RESULTS

Thirty women with advanced uterovaginal prolapse admitted as inpatients underwent vaginal hysterectomy with sacrospinous fixation during a 2 year period.

The mean age of patients was 51.4 years. Mean duration of mass per vagina in this study population was 5.3 years. 30% of patients were of Parity 4. 13% of patients belonged to premenopausal period. 27% were in perimenopausal period.50% patients presented after 5 years of menopause which reflected high rate of prolapse among patients with longer post-menopausal duration. In the present study of 30 patients, 26 (86%) had Grade III uterovaginal prolapse and 4 (24%) had procidentia.

Table 1: Surgical procedure done along with sacrospinous ligament fixation (SSF).

Surgical procedure	No. of patients (n=30)	Percentage (%)
Mayowards + SSF	25	83.3
Vaginal hysterectomy + ACR + SSF	1	3.3
Vaginal hysterectomy + BSO + SSF+ACR+PCPR	4	13.3

25 patients underwent Mayowards⁸ procedure along with sacrospinous fixation.1 patient had vaginal hysterectomy (VH) with anterior colporrhaphy (ACR) with SSF. 4 had VH with BSO, ACR, PCPR and SSF (Table 1).

Mean time taken for vaginal hysterectomy with site specific repair was 2 hours whereas sacrospinous ligament fixation was done in a mean time of 20 mins. Entire procedure was carried out within a range of 1.6 to 3 hours.

Blood loss per surgical procedure ranged from 280-750 ml with mean blood loss being 345ml.Out of 30 patients only (12) patients received 1 pint of blood (to compare loss of nearly 400ml of blood). Duration of hospital stay was 5 to 10 days with a mean of 6.3 days.

Table 2: Comparison of POPQ⁸ before and after the procedure.

POP Q points	Pre op POP Q in cms	Post op POP Q in cms
Aa	+ 1.5	- 2.5
Ba	+ 4.5	- 4
Ap	+1	- 2
Bp	+ 3	- 3.8
D	-1	- 6

For all patients who underwent vaginal hysterectomy with sacrospinous ligament fixation, preoperative and post-operative POPQ (immediately after operation) was done. There was considerable change in the outcome (Table 2). Vaginal length of almost 6cms was retained after surgery.

Table 3: Post-operative complications

Complications	Dalal et al (2006) (n = 35)	Cruikshank (1991) (n = 48)	Present study (n = 30)
Fever	05 (14%)	04 (8%)	5 (16%)
Buttock pain	-	-	3 (10%)
UTI	04 (11%)	03 (6%)	3 (10%)
Wound infection	01 (3%)	-	1 (3%)
Retention of urine	01 (3%)	-	-
Stress urinary incontinence	-	02 (4.5%)	-
Hemorrhage	-	-	3(10%)

Out of 30 study group,20(66.7%) patients had no complication. 5 patients suffered febrile illness . 3 of these patients were diagnosed with urinary tract infection. 3 patients developed buttock pain. 1 patient had post-operative wound infection. 3 patients had bleeding from the pararectal space which was controlled by hemostatic sutures and packing (Table 3).

Table 4: Follow-up results

Follow-up results	No. of cases	Percentage
No complaints	27	90
First degree Cystocele	1	3.3
First degree Rectocele	1	3.3
Granuloma	1	3.3

With a 12 months follow-up, out of 30 patients, 27(90%) did not have any complaint. Asymptomatic

first degree cystocele, first degree rectocele and granuloma were found in one patient each (Table 4).

DISCUSSION

The relatively large number of women presenting to our hospital with uterovaginal prolapse over a period of 2 years suggests it as a significant and common problem.

Traditionally, sacrospinous fixation has been regarded as a therapeutic tool to be used only for repair of vaginal vault prolapse. However, this procedure is also used as prophylaxis against post hysterectomy vault prolapse. Not every vaginal hysterectomy patient is a candidate. But its role can be justified in the presence of marked uterovaginal prolapse with attenuated cardinal and uterosacral ligaments. Older methods used the pelvic supportive structures (the cardinal uterosacral ligament complex) to prevent subsequent prolapse. These steps hold the vagina in its almost horizontal position above the levator ani. But in Grade III utero vaginal prolapse or procidentia, these ligaments are weak. Hence, the surgeon should use the sacrospinous fixation to support the vault to prevent recurrence and spare the patient from undergoing future procedures.

Nichols and Randall¹⁰ recommended sacrospinous colpopexy to be performed after vaginal hysterectomy. In this study the procedure has achieved good results so far in preventing vault prolapse.

In our study group of 30 patients, 26 had Grade III uterovaginal prolapse and 4 had procidentia. They underwent vaginal hysterectomy, site specific repair of anterior and posterior defects along with SSF. These procedures were similar to the studies done by Nichols⁷ and Cruikshank¹¹. (Table 5).

Table 5: Comparison of associated procedures performed with SSF

Procedure	Present study (n = 30)	Nichols ⁷ (n = 59)	Cruikshank ¹¹ (n = 48)
Anterior colporrhaphy	-	-	07 (14.6%)
Posterior colporrhaphy	-	04 (7%)	7 (14.6%)
Anterior and posterior colporrhaphy	29 (100%)	54 (92.5%)	18 (37.3%)
Repair of vault prolapse	00	01 (0.5%)	16 (33.3%)

In our study fever was the most common complication (16%) which could have been a result of operative stress, intravenous fluids, wound infection and urinary tract infection (UTI). UTI was present in 3 women and they responded well to antibiotics. Sciatica was seen in 3 patients due to prolonged duration of surgery of 2 to 3 hours. All 3 were treated¹² with Inj.Cobalamine daily and discharged on 10th day after symptoms reduced. Hemorrhage from pararectal space was controlled effectively by sutures and vaginal pack¹³. These results are comparable with studies by Dalal et al¹⁴ and Cruikshank¹¹ (Table 3).

In our study on the 5th post op day one patient died due to sudden severe chest pain diagnosed as massive myocardial infraction. Patient's preoperative ECG was normal. It was not considered under surgical complication.

On follow up, 1 patient had granuloma at vault, which was treated by chemical cauterization.

1 case of grade I cystocele and rectocele was found on 12 and 14 months respectively. They were asymptomatic and required no further correction.

CONCLUSION

The results of numerous studies, as well as our study, showed that transvaginal sacrospinous colpopexy could be performed along with vaginal hysterectomy in patients with uterovaginal prolapse because of its high success rate in the prevention of postoperative vaginal vault prolapse and low intra- and postoperative complication rates. This operative technique is successful in prevention of repeated vaginal vault prolapse. The vaginal route confirms an advantage by posing less anesthetic risk and allowing simultaneous repair of other defects. It is suitable particularly for elderly and obese patients³. If performed meticulously complications are minimal. Operative time, blood loss and hospital stay are minimally increased.

This study shows the effectiveness of sacrospinous ligament fixation in preventing vault prolapse in advanced uterovaginal prolapse.

The total number of cases under the study was 30, of which 24 cases had third degree uterovaginal prolapse and 4 cases had procidentia. All 30 patients underwent vaginal hysterectomy along with repair of

vaginal wall defects and right sided sacrospinous ligament fixation. Mean operating time was 2 hours 20 min with mean blood loss of 350ml. The intraoperative complication encountered was haemorrhage in 3 patients. These results were similar to the study by Kari et al¹⁵. The postoperative complications were fever in 3 cases (9.3%), urinary tract infection in 3 (9.3%), and buttock pain in 3 (9.3%) cases. Recurrence of cystocele and rectocele was found in one case each at 1 year follow-up.

The sacrospinous fixation has many advantages over abdominal procedures. It avoids major abdominal surgery and allows the surgeon to deal with co existent cystocele, rectocele and stress incontinence. It adds only 15 to 20 min to the vaginal repair with low complication rate. With respect to correcting failure of upper genital tract supports, the sacrospinous fixation should assume a high place in a vaginal surgeon's repertoire in treating marked uterovaginal prolapse.

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A Study of Anterior Division of Internal Iliac Artery in Cadavers in a Medical College of Coastal Andhra Pradesh

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ABSTRACT

The internal iliac artery or hypogastric artery is one of the terminal branches of the common iliac artery. It arises approximately opposite the level of the intervertebral disc between L5 and S1 and lies anteromedial to the corresponding sacro-iliac joint.

The knowledge of branching, course, usual and unusual variations of various branches of internal iliac artery is of paramount importance in many clinical conditions and diseases. The study is undertaken to add more light to the vasculature of the pelvic organs in order to prevent any complications during or after surgery.

Keywords: Internal Iliac Artery, Anterior Branch, Superior Vesical, Middle Rectal, Uterine Artery etc

INTRODUCTION

The internal iliac artery or hypogastric artery is one of the terminal branches of the common iliac artery. It arises approximately opposite the level of the intervertebral disc between L5 and S1 and lies anteromedial to the corresponding sacro-iliac joint. It is one and half inches long. The vessel courses inferiorly over the pelvic inlet, then divides into a long anterior and a short posterior division at the level of superior border of the greater sciatic foramen.¹ The posterior trunk breaks up into three branches, all of which are parietal i.e, ilio-lumbar, lateral sacral and superior gluteal. The anterior trunk has nine branches. Three branches are associated with urinary bladder – superior vesical, obliterated umbilical artery and inferior vesical. Three visceral branches – middle rectal, uterine and vaginal. Three parietal branches – obturator, internal pudendal and inferior gluteal. The internal pudendal and inferior gluteal vessels are considered to be the terminal branches of the anterior division.^{2,3,4} The knowledge of branching, course, usual

and unusual variations of various branches of internal iliac artery is of paramount importance in many clinical conditions and diseases like Cysts, tumors and malignancies in uterus, vagina and ovaries, during caesarian section, hysterectomy of different types, surgical procedures of the uterus, cervix & ovaries, diseases of ischio-rectal fossa., Abdomino-perineal resection of rectum for carcinoma rectum, prostatectomy, hip fractures, femoral hernia urethral and ureteric reconstructions, etc. requires extensive knowledge of pelvic vascularity.⁵ A detailed knowledge about the course, distribution and variations common or unusual of internal iliac artery is of utmost importance to the operating surgeon, hence the study is undertaken to add more light to the vasculature of the pelvic organs in order to prevent any complications during or after surgery.

MATERIALS AND METHOD

Study area: Department of Anatomy, G.S.L Medical College, Rajahmundry, A.P

Sample size: 50 cadavers

Study period: March 2007 to March 2008.

Study variables: Site of origin, Course, Relations, Distribution, Branches, Arterial anastomoses, Variations

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Statistical analysis: Percentages and proportions

METHODOLOGY

The cadavers were embalmed with the embalming fluid. A careful dissection was made to expose the internal iliac artery. During this dissection the course, distribution, branches, anastomoses and variations were noted and studied.

RESULTS

Superior vesical artery

The normal course and distribution of superior vesical artery giving many branches to the bladder was found in 50 percent of cases, in 25 cases out of 50 specimens. (50%) as shown in table 1. In the present study, in 15 percent of cases superior vesical artery is found to be giving single branch to the bladder. In 35 percent of cases the superior vesical artery is found to be giving 2 branches to the bladder. This is observed in 17 cases out of 50 specimens. (35%). The other branch arising from the proximal end of the superior vesical artery is vesiculo-deferential artery which is found in 90% of cases.

