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EDITORIAL

ANTIMICROBIAL RESISTANCE AND ITS GLOBAL SPREAD

Since their discovery during the 20th century, antimicrobial agents (antibiotics and related medicinal drugs) have substantially reduced the threat posed by infectious diseases. The use of these "wonder drugs", combined with improvements in sanitation, housing, and nutrition, and the advent of widespread immunization programmes, has led to a dramatic drop in deaths from diseases that were previously widespread, untreatable, and frequently fatal. Over the years, antimicrobials have saved the lives and eased the suffering of millions of people. By helping to bring many serious infectious diseases under control, these drugs have also contributed to the major gains in life expectancy experienced during the latter part of the last century.

These gains are now seriously jeopardized by another recent development: the emergence and spread of microbes that are resistant to cheap and effective first-choice, or "first-line" drugs. The bacterial infections which contribute most to human disease are also those in which emerging microbial resistance is most evident: diarrhoeal diseases, respiratory tract infections, meningitis, sexually transmitted infections, and hospital-acquired infections. Some important examples include penicillin-resistant *Streptococcus pneumoniae*, vancomycin-resistant enterococci, methicillin-resistant *Staphylococcus aureus*, multi-resistant salmonellae, and multi-resistant *Mycobacterium tuberculosis*. The development of resistance to drugs commonly used to treat malaria is of particular concern, as is the emerging resistance to anti-HIV drugs.

Treatment, resulting in prolonged illness and greater risk of death. Treatment failures also lead to longer periods of infectivity, which increase the numbers of infected people moving in the community and thus expose the general population to the risk of contracting a resistant strain of infection.

When infections become resistant to first-line antimicrobials, treatment has to be switched to second- or third-line drugs, which are nearly always much more expensive and sometimes more toxic as well, e.g. the drugs needed to treat multidrug-resistant forms of tuberculosis are over 100 times more expensive than the first-line drugs used to treat non-resistant forms. In many countries, the high cost of such replacement drugs is prohibitive, with the result that some diseases can no longer be treated in areas where resistance to first-line drugs is widespread. Most alarming of all are diseases where resistance is developing for virtually all currently available drugs, thus raising the spectre of a post-antibiotic era. Even if the pharmaceutical industry were to

step up efforts to develop new replacement drugs immediately, current trends suggest that some diseases will have no effective therapies within the next ten years.

For World Health Day 2011, WHO will launch a worldwide campaign to safeguard these medicines for future generations. Antimicrobial resistance - the theme of World Health Day 2011 - and its global spread, threatens the continued effectiveness of many medicines used today to treat the sick, while at the same time it risks jeopardizing important advances being made against major infectious killers.

To underline this, the WHO public awareness campaign will include a special focus on the HIV/AIDS, tuberculosis and malaria pandemics. WHO will call on governments and stakeholders to implement the policies and practices needed to prevent and counter the emergence of highly resistant superbugs, and to also provide appropriate care to those seriously affected by these microbes.

In just the past few decades, the development of resistant microbes has been greatly accelerated by several concurrent trends. These have worked to increase the number of infections and thus expand both the need for antimicrobials and the opportunities for their misuse. Such trends include:

- urbanization with its associated overcrowding and poor sanitation, which greatly facilitate the spread of such diseases as typhoid, tuberculosis, respiratory infections, and pneumonia;