Obturator artery

In 75 per cent of cases, normal course and distribution of the obturator artery was found. As per table 2, in 92 % of cases, the anomalous origin of the obturator artery was observed where there was no corresponding vessel arising from the hypogastric. In the present work, obturator artery was seen arising from the inferior epigastric artery. This origin apparently represents an enlargement of the anastomosis which the pubic branch of the inferior epigastric typically has with the obturator at the foramen. In 8% of cases, obturator artery was seen arising from the superior gluteal artery i.e., from the posterior trunk by the way of iliolumbar artery.

Middle rectal artery

The normal course and distribution of the middle rectal artery was found in 75 % of cases as per table 3. This observation was made in 38 out of 50 specimens.(75%). Out of 12 cases showing variations,

in 5 cadavers, (41%) middle rectal artery is arising from the internal pudendal artery. In 26 % i.e 3 cases, the middle rectal artery is arising from the inferior gluteal artery. In 4 cases i.e 33.3% , the middle rectal artery is arising directly from the anterior division of the hypogastric artery.

Inferior vesical artery

The normal course and distribution of the inferior vesical artery was found in 25 (50%) cases. In 25 percent of cases, it is found to be arising from the common trunk of internal pudendal and inferior gluteal arteries. In 15 percent of cases inferior vesical artery is arising from the umbilical artery as per table 4. In 10 percent of cases inferior vesical artery is found to be arising from obturator artery.

Uterine artery

The normal course and distribution of the uterine artery is found in 25 (50%) of cases. In 24% of cases i.e 12 cases, uterine artery arises as a common stem with inferior gluteal and internal pudendal arteries. In 13 (26%) of cases the uterine artery arises as a common stem with umbilical and obturator arteries.

Vaginal artery

In 25 (50%) of cases, the vaginal artery is arising from the hypogastric artery. In 50% i.e. 25 cases, the vaginal artery is arising from the uterine artery.

Inferior gluteal artery.

In 45 out of 50 (90%) of cases, the normal course and distribution of the inferior gluteal artery is seen. In 5 i.e. 10% of cases, the inferior gluteal artery is arising from the posterior division along with superior gluteal as a common stem.

Internal pudendal artery

In all cases i.e 100 per cent of cases, the internal pudendal artery is arising from the anterior division of the internal iliac artery as a terminal branch along with the inferior gluteal artery. In all most all cases standard pattern was observed except only in one specimen division into anterior and posterior was not noticed and the branches showed a variable pattern of origin and distribution.

Table 1: Showing variations in Superior vesical artery

Vasculature observed		No. of specimens	Percentage
1.	Standard pattern	25	50%
2.	Single branch	8	15%
3.	Two branches	17	35%
Total		50	100%

Table 2: Showing variations in Obturator artery

Vasculature observed		No of specimens	Percentage
1.	Standard pattern	37	75.5%
2.	Variations		Out of 13
a.	Anomalous origin of obturator artery	12	92%
b.	Arising from posterior trunk by way of iliolumbar.	1	8%
Total		50	100.00%

Table 3: Showing variations in Middle rectal artery

Vasculature observed		No. of specimens	Percentage
Standard pattern		38	75 %
Variations			Out of 12
a.	*Internal pudendal artery	5	41%
b.	**Inferior gluteal artery	3	26%
c.	***Hypogastric artery	4	33%
Total		50	100%

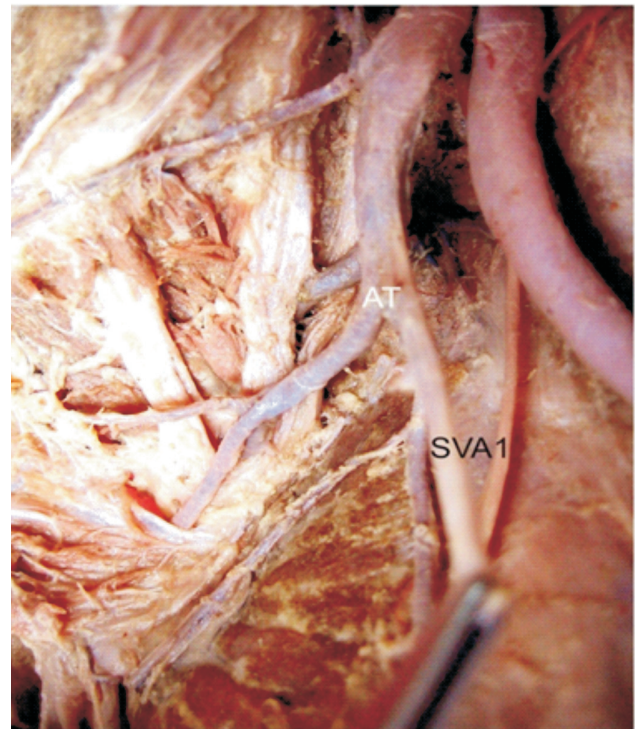
* Middle rectal artery arising from internal pudendal artery.

** Middle rectal artery arising from inferior gluteal artery.

*** Middle rectal arising from anterior division of hypogastric artery.

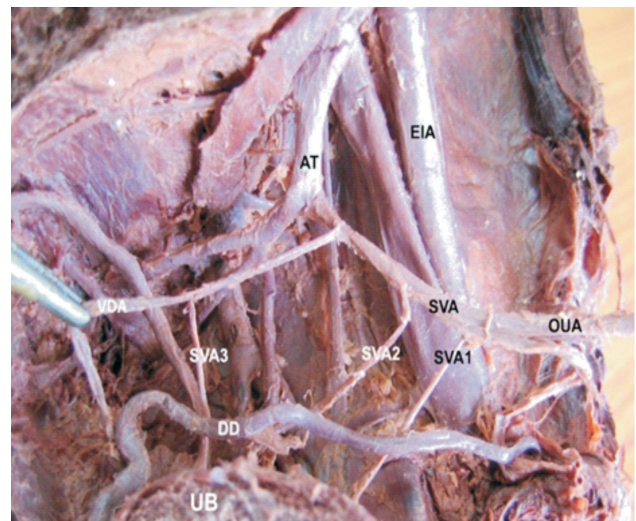
Table 4: Showing variations in inferior vesical artery

Vasculature observed		No. of specimens	Percentage
1.	Standard pattern	25	50%
2.	Variations		
a.	Common trunk of internal pudendal & inferior gluteal arteries.	12	25%
b.	Arising from umbilical artery	8	15%
c.	Arising from obturator artery	5	10%
Total		50	100%



Pic 11 Left Male Pelvis - Single branch of superior vesical artery.

Fig. 1. Showing single branch of superior vesical artery



Pic 13 Left Male Pelvis - Vesiculodiferential artery arising from proximal end of superior vesical artery.

Fig. 2. Showing Vesico-differential artery

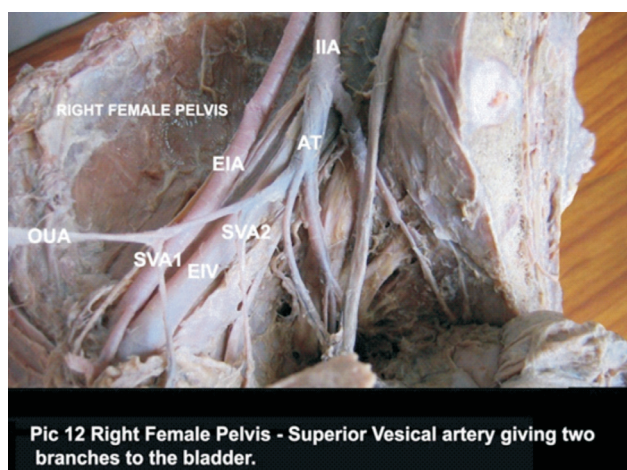


Fig. 3. Showing two branches of superior vesical artery

DISCUSSION

Superior Vesical Artery (Umbilical)

In the present study the superior vesical arteries are more commonly multiple in number which is found in 50 % of cases. Braithwaite, J.L.⁶ found superior vesical arteries are more commonly multiple which is similar to the present study. In 15 % of cases superior vesical artery is found to be giving single branch to the bladder. Braithwaite, J.L.⁶, found the same feature in 21.4% of cases which is again similar to our study. The other branch arising from the proximal end of the superior vesical artery was vesiculo-deferential artery which was found in 90 per cent of male pelvic sections. Braithwaite, J.L., found it in 94.3% of cases which is again similar to our study.

Obturator Artery

In the present study the anomalous origin of the obturator artery from the pubic branch of the inferior epigastric artery was observed in 22.5 per cent of cases. Sahana, S.N.,⁷ Hollinshead H.W.², Peter L. Williams⁸, Last, R.J.⁹ described the anomalous origin of the obturator artery from the pubic branch of the inferior epigastric artery in 20-30 per cent of cases which is similar to our study. In 2.5 per cent of cases obturator artery was arising from the posterior trunk of the internal iliac artery i.e. from the superior gluteal artery which is in conformity with Hollinshead, H.W.²

Middle Rectal Artery

In the present study the middle rectal artery was arising from the internal pudendal artery which was found in 39.6 per cent of cases which is in conformity with Ashley and Anson¹⁰ & Didio and Bezerra¹¹ who

observed such finding in 40% of cases. Similar findings were also seen in the study by Ashley & Didio regarding the middle rectal artery which was arising from the inferior gluteal artery in 26.4 per cent of cases. In the present study. Ashley and Anson, Didio and bezerra studied the middle rectal artery arising from the inferior gluteal artery in 26.7 per cent of cases and their findings were in accordance with the present work. In the present study, middle rectal artery originated directly from the anterior division of hypogastric artery in 33.3 per cent of cases. Ashley and Anson, Didio and Bezerra studied that the middle rectal artery originated from the hypogastric artery in 16.8 per cent of cases. So this finding was in conformity with the previous studies.

Inferior Vesical Artery

In the present study the inferior vesical artery was found to be arising from the common trunk of internal pudendal and inferior gluteal arteries in 25 % of cases. Braithwaite, J.L.,⁶ found the same feature in 30 per cent of cases. In 15 per cent of cases inferior vesical was arising from the umbilical artery. Braithwaite, found that the common origin of the vesical arteries in 30 per cent of cases. In 10 per cent of cases inferior vesical artery was arising from the obturator artery which does not coincide with the observations of present study.

Uterine Artery

In the present study the uterine artery arises as a common stem with inferior gluteal and internal pudendal arteries in 25 per cent of cases. Ashley and Anson,¹⁰ Jagielski and Wozniak¹² studied the origin of uterine artery from a common stem with inferior gluteal and internal pudendal arteries which is similar to the present study. In the present study, origin of the uterine artery from a common stem with umbilical and obturator arteries in 25 per cent of cases which is similar to the study by Ashley and Anson¹⁰ & Jagielski and Wozniak¹²

Vaginal Artery

In the present study vaginal artery was arising from hypogastric artery in 50 per cent of cases which is in conformity with Hollinshead, H.W. In the present study vaginal artery corresponds to the inferior vesical artery in male. In 50 per cent of cases, vaginal artery was arising from the uterine artery. Last, R.J., Hollinshead, H.W., mentioned that the vaginal artery more frequently arises from the uterine artery.

Inferior Gluteal Artery

In the present study inferior gluteal artery was arising from the posterior division along with superior gluteal artery as a common stem and divides into 2 terminal branches that is superior and inferior gluteal arteries in 10 per cent of cases which is again in accordance to Hollinshead, H.W.

Internal Pudendal Artery

In the present study the internal pudendal artery was arising from the anterior division of the internal iliac artery as a terminal branch along with the inferior gluteal artery in 100 per cent of cases which is in concordance to findings of Hollinshead, H.W., Peter L. Williams., Last, R.J., mentioned the same origin in their study. In the present study, the internal iliac artery normally divided into anterior and posterior division at the level of upper margin of greater sciatic foramen in all most all specimens except one specimen. According to Hollinshead, H.W., the division may not be clear cut, and the branches which arise from anterior and posterior trunks respectively may vary considerably which is similar to our study.

CONCLUSIONS

A great number of variations were observed in almost all the branches coming out from anterior and posterior division, except in the internal pudendal artery which followed its standard pattern of origin and distribution.

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Peritonitis due to Uterine Perforation by a Degenerated Fibroid- an Atypical Presentation

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ABSTRACT

Uterine leiomyomas are the most common tumors of the uterus arising in the smooth muscle of the myometrium. Uterine perforation by a fibroid is a very rare complication. Here we are reporting a case of a perimenopausal 44 year old who presented in the emergency department of our hospital with acute abdomen and evidence of peritonitis. The patient was sent for an USG which showed a fundal fibroid and free fluid within the peritoneum which was confirmed by a CT scan. Laparotomy revealed a perforation on the uterus due to a degenerated fibroid leading to ascending infection, peritonitis and sepsis.

Keywords: *Leiomyoma, Degeneration, Perforation, Peritonitis*

INTRODUCTION

Although benign, uterine leiomyomas are one of the most common tumors in women¹. These tumors have the highest prevalence occurring between the fourth and fifth decades of human life². The prevalence in the general population is about 30-50% in women of reproductive age group². They can present with multitude of symptoms like menstrual complaints, abdominal mass, pressure symptoms, infertility, dysmenorrhea etc. But 75% of fibroids are asymptomatic. Secondary changes can occur in about 65% of the myomas. The common types of degenerations are hyaline (63%), myxoid (19%), calcified (8%), cystic (4%)³. There is a possibility that the degenerating myomas may perforate the uterus and result in a sequalae as mentioned in our case report.

CASE REPORT

A 44 year old Para 2 living 2 without history of any abortions came to the emergency department of our hospital with fever, abdominal pain, abdominal distension and vomiting of around 4 days duration. She had previous regular menstrual periods with normal flow but this time her LMP was 5 weeks back.

She had past history of fever and abdominal pain three weeks back when she had UTI and early renal failure which symptomatically improved in 3 days after treatment.

General examination had no positive findings except for fever. Per abdominal examination showed diffuse abdominal tenderness and mild abdominal distension. Per vaginal examination showed a 10 weeks size uterus, non tender. She was admitted and evaluated by the surgeons along with the gynecologists. Her urine pregnancy test was negative, and total count was 15,300. USG showed evidence of ascitis and multiple fibroids in the uterus. CT scan was done for further evaluation. CT scan showed findings of a bulky uterus with possibility of necrosed fibroid with peritonitis. There was no other source for infection clinically. Patient was managed conservatively with antibiotics. But the very next day as the abdominal pain and distension increased the patient was taken up for emergency laparotomy. Per-operative findings included serous ascitic fluid, uterus showed multiple fibroids with one fundal subserous fibroid of 3x4 cm. Around one cm from the base of the subserous fibroid was a perforation of 1 x 1 cm with necrotic tissue projecting from it. Left ovary was cystic and right ovary was looking normal. Appendix appeared inflamed but

no perforation. Total abdominal hysterectomy with left salpingo oophorectomy along with appendicectomy was done. Post op period was uneventful. With antibiotics and supportive measures she recovered and was discharged on the 10th post operative day. Histopathology report revealed intramural cellular fibroid with extensive hyaline necrosis with cystic degeneration and inflammation perforating through the fundus. There was one subserous fibroid and other multiple intramural fibroids with basal endometrium. Appendix showed evidence of peri-appendicitis only.

DISCUSSION

The danger of fibroid tumors of the uterus lays not so much in their presence per se, as in the secondary changes that they may undergo and their pressure on the neighboring organs and tissues. Fibroids are classified as submucosal, intramural and subserosal based on their location. Intramural fibroids within the substance of the myometrium are the most common but often asymptomatic². Pain occurs in approximately 30% women with fibroids and is usually the result of acute degeneration⁴. Degeneration of fibroid which occurs secondary to inadequate blood supply, may be hyaline, myxomatous, cystic, fatty, hemorrhagic or malignant in nature of which cystic degeneration accounts for only 4 %⁵.

Degeneration of a fibroid leading to spontaneous perforation of the uterus leading to peritonitis and sepsis is a very rare complication of a uterine leiomyoma. Review of literature could not reveal the true incidence of the condition. Intraperitoneal hemorrhage secondary to perforation of uterine fibroid after cystic degeneration has been reported by Varras et al in Greece⁶.

Spontaneous gangrenous changes leading to perforation and fatal septic shock has been reported by Victor Olagundoye et al in united Kingdom⁷. Spontaneous perforation of a huge 10 x 10 x 13cm degenerating leiomyoma associated with massive ascites in a nonpregnant woman was reported by Dan Grisaru, of Israel⁸.

Spontaneous rupture of pyometra with or without endometrial/cervical carcinoma is well documented⁹.

Acute abdominal pain has also been reported from fibroid necrosis following gonadotrophin releasing hormone (GnRH) analogue therapy to reduce fibroid size¹⁰. Recently, Vashisht *et al* reported a case of fatal septicemia from a fibroid necrosis following embolisation therapy¹¹. The number of such complications may rise as more such procedures are performed.

In our case the patient had a totally asymptomatic fibroid which was diagnosed by an USG when she was admitted with acute onset of abdominal pain, distension and fever. CT scan confirmed the findings adding on the suggestion that the fibroid is necrosed with the possibility of secondary infection and peritonitis. CT scan is the preferred imaging modality especially if clear interpretation of pelvic anatomy is obscured by multiple large leiomyomas or if appendicitis is a considered diagnosis¹². On laparotomy, there was ascitis along with a perforation on the fundus of the uterus due to an intramural fibroid which was located next to a subserous fibroid. She had no h/o of dilatation and curettage or any surgeries on the uterus in the past. The patient had a 3 days history of UTI and early renal failure around three weeks before the current admission which may have triggered the cystic degeneration and necrosis of the fibroid. Hysterectomy should be the surgical options along with other supportive treatment.

In a case of acute abdomen in the presence of a leiomyoma uterus, this is one complication which we have to be aware of.



Figure 1: Specimen of the Uterus showing the subserous fibroid along side the perforation.



Figure 2: Specimen of the uterus showing perforating site.

CONCLUSION

Fibroid uteri are the most common benign tumors of the women in the reproductive age group. Although they can present with a multitude of symptoms majority are asymptomatic. Fibroids can undergo degenerative changes and rarely as reported in this case these degenerated fibroids can cause necrosis and perforation of uterus. Secondary infection and peritonitis are rare complications due to this perforation.

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An Outbreak Investigation of Gastroenteritis at Dubbaka, India

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ABSTRACT

Context: An outbreak of gastro-enteritis occurred at Dubbaka village, Nizamabad District, Andhra Pradesh State, India.

Aims: To investigate the gastro-enteritis out-break; identify the agent, source, mode of disease transmission and recommend control measures.

Settings and Design: Cross-sectional study

Method and Material: An outbreak investigation was carried out at Dubbaka village, Nizamabad District, Andhra Pradesh state, India during 16th to 23rd October 2010. Pre-tested, Pre-designed epidemiological case sheets were used. Ten stool and water samples were collected for laboratory analysis.

Statistical analysis used: Chi-square test

Results: Out of 3051 population, 471 cases were identified. Over-all attack rate was 15.43%, higher among above 14 yrs (20.32%) of age than in below 14yrs (8.1%), higher in females (16.17%) than in males (14.75%). The samples of stools and drinking water were positive for *Escherichia coli*.

Conclusions: The present out-break was caused by contamination of drinking water. The quality of drinking water should be improved using locally available appropriate technology and resources. Solar water disinfection is a low cost method of purifying water that can often be implemented with locally available materials.

Keywords: *Gastro-enteritis, Out-break, Attack- rate*

INTRODUCTION

Diarrhea associated with nausea and vomiting is referred to as Gastroenteritis (GE) which is usually caused by contamination of water or food. More recently, three highly publicized drinking water outbreaks of *E. coli* infections (one each in Wyoming, New York, and Canada), have focused increased attention on the safety of drinking water¹. In India, nearly two-thirds of the population lives in rural areas, where only 28% of households use safe water and 26% have access to good sanitation³. Hence it is not surprising that GE continues to be endemic, with peaks of seasonal epidemics which is an important public

health problem in the country. The investigation of this outbreak of GE was conducted to identify the agent, source, mode of transmission and recommend control measures.

SUBJECTS AND METHOD

Dubbaka village is a sub-centre in the Upgraded Primary Health centre (UPHC), Dharpally, to the east of Nizamabad District, Andhra Pradesh State. The epidemic started on 16.10.2009 with admission of 10 cases with diarrhea and vomiting from Dubbaka village in a Private Hospital at Nizamabad but it was not notified to the district health department. Only on

17.10.09 at 9.30 am, the health personnel of Dubbaka sub-centre informed the district authority that there were a cluster of more than 50 cases of acute diarrhea with vomiting among all age groups especially adults since morning & the patients were not able to even walk a short distance. The same information was received telephonically by District Medical and Health Officer (DMHO) from one of the local people's representative of the same village. Deployment of staff - six health supervisors of the Integrated Disease Surveillance Project (IDSP) team from the office of the DMHO, the Medical Officer (M.O), Para-medical staff (PMS), lab-technician, pharmacist, and supportive staff of the concerned UPHC were deployed to the affected village. Materials - Adequate stock of I.V sets, I.V fluids, O.R.S packets, antibiotics, Paracetamol tablets, Chlorine tablets, sterile bottles for collection of stool samples, epidemiological investigation forms were positioned at treatment centre. Vehicle - An ambulance -108 was parked for effective referral. Communication system - A 24 hour's communication system was established at the DMHO's office for continuous administrative support of logistics, supplies, manpower and guidance from the health department. Instructions to the villagers - The local villagers were informed to stop drinking the water from the contaminated source until further orders. Alternate safe drinking water was provided in water tanks till 2nd November 2010. Establishment of Temporary Treatment Centre (TTC) - The M.O of the concerned PHC along with PMS had established TTC at Zilla Parishad High School (ZPHS) in Dubbaka village so that the cases were treated nearer to their homes without losing time and to control the spread of the disease. Priority was given to prompt treatment of patients as per standard set guidelines.

Epidemiological investigation was conducted using pre-designed, pre-tested, structured questionnaire. Operational definition of a GE case was defined as any person from Dubbakka village, suffering from diarrhea >3times in 24 hrs. Case finding was done by reviewing the records of P.H.C, Private hospitals and by house to house visit by the health workers (HWs). A Chi-square test was applied to see whether there was any significant difference between the expected and observed results. Chlorination of water at domestic level - HWs distributed five chlorine tablets per house-

hold with necessary instructions about how to use these tablets for chlorination of drinking water at domestic level. Health Education (H.E) - H.E was given at family level about personal hygiene, excreta disposal if there were small children in the family, food safety and use of safe water. During the survey along with public health engineers (PHE) of Rural Water Supply Department (RWSD), it found that there was a breakage of water pipes, leakages contaminating the water in over-head water tank no.1 which was supplying drinking water to a part of the community of Dubbaka village. Accordingly PHEs repaired the water supply system. Laboratory tests - PHEs collected 10 water samples and tested for the total bacteria and the Coliform bacteria count according to the national standard examination methods for drinking water. About 10 stool samples were collected randomly from the patients which were tested at PHC using Gram's stain and hanging drop method. Dis-infection - Bleaching powder was used for disinfection of vomitus, motions. The Panchayatraj Department (PR) had taken care of sanitation in the village. Inter-sectoral co-ordination - The health department established close co-ordination with the Collector and District magistrate, RWSD, PRD, ICDS, Education etc., Reporting - Daily report on the status of the epidemic was sent to the Collector, Director of Public Health and Family Welfare and local District Minister and M.L.A till the epidemic subsided. School Premises - On 25th October, the school was handed over to the Principal after total disinfection of the school premises by PRD.

RESULTS

Table-1 shows the distribution of cases by age and sex, with age specific attack rates. The village population was 3051 at the time of outbreak, out of which 471 cases occurred i.e., 15.43% of the population was affected within a period of 8 days. The A.R was high among age group of above 14 yrs (20.32%) when compared to those aged below 14yrs (8.1%). which was statistically significant. The attack rates in the females (16.17%) are higher than in males (14.75%).

Only 49 cases were referred to District Head-Quarter Hospital. Private sector treated 37cases. The stool and drinking water samples were found to be positive for *Escherichia coli*.

Table 1: Distribution of cases by age and gender with attack rates

Category	Population (No. 3051)	Cases (No. 471)	Attack rate (%)	X ²	p-value
Age	Up to 14 yrs (n=1221)	99	8.1	83.7710	< 0.05
	Above 14 yrs (n=1830)	372	20.32		
Gender	Males (n=1586)	234	14.75	1.1819	> 0.05
	Females (n=1465)	237	16.17		

Figure-1 shows the distribution of the gastroenteritis cases by time. The first case was reported on 16th October, 2009. Maximum number of cases occurred on 17th & 18th October. The cases escalated from 16th to 23rd October except on 20th October where there was a slight increase in cases and then leveled off.

Figure-2 Spot Map shows the clustering of cases in the village where the water supply was from over-head tank No.1 which had a capacity of 80000 liters, located at ZPHS. The other two over head tanks No.2 and 3 had a capacity of 60000 liters each supplied the remaining population of the same village which was not affected.

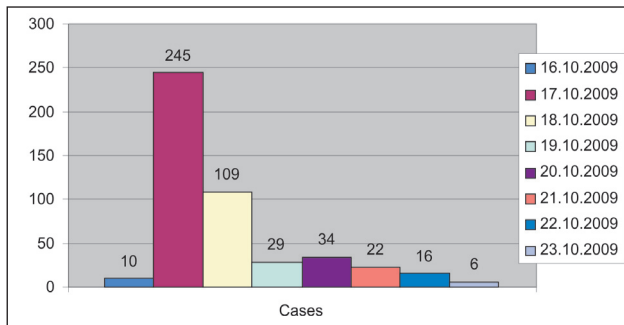


Fig. 1. Distribution of Gastro-enteritis Cases by Time

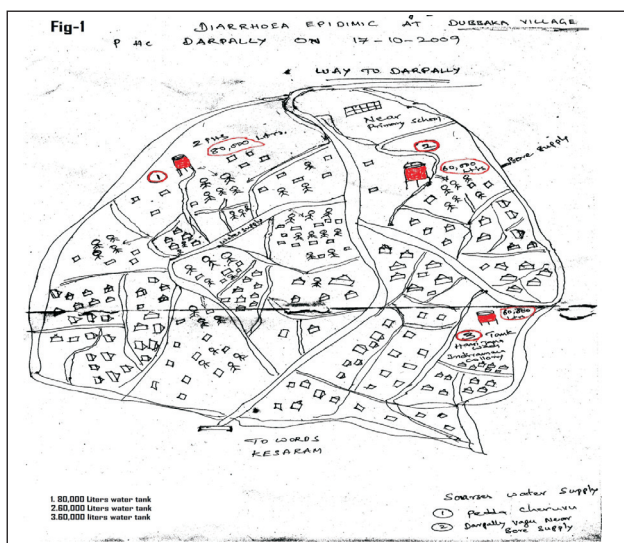


Fig. 2. Distribution of Gastro-enteritis Cases by Place

DISCUSSION

In this out-break of G.E; there was contamination of drinking water which was similar to most of the diarrheal outbreaks recorded in India^{4,5}. All ages and both sexes were affected and the similar results were seen in the study conducted by Rajiv Sarkar⁶ in a village in southern India. Water samples collected for microbiological examination showed high Coliform counts which are similar to the study by Rajiv Sarkar⁶. The out-break involved 15.43% of the village population but due to better surveillance and timely action, there was no mortality during the outbreak, which was similar to study conducted by Amitav Das in Orissa⁷. The A.R was significantly more ($p < 0.05$) among age group of above 14 yrs (20.32%) when compared to those aged below 14yrs (8.1%), which was similar to study conducted by Geetha S in Nanded⁸. There was no significant difference ($p = > 0.05$) in the attack rates between the males (14.75%) and females (16.17%) which was similar to study conducted by Geetha S in Nanded⁸.

The epidemic curve showed that the out-break originated from a common or point source. The cases escalated from 16th to 23rd October except on 20th October where there is a slight increase in cases and then leveled off. This type of curve was seen in a study conducted by Amitav Das in Orissa⁷.

Spot Map shows the clustering of cases, all traced to a single source of contaminated drinking water, which was the over-head tank No.1 with a capacity of 80000 liters of water, located at ZPHS. The other two over head tanks No.2 and 3 with a capacity of 60000 liters each supplying the remaining population was not affected in the same village. In similar way, the eminent Dr. John Snow demonstrated how cases of cholera that broke out in a district of central London could all be traced to a single source of contaminated drinking water⁹.

After effective comprehensive control measures like stopped consumption of contaminated water, supplied safe water through water-tanks and Heath

Education on personal hygiene and sanitation, the number of GE cases reduced sharply. Similarly findings were seen by Esrey et al. that made an assessment of 144 published studies to determine the impact of improving the quality of the community water supply together with improved hygiene and sanitation. The E.coli in water samples is generally regarded as the hygiene standard for drinking-water and food. The coliform count was higher suggested fecal contamination at some part of the source of water supply.

CONCLUSION

The G.E out-break in Dubbaka village occurred due to contamination of water at the source of supply in the over head tank No.1 which is situated at ZPHS in the village. Solar water disinfection is a low cost method of purifying water that can often be implemented with locally available materials^{10, 11, 12, 13}. It has low impact on the environment. The attention of policymakers and researchers should be directed towards rural population.

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Ethical Clearance: It is cleared by the Directorate of Health, Government of Andhra Pradesh state, India

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Selection Criteria for laparoscopic Evaluation of Adnexal Masses

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ABSTRACT

Aim: To evaluate the accuracy of a combination of CA-125 levels, pattern recognition approach on ultrasound, presence or absence of ascites and Resistance Index on Doppler ultrasound for predicting benign adnexal masses.

Materials and Method: All cases of adnexal were enrolled into the study from Jan 2008 to Jul 2011, and then subjected to risk evaluation for any underlying malignancy. A combination of CA-125 levels, pattern recognition approach on ultrasound, presence or absence of ascites and Resistance Index on Doppler ultrasound were used for predicting benign adnexal masses which were then taken up for laparoscopic management and evaluation.

Results: Out of the 136 patients enrolled into this study, the histopathology report confirmed benign pathology in 134 patients (98.53%), while borderline tumor of low malignant potential was reported in one (0.74 %) and mucinous cystadenocarcinoma in one patient (0.74%).

Conclusion: Hence, by using simple readily available investigations like ultrasound (pattern recognition approach, tumor morphology and ascites) and CA-125, the nature of adnexal mass can be reliably predicted and these patients can be safely offered the benefits of laparoscopic surgery.

Keywords: Laparoscopic, Adnexal Mass, Ultrasound, Selection Criteria

INTRODUCTION

Management of Adnexal masses detected at the time of gynecological consultancy pose a double edged problem. There is the dilemma of performing extensive surgery in the form of staging laparotomy for a benign disease on one hand and the lurking fear of missing the diagnosis of malignancy on the other in case the

patient is followed on conservative lines. Thus, it seems that it is important to establish risk profiles of all patients with adnexal masses so they can reap the benefit of minimally invasive surgery wherever possible and be rightly subjected to staging laparotomy where indicated. This prospective study was conducted to evaluate the benefit of laparoscopic management in case of adnexal masses thought to be benign based on certain demographic characteristics like age, menopausal status, tumor morphology on ultrasound, presence or absence of ascites, CA-125 levels and Resistance index on Doppler Ultrasonography.

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METHOD & MATERIALS

This prospective study was carried out at a tertiary level Hospital and 136 women with adnexal masses

were enrolled into the study. The study was approved by the institutional review board.

All cases of symptomatic adnexal masses or those, diagnosed incidentally were enrolled into the study from Jan 2008 to Jul 2011, and then subjected to risk evaluation for any underlying malignancy. These women were subjected to thorough history taking including detailed history of pain and the onset or duration of mass. They were then subjected to Transvaginal/ transabdominal Sonography for morphological features [Table 1] like tumor size, bilaterality, solid areas, complex echotexture with solid cystic areas or cystic, presence and thickness of septations, presence or absence of ascites [figure 1]. Whenever, possible ultrasound examiners provided a specific histologic diagnosis (e.g. endometrioma, dermoid cyst, hydrosalpinx) by use of pattern recognition data. The ultrasound examiner had no knowledge of the serum CA-125 levels when suggesting a diagnosis.

Tumor marker studies like CA-125, CEA, AFP, beta HCG and LDH were done in patients wherever indicated. The sensitivity and specificity of Serum CA125 >35U/ml for identifying or ruling out malignancy is 85.5% and 86.4%, respectively, while sensitivity and specificity of cystic morphology on ultrasound for the same is 100% and 46.6%, respectively¹. Those adnexal masses with high suspicion of malignancy were subjected to additional investigations like colour Doppler ultrasonography, CT scan or MRI.

Based on the above criteria the following were used as exclusion criteria for the laparoscopic management in this study

1. Complex echotexture with solid cystic areas on transvaginal/ transabdominal ultrasonography.
2. Raised CA- 125 levels in the absence of endometriotic cysts
3. Presence of significant ascites
4. Resistance Index < 0.4 on Doppler Ultrasonography suggestive of low resistance flow or increased vascularity.

The rest of the adnexal masses were then taken up for laparoscopic management and evaluation [Table 3].

Laparoscopy was performed for all the patients. A thorough visualization of the entire pelvis and abdomen was done and any fluid if present was aspirated and sent for cytology. A note of the size, shape, location and nature of the adnexal mass, the opposite ovary, their surface, presence of ascites and adhesions was made. The peritoneal surfaces, sub diaphragmatic surface and the entire viscera were inspected in the clockwise direction and biopsy was taken from any suspicious area.

In young patients with benign pathology cystectomy was performed, while for post-menopausal women and in those cases where the tubes and ovaries could not be preserved oophorectomy or salpingo-oophorectomy was performed. Salpingectomy was performed for hydrosalpinx.

All adnexal masses were placed into endobags and further decompressed if required in the bag and then removed through one of the ports to avoid intraperitoneal spillage of the surgical specimen and contamination of the abdominal wall during removal.

For small superficial endometriomas which were difficult to remove surgically, fluid was drained from these endometriomas followed by bipolar fulguration of cyst wall.

In selective cases with high suspicion of malignancy per-operatively, specimen was sent for frozen section with the intent of performing a complete staging laparotomy on evidence of malignancy.

At the conclusion of each case hemostasis was assured and the laparoscopic incisions were closed.

The patients were followed up in the post-operative period for any complication. A note of the histopathology report was made and matched with the pre-operative diagnosis. The histopathology slides were reviewed in the Department of Pathology. [Table 4]. The final endpoint of the study was histology of surgically removed tissue. Tumors were classified according to the criteria recommended by the International Federation of Gynaecology and Obstetrics.

RESULTS

There were 136 patients in our study, who were treated by laparoscopy for an adnexal or pelvic mass. While most of the women in our study group were in

the reproductive age group, there were girls as young as 12 years to women as old as 72 years of age [Table 2]. Out of 136 patients, 23 women were postmenopausal.

22 women in our study group had cyst larger than 10cm with the largest cyst 28-30cm in diameter, almost reaching up to the xiphisternum.

All the patients but two were treated laparoscopically. One patient had to be taken up for a staging laparotomy later on, in view of malignancy confirmed on histopathology report. Another patient with chronic pelvic pain and adnexal mass was detected to have encysted fluid collection with extensive intra-peritoneal adhesions [figure 3]. 83 patients (61.03 %) had undergone laparoscopic cystectomy, while 18(13.24%) patients each had undergone laparoscopic oophorectomy and salpingo-oophorectomy, and 12 patients (8.82 %) underwent laparoscopic salpingectomy. 3 patients underwent laparoscopic adhesiolysis in view of encysted fluid collection. Adhesiolysis was also performed as an adjunct to several of the above procedures in view of endometriosis or adhesions due to previous surgeries.

The histopathology report confirmed benign pathology in 134 patients (98.53%), while borderline tumor of low malignant potential was reported in one (0.74 %) and mucinous cystadenocarcinoma in one patient (0.74%). [Table 4]

The histopathology report of a 14 year old girl with a clear unilocular cyst size 15X15cm with no evidence of ascites, revealed a diagnosis of borderline tumor of Low Malignant Potential (LMP). Since she was Stage 1a she is on close follow up till date, with no evidence of metastasis or tumor spread post-operatively till date.

A 52 year old postmenopausal lady with a clear unilocular cyst of size 8X9cm [figure 4], showed a focus of mucinous cystadenocarcinoma on final histopathology report. She was taken up for a staging laparotomy with total abdominal hysterectomy and bilateral salpingo-oophorectomy on post-operative day 8 and was found to be stage 1a ovarian cancer with no evidence of tumor spread. She is on follow up till date, with no evidence of metastasis.

DISCUSSION

The aim of this study was to assess the feasibility of laparoscopic management of adnexal masses that

were predicted to be benign.

The authors have used a combination of clinical impression, pattern recognition approach on ultrasound and serum CA-125 value ≤ 35 U/ml to differentiate women at risk of ovarian cancer from those with benign adnexal mass (Table 5). Doppler ultrasound, CT scan and MRI have been used selectively only in those cases with high suspicion of malignancy. This combined criteria accurately predicted benign masses in most women (98.53%) except for two.

Using a similar criteria, a chinese study ² has reported a rate of malignancy of 0.77% while Duggal et al. ³ reported no malignancy in the 121 patients evaluated in their study.

Jeong- Won Lee et al. ⁴ using Sasson's scoring system for trans-vaginal ultrasound and serum CA-125 levels ≥ 65 U/ml accurately predicted benign adnexal masses in most post-menopausal women (99.5%).

In 2002, ACOG Committee set forth ACOG Committee opinion 280 for referring both pre-menopausal and post-menopausal women for care by gynaecologic oncologists. Though the negative predictive value of the criteria was 95.57% and 90.91% in pre-menopausal and post-menopausal women, respectively, it had a poor positive predictive value of 24.3% for stage I/II ovarian cancer and 56.8% for stage III/IV ovarian cancer ⁵. This can probably be explained by the fact that they have used only gross criteria like ascites, metastasis and nodular or fixed pelvic mass in the differentiating feature. Morphological pattern of the ovarian mass on ultrasound has not been included in this criteria.

Mc Donald et al ¹ used tumor morphology (solid, cystic, complex), ascites, serum CA125 levels > 35 IU/ml, tumor size, bilaterality, menopausal status and age, to characterize women with high risk and low risk adnexal mass. They reported a higher positive predictive value of 84.7% and a negative predictive value of 92.4%

In the present study, the authors have used the subjective assessment of the adnexal mass on ultrasound instead of a simple morphologic criteria (solid, cystic, complex) because many benign lesions like endometriosis, chronic ectopic may present with complex masses. Many of the young women with

benign disorders like endometriosis have raised CA125 levels > 35 IU/ml, and hence, the authors have not used this level of CA-125 as a cut-off for malignancy in young patients with suspected endometriosis.

The Risk of Malignancy Index (RMI) is a simple score that includes CA-125 and menopausal status, in addition to ultrasound-based morphology. Employing a cutoff of 200 to be indicative of malignancy, the reported sensitivity and specificity are 70.6% and 83.9%, respectively ⁶. RMI 2 and RMI 3 are newer versions of this tool, with comparable levels of sensitivity and specificity. The RMI 2 has a reported sensitivity of 80%, specificity of 78.2%, PPV of 71.6%, and NPV of 85.1%.

Though the subjective or the pattern recognition approach on ultrasound requires a skilled radiologist or a gynaecologist, it has been shown to be superior to other methods, with a sensitivity of 88-100% and a specificity of 62-96% for predicting malignancy ^{7,8,9}. In our study too we were able to accurately predict benign adnexal masses in 134/136 patients (98.53%) using the pattern recognition approach on ultrasound, patient demographics and CA125 levels.

Hence, by using the pattern recognition approach along with patient demographics and CA-125 levels we were able to reliably predict the nature of the adnexal mass.

CONCLUSION

Hence, by using simple readily available investigations like ultrasound (pattern recognition approach, tumor morphology and ascites) and CA-125, the nature of adnexal mass can be reliably predicted and these patients can be safely offered the benefits of laparoscopic surgery.

Table 1: Ultrasound Diagnosis

Diagnosis	No. of patients
Unilocular clear cyst	68
Endometrioma	23
Dermoid cyst	14
Chronic ectopic	8
Hydrosalpinx	5
Encysted fluid collection	3
Multiloculated cyst	3
Hemorrhagic cyst	6
Other pathologies	6

Table 2: Age in years

Age in years	Number of patients
<20	5
21-30	54
31-40	38
41-50	26
51-60	6
>=61	7
Mean age	35.85

Table 3: Laparoscopy diagnosis

Diagnosis	No. of patients
Benign serous cyst	67
Endometriosis	23
Hydrosalpinx	6
Dermoid cyst	14
Chronic ectopic	8
Encysted fluid collection	3
Non-communicating horn of the uterus	1
sub serous fibroid	1
Benign mucinous cyst	4
Hemorrhagic cyst	5
Paraovarian cyst	2
Other benign pathologies	2

Table 4: Final diagnosis

Diagnosis	No. of patients	Benign/ Malignant
Serous cystadenoma	53	Benign
Endometriosis	23	Benign
Hydrosalpinx	6	Benign
Mature teratoma	14	Benign
Chronic ectopic	8	Benign
Leiomyoma uterus	1	Benign
Non-communicating horn of uterus	1	Benign
Encysted fluid collection	3	Benign
Borderline tumor of low malignant potential	1	Borderline malignancy
Mucinous cystadenocarcinoma	1	Malignant
Mucinous cystadenoma	3	Benign
Hemorrhagic cyst	5	Benign
Paraovarian cyst	2	Benign
Other benign pathologies	15	Benign

Table 5: Sensitivity and specificity of each variable for identifying or ruling out malignancy [1]

	Sensitivity (%)	Specificity (%)
Serum CA125 >35U/ml	85.5	86.4
Tumor morphology		
Cystic	100	46.6
Complex	91.6	56.1



Fig. 1. Clear cyst



Fig. 2. cystectomy



Fig. 3. encysted fluid collection



Fig. 4. cancer

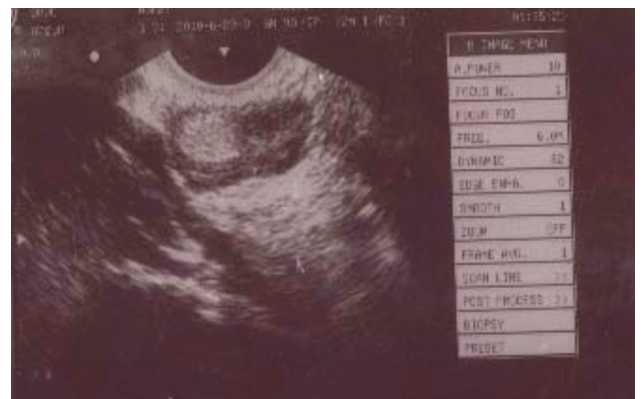


Fig. 5. dermoid cyst

Conflict of Interest Statement: We here by state with reference to the study titled "Selection criteria for laparoscopic Evaluation of Adnexal Masses", that:

There is no commercial association that might pose a conflict of interest, either directly or through immediate family, in such areas as: expert testimony, consulting, honoraria, stock holdings, equity interest, ownership, patent-licensing situations, or employment. Also there are no conflicts for other reasons, such as personal relationships and academic competition.

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Comparative Study of Different Oral Beta-Lactam Antibiotics Causing Antibiotic Associated Diarrhoea in Paediatric Population

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ABSTRACT

Objective: To compare tendency of different oral beta-lactam antibiotics causing AAD in paediatric population.

Method: The study was prospective, randomized, open and parallel study conducted in paediatric OPD of tertiary hospital.

Material and Method: 680 children in the age group of 6 months -12yrs suffering from upper respiratory tract infection [associated with tonsillitis, otitis media, sinusitis, pharyngitis] and urinary tract infection were included in the study. 80 children having diarrhoea and children's parents who refused to be the part of the study or come for the follow up were excluded. 600 children were divided into five subgroups [A - E] and children in A group was given co-amoxycylav, B group children was given cefixime, C group children was given cephalaxin, D group children was given cefpodoxime and E group children was given cefdinir. Occurrence of AAD was observed in each group for 14 days and children were called for follow up on 3rd, 7th and 14th day.

Result: It was observed that A group children had - 43.3%, B group children had 20%, C group children had 23.4%, D group children had 20% and E group children had 6.6% AAD.

Conclusion: We see all beta-lactam antibiotic are liable to cause AAD, it is more with the co-amoxycylav and cephalaxin.

Keywords: AAD [Antibiotic Associated Diarrhoea]

INTRODUCTION

Diarrhoea is a common adverse effect associated with antibiotic therapy¹ such as diarrhoea is called as antibiotic associated diarrhoea. AAD according to WHO criteria is considered clinically significantly when there are three or more abnormally loose stool in 24 hrs²

Oral antibiotic are oftenly prescribed to children suffering from various infections. Adverse effect of antibiotic include various digestive disorders among which diarrhea, occupies a special place. It causes anxiety to parents resulting in stoppage of antibiotic or change of antibiotic leading to antibiotic resistance. Antibiotic commonly associated with AAD are β lactam antibiotics, clindamycin, erythromycin.¹ The key factor in pathogenesis of AAD is disturbance in normal intestinal micro flora. AAD occurs either early during antibiotic therapy or up to two months after discontinuing of the treatment^{3,4,5}. AAD has been studied commonly in hospitalized Indian adult patients but very little data is available for Indian pediatric population⁶ so this study was done to know AAD association with various oral β lactam antibiotic to Indian children.

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MATERIAL AND METHOD

After approval from ethical committee, a prospective randomized, open, parallel study was conducted in pediatric OPD of tertiary hospital. 600 children out of 680 in the age group of 6 months to 12 years suffering from Upper respiratory tract infection (associated with tonsillitis, otitis media, sinusitis, pharyngitis) and Urinary tract infection were taken in the study. Children were randomized by block method in 1:1 ratio. 80 children were excluded due to various reasons like having diarrhoea and children's parent refused to participate in the study or come for follow up.

These 600 children were divided into five subgroups [A- E] and each subgroup was having 120 children. Each child of a subgroup was given single type oral antibiotic. A subgroup children were given co-amoxycylav in dose of 25-45 mg /kg/day in two divided dose. [syrup Augmentin Duo], B subgroup children was given cefixime in dose of 8mg/kg/day in two divided doses [syrup zifi], C subgroup children was given cephalaxin in dose of 25-50 mg /kg/day in three-four divided doses [syrup phexin]. D subgroup

children was given cefpodoxime in the dose of 8-10 mg/kg/day in two divided doses [syrup gudcef], E subgroup children was given cefdinir in dose of 14mg/kg/day in two divided doses [syrup aldrinir]. Occurrence of AAD was recorded in children of each subgroups.

Exclusion criteria - Children with acute /chronic diarrhoea, severely ill patients, immunocompromised patient and patients who received any antibiotic within previous two weeks were excluded from the study.

Parent's children were given diary and advised to note down the frequency/ consistency of the stool, after giving the antibiotic. The antibiotic treatment was given for seven days and subject was called for follow up on 3rd, 7th and 14th day. Data was collected and percentage of the children suffered from AAD was calculated.

RESULT

AAD in various subgroups were tabulated and percentage of diarrhoea was calculated as shown in table 1

Table 1

Subjects	Groups				
	Co-Amoxycylav n= 120	Cefixime n=120	Cephalaxin n=120	Cefpodoxime n=120	Cefdinir n=120
Diarrhoeal	52[43.3%]	24[20%]	28[23.4%]	24[20%]	8[6.6%]
Non -diarrhoeal	68[56.7%]	96[80%]	92[76.6%]	96[80%]	112[93.4%]
Total	120	120	120	120	120

DISCUSSION

Beta - lactam antibiotics are commonly used paediatric O.P.D drugs given orally for various illness, but these drugs commonly produces AAD⁷. AAD is a common cause for stoppage of antibiotic or change of antibiotic due to which there is increase chances of antibiotics resistance. So considering these factor in mind and seeing the poor economic status of the subjects we decided to find out which antibiotic is more liable to cause AAD. According to the result we found out that co- amoxycylav, cefixime, cephalaxin, cefpodoxime, cefdinir causes AAD in children. It was more with coamoxycylav and least with cefdnir. In previous studies AAD is reported to be 10-15% with amoxycylav but in our study it is reported to be 43.3%⁸. This difference in data may be because most of the

studies are performed in western countries, and microflora colonization of the gut of the individual vary from country to country. Other data was difficult to be compared because work in this field is lacking. The most probable cause of AAD is due to disruption of normal enteric micro-flora caused by the antibiotic.⁹ As we know that non- absorbable carbohydrates and bile salts are degraded by normal colonic flora, any disturbances in colonic micro-flora results in alteration in degradation of bile salts and non -absorbable carbohydrates. This causes reduced production of small chain fatty acids which are responsible for growth of colonic epithelium. The disturbed growth of colonic epithelium leads to decrease glucose facilitated sodium ion absorption thus causing osmotic diarrhoea.¹⁰

CONCLUSION

All beta-lactam antibiotic causes Antibiotic Associated Diarrhoea. It is maximum with co – amoxyclav and cephalaxin.

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Conflict of Interest: None

Ethical Committee Approval: Taken.

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Cervical Cancer and Human Papilloma Virus Vaccine : Awareness and Acceptability among Nursing Staff in a Tertiary Health Care Hospital

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ABSTRACT

Background: Cervical Cancer is the second-most common cancer in women worldwide; which can be prevented by HPV vaccine.

Objectives: (1) To assess the awareness about cancer cervix and associated risk factors. (2) To assess the awareness regarding HPV vaccine (3) To study the acceptability of the HPV vaccine among nursing staff.

Material and Method: This cross sectional study was conducted among female nursing staff of a tertiary care hospital. A pretested semi-structured questionnaire was used to collect the data regarding awareness about cancer cervix, its risk factors, HPV vaccination and willingness for vaccination. Data analysis was done by calculating arithmetic mean, proportions and percentage.

Results: Awareness about what is meant by Cancer cervix was found to be present among 76.32 percent. Awareness about any risk factors was 62.28 percent respectively. Only 34.21 percent of the respondents knew that HPV vaccine is used for prevention of cancer cervix. Majority of the respondents were not aware about dose and cost of vaccine. However; in majority of cases, acceptability was demonstrated by their willingness to get vaccination themselves and for their daughters.

Conclusion: Though the awareness of nursing staff regarding cancer cervix, its risk factors, HPV vaccine was low, acceptability of HPV vaccine was very high. Low awareness indicates a need for enhancing the knowledge of cervical cancer, its prevention and vaccination so that use of HPV vaccine will be promoted at the tertiary care hospital.

Keywords: Carcinoma Cervix, HPV Vaccine, Pap Smear

INTRODUCTION

Cancer of the uterine cervix is the second-most common cancer in women worldwide but it is the most common health hazard in India¹. According to the International Agency for Research on Cancer (IARC), India has the highest number of cervical cancer cases in the world. In India about 1.32 thousand new cases and 74,000 deaths occur due to cervical cancer every year². Multiple sexual partners and poor genital hygiene is known for increased prevalence of HPV. Genital infection by oncogenic HPV is a necessary factor in the development of cancer of the cervix³.

It has been observed that about 80% of sexually active women infected with persistent Human Papilloma Virus (HPV) infection leads to invasive cervical cancer^{4,5}. Although the HPV family of viruses includes more than 100 different viral genotypes, HPV 16 and 18 were identified in about 70% of cervical cancer cases⁶, while HPV 6 and 11 can cause genital warts⁷. Since it is the only cancer which can be prevented by vaccination, the discovery of HPV vaccine has changed the prospects for reducing the incidence of cervical cancer. Nurses' awareness is a key factor for effective vaccination since they are the interface between patients and healthcare delivery

system. Therefore the present study was carried out with the following objectives.

OBJECTIVES

- (1) To assess the awareness about cancer cervix and associated risk factors.
- (2) To assess the awareness regarding HPV vaccine
- (3) To study the acceptability of the HPV vaccine among nursing staff.

MATERIAL AND METHOD

The study was conducted among female nursing staff of a tertiary care hospital, located at western Uttar Pradesh (U.P.). It was a cross sectional study, where respondents were enrolled for the study after taking consent. A pretested semi-structured questionnaire was used to collect the data. The information obtained included socio-demographic data such as age, marital status, parity, number of living children, and other related information such as contraceptive use, awareness about cancer cervix, its risk factors, HPV vaccine and willingness to get themselves and their female children vaccinated for HPV vaccine.

Statistical Analysis: Data analysis was done by calculating the arithmetic mean, proportions and percentage.

RESULTS

Out of a total of 117 female nursing staff at the tertiary hospital, 114 staff participated in the study. Three female staff members who denied participating in the study were excluded from the study.

Table 1: Socio-demographic distribution of the respondents

Variables	n =114	Percent
Age		
<20	3	2.63
21-30	32	28.07
31-40	36	31.58
41-50	38	33.33
50 and above	5	4.39
Marital Status		
Unmarried	45	39.47
Married	69	60.53
Other	0	0

Table 1: Socio-demographic distribution of the respondents (Contd.)

Variables	n =114	Percent
Parity		
0	19	27.54
1	21	30.43
2	17	24.64
3	12	17.39
4 or more	0	0

As observed from Table 1, majority of the respondents (31.58 percent) were from age group 41-50 years and the mean age was 36 years. Majority of them (60.53 percent) were married.

About 27.54 percent of married respondents did not have any living child; whereas 30.43, 24.64 & 17.39 percent had one, two and three children respectively.

None of the respondents had more than three children. Among all the married respondents, only about 35.56 percent were users of some or other contraception.

Table 2 provides information about various aspects regarding awareness of cancer cervix and HPV vaccine respectively. About 76.32 % of the respondents were aware of the term cancer cervix. About 53.51 percent of them were aware of the fact that Cancer cervix is a common cancer among females and only 12.28 per cent respondents knew that Pap smear can detect Cancer cervix. Overall awareness about either of responses about cancer cervix was about 66.69 percent.

Table 2: Awareness regarding Cancer cervix and HPV vaccine

Variables	n =114	Percent
Awareness about Cervical Cancer		
Awareness of term cancer cervix	87	76.32
Cancer Cervix is very common cancer	61	53.51
Pap smear can detect Cancer cervix	14	12.28
Awareness about risk factors associated with Cervical Cancer		
Genital infection with HPV / STDs such as Chlamydia, Gonorrhea, Syphilis	82	71.93
Early age of sexual intercourse	43	37.72
1 st baby before 18 years of age	38	33.33
Multiple sexual partners	64	56.14
Multi parity	41	35.96
Cigarette smoking	12	10.53
Other (Genetic, mental stress, long use of contraceptive pills)	27	23.68

Table 2: Awareness regarding Cancer cervix and HPV vaccine (Contd.)

Variables	n =114	Percent
HPV Vaccine Awareness		
HPV Vaccine can prevent cancer cervix		
Yes	39	34.21
No	75	65.79
HPV Vaccine Dose		
Yes	18	15.79
No	96	84.21
HPV Vaccine Cost		
Yes	21	18.42
No	93	81.58

Awareness about any of the risk factors for cancer cervix was found to be present among 38.47 percent. Genital infection, early age of first sexual intercourse, first baby before 18 years of age, multiple sexual partners, multi-parity, and cigarette smoking and other risk factors, were correctly responded by and 71.93, 40.35, 33.33, 56.14, percent respectively.

Only 34.21 percent of the respondents knew that HPV vaccine is used for prevention of cancer cervix. However as regards the dose and the cost of the vaccine was concerned, majority of the respondents, 84.21 percent and 81.58 of the respondents respectively were not aware.

Table 3: Acceptability regarding HPV vaccine

Willingness to get themselves vaccinated	n =114	Percent
Yes	99	86.84
No	16	14.04
Willingness to get female children vaccinated		
Yes	83	72.81
No	32	28.07

As observed from table 3, HPV vaccine was acceptable to majority of the respondents (86.84 %). The reasons cited for not willing to get vaccination done were: fear of side effects (28.13%) and the cost of the vaccine (65.63%) need time to decide (6.25%), respectively. It was interesting to note that majority of the respondents (72.81 %) were willing to get their female children also vaccinated for prevention of cancer cervix. Only 28.07 percent of the respondents were not willing to get their female children vaccinated.

DISCUSSION

The mean age of respondents was 36 years and majority of them were sexually active in the present study and majority of the respondents were aware of the fact that cancer cervix was a common cancer. Similar findings were observed in a study by Catherine McCarey⁸ where mean age respondents was 38 years and majority were sexually active.

Research has shown that various risk factors for cervical cancer exist, such as early age at marriage, coitus before the age of 18 years, multiple sexual partner, delivery of the first baby before the age of 20 years, multiparty with poor birth spacing between pregnancies, poor personal hygiene and women with STD, HIV infection, Herpes Simplex virus 2 and Human Papilloma Virus infection^{9,10}. However in the present study two common risk factors the respondents aware of, were genital infection and multiple sexual partners. However, similar findings varied from 11.5 and 71 percent respectively in two mother studies^{8,11}. As far awareness about genital infection (including HPV / STD / AIDS) as a risk factors for cancer cervix was concerned, it was high (71.93%).

In another study¹², 93% of the respondents considered cancer of the cervix a public health problem and knowledge about Pap smear was 83% among respondents. Less than 40% knew risk factors for cervical cancer, eligibility for and screening interval as against 68.20% in the present study. This difference may be due to inclusion of medical workers, lab technicians and final year medical students were also included in their study. In another study carried out among the nursing staff of tertiary care hospital located at Ahmedabad, Gujrat, awareness about cancer cervix was found to be 69 percent¹¹.

In the present study only about two third of the respondents were aware about vaccine for prevention of cancer cervix. Majority of the respondents were not aware about dose and cost of the vaccine for prevention of cancer cervix which is a major issue of public health importance. These findings are in agreement with some other studies, conducted in other countries^{12,13,14,15,8}. Studies, mostly from developed countries, have shown that the knowledge of HPV infection and vaccines and the acceptability of these

vaccines among health care providers and the general public varied from low to high¹⁶. In the present study, it is interesting to note that in spite of relatively low awareness about cancer cervix, there was high acceptability for vaccination, not only for themselves but even for their daughters.

In order to prevent HPV infection, two vaccines are available; one bivalent vaccine (against type 16 and 18) and another quadrivalent vaccine (against types 16, 18, 6 and 11). It has recommended by WHO that vaccination should be done at age 9-13 years before their sexual debut which provides 98% protection¹⁷ and catch-up vaccination for females aged 13-26^{18,19}. It is found that these vaccines can reduce cervical cancer deaths by more than 60% and the largest effects have been reported in countries that have received subsidized vaccine through the GAVI Alliance²⁰. Indian Academy of Pediatrics Committee of Immunization, along with the Federation of Obstetric and Gynaecological Societies of India, and the WHO Strategic Advisory Group of Experts on Immunization, recommended HPV vaccine for 10-12 year old females, with catch-up vaccination through 26 years (IAPCOI, 2008)²¹.

In India though National Cancer Programme supports early screening and treatment of cervical cancer, there are logistical barriers such as insufficiently trained staff and infrastructure for the screening programs²². Currently, in India, HPV vaccines are solely available for purchase through the private sector. Major obstacles to acceptance are high cost and fear of side effects.

Nurses in developing countries play an important role in immunization programs. The effectiveness of a vaccine delivery program will largely depend upon whether the health care providers recommend the vaccine²³. Since cervical cancer is the most common and preventable cancer in developing countries²⁴, it is recommended that there should be efforts to enhance the knowledge in this direction by conducting training, addition into the syllabus of nursing students. A recent qualitative study²⁵ reported a low level of knowledge of HPV and cervical cancer among parents, teachers, children, community leaders and even health service providers of four developing countries (India, Peru, Uganda and Vietnam).

Cervical cancer screening along with HPV vaccination is the most effective way of prevention of cervical cancer²⁶. Therefore it is recommended that

HPV vaccine should be included in the National Immunization program, so that it will be available to people from low socio-economic status and will also take care of the cost factor associated with acceptability of HPV vaccine.

CONCLUSION

Though the awareness of nursing staff regarding cancer cervix, its risk factors, HPV vaccine was low, acceptability of HPV vaccine was very high. Low awareness indicates a need for enhancing the knowledge of cervical cancer, its prevention and vaccination so that use of HPV vaccine will be promoted at the tertiary care hospital.

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To Study the effects of Alcohol on Lipid Profile on Basis of Amount, Type and Duration of Alcohol Consumption

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ABSTRACT

Objective: To determine the effect of various types of alcohol on different parameters of lipid profile and to determine the effect of amount and duration of alcohol consumption on metabolic and lipid profile in population of Punjab.

Method: 100 cases and 100 controls between ages of 20 to 60 years, were enrolled and their haematological, biochemical and metabolic profiles were studied. Fasting Lipid profile of all cases and controls were done. A comparison of metabolic parameters and lipid profile was done between the two groups.

Result: Most of the alcoholics (76%) are in middle age of life (41 to 60 years) and consume alcohol predominantly in form of whiskey (49%) and country liquor (49%). Total serum lipids, serum triglycerides and serum cholesterol levels are found higher in alcoholics than non alcoholics. In heavy alcoholics total serum cholesterol and serum triglycerides levels were significantly higher, as compared to light to moderate alcoholics. Serum heavy density lipoprotein (HDL) level were found to be higher in cases consuming light to moderate amount of alcohol in comparison to heavy alcohol consumers.

Conclusions: Alcohol is a "double edged sword", as consumption of alcohol is beneficial in light to moderate amount and harmful in heavy amount.

Keywords: Alcohol, Lipid Profile, Country Liquor, Whiskey, HDL, LDL, Serum Cholesterol, Serum Triglycerides

INTRODUCTION

Relatively low doses of alcohol (one or two drinks per day) have potential beneficial effects of increasing HDL and decreasing aggregation of platelets, with a resulting decrease in risk for occlusive coronary disease and embolic strokes. Red wine has additional potential health promoting qualities at relatively low

doses due to flavinols and related substances, which may work by inhibiting platelet activation. However, any potential healthful effects disappear with the regular consumption of three or more drinks per day and decrease the life span by about 10 years.^[1]

It is estimated that the cardio protective effect of alcohol may be attributed to 50% of the HDL-C increase.^[7,8] Moderate alcohol intake may lower triglycerides, while high alcohol intake has been consistently related to elevated triglycerides.^[2] The mechanism of potential cardioprotective effect of alcohol is fertile ground for research. As in this region of Punjab, alcohol consumption is high in both rural and urban population, so we did the clinical study to see the effect of alcohol on lipid profile.

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MATERIAL AND METHOD

This is cross sectional study conducted in the Department of Medicine, Guru Gobind Singh Medical College, Faridkot, Punjab. 200 male participants were taken including 100 cases and 100 controls. Cases between age group of 20-60 years, attending Medicine outdoor and indoor department were included in the study. 100 age matched, non-alcoholic, healthy controls were taken between ages of 20 to 60 years. Our study was approved by the ethics committee of the institute and informed consent was obtained from all study participants.

Inclusion Criteria

1. Alcohol consumption for five years or more
2. Age between 20-60 years
3. Male sex
4. Non smokers

Exclusion Criteria

1. Patients less than 20 years and more than 60 years
2. Patients with Coronary Artery Disease, Rheumatic Heart Disease, Chronic Renal failure, Chronic liver disease, Bronchial Asthma, Diabetes Mellitus and Hypertension were excluded.
3. Subjects having less than one drink per week
4. Subjects who were taking drugs like HMG Co-A reductase inhibitors, Fibrin acid derivatives, Nicotinic acid, Beta blockers and Diuretics

Self reported alcohol consumption of each case was taken. Cases were divided into heavy alcoholics (alcohol consumption equal to or more than 141 gms/week) and light to moderate alcoholics (alcohol consumption 40-140 gms/week). Amount of alcohol (in grams or units) consumed in each week was noted down. The type of alcohol (Whiskey, Beer, country liquor, Wine, Rum or Vodka) consumed by each case was recorded. It was possible that a case consumes different type and quantity of alcohol beverage, so we considered that a particular type of alcohol beverage as predominant, if consumption of that beverage

accounts for >2/3 of total amount of alcohol consumed. Although different alcohol beverages having different concentration of alcohol, but in this study the total average amount of ethanol consumed (in grams and units per week) was calculated assuming the following alcohol content:-

Type of beverage	% of alcohol	Units/ 10ml	Grams/ 10ml
Beer	8%	0.08	0.64
Wine	12%	0.12	0.96
Whiskey	42.7%	0.42	3.4
Rum	40%	0.40	3.2
Vodka	50%	0.50	4.0
Country Liquor	40%	0.40	3.2

Ultrasound was done on all cases to rule out liver cirrhosis. The fasting blood samples for lipid profile were collected in plain sterile vial after overnight fasting i.e. 10ml from the median cubital vein and sent to laboratory immediately and serum was separated subsequently and was processed for determining various lipid profiles.

Statistical Analysis

The unpaired student t test and chi square test were used to find out, whether the differences were statistically significant

RESULTS

Out of 100 cases, 45 (45%) cases were of age group 41-50 years, 31 cases (31%) between 51-60 years, 13 cases (13%) between 31-40 years and only one case (1%) was in range of 21-30 years. Most of the cases were having alcohol predominantly in form of whiskey (49%) and country liquor (49%). There was only one case (1%) consuming beer predominately and only one (1%) wine consumer. No case was found consuming rum, gin, vodka or brandy predominately. BMI of cases was comparatively higher ($26.42 \pm 2.36 \text{ kg/m}^2$) as compared to controls ($23.69 \pm 1.38 \text{ kg/m}^2$). Out of total 100 cases, 50 were heavy alcoholics and 50 were light to moderate alcoholics.

In this study, we found that total cholesterol was higher in cases (mean = $199.38 \pm 39.35 \text{ mg/dl}$) in comparison to controls (mean = $177.7 \pm 21.2 \text{ mg/dl}$) and

in heavy drinkers (mean =215.16±45.2mg/dl) in comparison to light to moderate drinkers (mean=183.60±24mg/dl). Serum triglyceride was also found higher in cases (mean=165.63±45.56mg/dl) in comparison to controls (147.7±30.39mg/dl) and in heavy drinkers (mean=189.5±45.18mg/dl) in comparison to light to moderate drinkers (141.98±31.62mg/dl). We also found that our cases had lower value of HDL (mean=41.1±9.7mg/dl) in comparison to controls (mean=43.3 ±8.2mg/dl). Light to moderate alcoholics have higher serum HDL (mean = 46.58 ±7.96mg/dl) as compared to heavy alcoholics (mean =35.62±8.28mg/dl). We found increased serum LDL level in cases (mean=134.48±36mg/dl) in comparison to controls (mean=130.35±22.2mg/dl) and higher serum LDL level for heavy alcoholics (mean=147.62±41.43mg/dl) in comparison to light to moderate alcoholics (mean=121.34 ±23.73mg/dl). We found that serum VLDL level is higher in cases (mean=31.9±9.5mg/dl) than in controls (mean=26.4±8.24mg/dl) and in heavy alcoholics (mean=38±7.9mg/dl) as compared to light to moderate alcoholics (mean =25.8±6.6mg/d (Table 1&2).

We also compared various clinical and biochemical characteristics of cases and controls and found that our cases that higher values of total bilirubin, SGOT, SGPT, ALP and Serum uric acid levels. Also our cases had higher BMI as compared to age matched healthy

controls (Table 1). We found a higher BMI and more deranged liver function tests in heavy alcohol consumers as compared to light to moderate alcohol consumers (Table 2).

In the other part of study, we tried to find out the relationship between type of alcohol and its effect on lipid parameters. Since in this part of Punjab, people consume alcohol predominately in form of whiskey and country liquor, so we compared lipid parameters of whiskey and country liquor consumers. Serum cholesterol and triglycerides are almost same in both groups, where whiskey consumers were having more favorable lipid parameters in respect to serum HDL, LDL and VLDL, but overall, no statistically significant relevance could be found between the two groups. We found statistically higher value of SGPT in country liquor consumers as compared to whiskey consumers (Table 3).

In completion of our objectives, the last part of our study we tried to find out the relation between duration of alcohol consumption and serum lipid parameters of cases and found that there is comparable rise in serum cholesterol, triglycerides, LDL and VLDL in alcoholics who consume alcohol for equal or more than 11 years in comparison to alcoholics for 5-10 years duration, but the results were not found to be statistically significant (Table 4).

Table 1: Clinical & Biochemical characteristics of participants of study

Characteristics	Cases(n=100)	Controls(n=100)	p value
Age (years)	46.92 ± 7.06	44.85 ± 8.14	.43
BMI (kg/m ²)	26.42 ± 2.36	23.69 ± 1.38	0.001
FBS (mg/dl)	88.16 ± 9.42	88.24 ± 7.74	.948
SBP(mm of Hg)	120.2 ± 9.78	121.22 ± 8.91	.442
DBP(mm of Hg)	81.56 ± 6.37	81.82 ± 6.59	.777
Serum Bilirubin (mg/dl)	2.55 ± 2.7	0.98 ± 0.34	.001
SGOT (IU/L)	52.24 ± 36.47	30.56 ± 8.07	.001
SGPT (IU/L)	50.43 ± 13.18	28.72 ± 7.55	.001
ALP(IU/L)	124.37 ± 52	88.42 ± 19.48	.001
Serum uric acid (mg/dl)	6.85 ± 1.02	5.56 ± 1.01	.001
Serum Cholesterol (mg/dl)	199.38 ± 39.35	177.7 ± 21.2	.001
Total lipids (mg/dl)	568.31 ± 105.5	520.7 ± 68.01	.001
Serum Triglycerides(mg/dl)	165.74 ± 45.56	147.74 ± 30.39	.001
HDL (mg/dl)	41.1 ± 9.78	43.35 ± 8.23	.080
LDL (mg/dl)	134.48 ± 36.09	130.35 ± 22.21	.331
VLDL (mg/dl)	31.94 ± 9.55	26.4 ± 8.24	.001

Table 2: Comparison of means of various clinical and lipid parameters between light to moderate alcohol consumers and heavy alcohol consumers

Characteristics	Light to moderate alcohol consumers n=50	Heavy alcohol consumers n=50	p value
	(Alcohol consumption <= 140 grams per week)	(Alcohol consumption > 141 grams per week)	
Age (years)	46.82 ± 7.35	47.02 ± 6.83	.888
BMI (kg/m ²)	25.09 ± 1.67	27.75 ± 2.21	.001
FBS (mg/dl)	88.82 ± 8.92	87.5 ± 9.94	.486
SBP(mm of Hg)	119.84 ± 10.26	120.56 ± 9.37	.715
DBP(mm of Hg)	81.6 ± 6.71	81.52 ± 6.08	.950
Serum Bilirubin(mg/dl)	2.63 ± 2.59	2.47 ± 2.83	.771
SGOT (IU/L)	36.36 ± 23.15	68.11 ± 40.46	.001
SGPT (IU/L)	40.82 ± 8.23	60.04 ± 9.74	.001
ALP (IU/L)	107.12 ± 47.95	141.62 ± 50.57	.001
Serum uric acid (mg/dl)	6.07 ± 0.65	7.57 ± 0.73	.001
Serum Cholesterol(mg/dl)	183.6 ± 24.04	215.16 ± 45.2	.001
Total lipids (mg/dl)	515.46 ± 67.17	621.16 ± 110.8	.001
Serum Triglycerides (mg/dl)	141.98 ± 31.62	189.5 ± 45.18	.001
HDL (mg/dl)	46.58 ± 7.96	35.62 ± 8.28	.001
LDL (mg/dl)	121.34 ± 23.73	147.62 ± 41.43	.001
VLDL (mg/dl)	25.8 ± 6.66	38.08 ± 7.93	.001

Table 3: Comparison of means of various clinical and lipid parameters between whiskey consumers and country liquor consumers

Characteristics	Whiskey consumers n=49	Country liquor consumers n=49	p value
Age (years)	46.78 ± 7.5	47.06 ± 6.64	.846
BMI (kg/m ²)	25.92 ± 2.34	26.94 ± 2.29	.030
FBS (mg/dl)	88.9 ± 9.62	87.39 ± 9.24	.424
SBP(mm of Hg)	120.43 ± 8.63	119.96 ± 10.94	.811
DBP(mm of Hg)	81.1 ± 6.48	82.04 ± 6.29	.462
Serum Bilirubin (mg/dl)	2.12 ± 2.26	2.99 ± 3.05	.108
SGOT(IU/L)	51.54 ± 36.35	52.96 ± 36.96	.847
SGPT(IU/L)	46.22 ± 12.47	54.82 ± 12.56	.001
ALP(IU/L)	121.9 ± 49.64	126.94 ± 54.74	.631
Serum uric acid (mg/dl)	6.61 ± 1.04	7.13 ± 0.93	.027
Serum Cholesterol (mg/dl)	199.59 ± 36.04	199.16 ± 42.91	.957
Total lipids (mg/dl)	567.14 ± 90.3	569.53 ± 120.25	.910
Serum Triglycerides(mg/dl)	165.63 ± 43.11	165.86 ± 48.42	.980
HDL (mg/dl)	43.12 ± 9.49	39 ± 9.73	.035
VLDL(mg/dl)	30±10.1	33.96±8.58	.038
LDL (mg/dl)	133.14 ± 31.17	135.88 ± 40.88	.706

Table 4: Comparison of means of various lipid parameters between cases according to duration of alcohol consumption

Variables	Alcohol consumption Duration 5-10 yrs (n=50)	Alcohol consumption Duration ≥ 11 yrs (n=50)	p value
Serum Cholesterol (mg/dl)	198.97±29.979	199.59±43.617	0.934
Serum Triglycerides (mg/dl)	169.82±45.141	163.64±45.969	0.521
HDL (mg/dl)	41.41±10.436	40.94±9.504	0.826
LDL (mg/dl)	137.91±30.822	132.71±38.633	0.467
VLDL (mg/dl)	32.29±9.077	31.76±9.847	0.786

DISCUSSION

The cardio protective effect of moderate alcohol consumption may be mediated by effects on lipids. The most consistent of these is a significant increase HDL concentration and significant decrease in serum LDL and Lipoprotein(a) level.^[4,5] Moderate consumption of alcohol (30 gm ethanol/ day) results in increases of the concentration of HDL-C in approximately 4 mg/dL, with a reduction to the risk of cardiac disease estimated at 24.7%^[9,10]. Certain wine contains different antioxidants (e.g. tannins, flavonoids) that could protect against peroxidation of LDL.^[7] As well as, certain beer products also contain similar substances (e.g. epicatechin) and may increase the serum level of the antioxidants, total tocopherol and α -tocopherol.^[4,6]

In a meta-analysis of experimental studies that assessed the effects of moderate alcohol intake on biological markers of CVD, consumption of 30 grams of alcohol per day increased concentrations of HDL-C by 3.99 mg/dl, apolipoprotein A-1 by 8.82 mg/dl and triglycerides by 5.69 mg/dl. It was concluded on the basis of published data that 30 g of alcohol a day would cause an estimated reduction of 24.7% in the CVD risk^[11]. Our results are also consistent with Gupta S et al who completed their study very recently in 2014 and summarized the results of 44 studies done previously in respect to amount of alcohol and altered serum HDL level and gave their conclusion about effects of moderate alcohol consumption on the lipid profile and alcohol induced increase in HDL-C levels and cardioprotection.^[3]

Data regarding the effect of alcohol on LDL-C are conflicting, with a meta-analysis of pooled human intervention studies showing a trend of ethanol-induced LDL-C lowering. Alcohol intake was associated with less total LDL particles, lower levels of small LDL, HDL and VLDL particles and higher levels of large LDL and medium and large sized HDL particles, as measured by nuclear magnetic resonance spectroscopy^[12]. Small LDL particles tend to be more atherogenic and the shift towards larger LDL particles could account for part of the anti-atherogenic activity of alcohol. However, heavy long term alcohol intake reduces the total mass of LDL-C and all its components.

So Alcohol has considerable effect on lipid parameters. In chronic alcoholics, serum TG levels may rise considerably.^[5] Moderate alcohol intake may lower triglycerides, while high alcohol intake has been consistently related to elevated triglycerides.^[2] We saw

significantly higher Serum Triglyceride levels in our cases especially in heavy alcoholics. Also our cases had higher BMI, SGOT, SGPT and ALP in comparison to controls (Table 1). Alcohol consumption of more than 141grams per week is associated with unfavourable metabolic and lipid profile. In our population of Punjab, we found only 2% cases were consuming beer or wine as predominant form of alcohol. Most of the population i.e. 98% were consuming alcohol in form of whiskey and country made liquor. 49% of total cases were consuming alcohol in form of Country made liquor, which contains upto 40% alcohol. We saw a little more favorable metabolic and lipid profile in patients consuming whiskey as compared to country liquor, but the results were not statistically significant

CONCLUSION

Light to moderate alcohol drinkers display a more favorable clinical and biological profile, consistent with lower cardiovascular risk as compared with heavy drinkers. Therefore, moderate alcohol consumption may represent a marker of higher social level, superior health status and lower cardiovascular risk.

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Abbreviations

HDL = Heavy density lipoprotein, LDL= Low density lipoprotein, VLDL=Very low density lipoprotein, TG=Triglyceride, HDL-C=High density lipoprotein cholesterol, Apo-A1 =Apolipoprotein A, BMI=Body Mass Index, FBS=Fasting blood sugar, SBP=Systolic Blood Pressure, DBP=Diastolic Blood Pressure

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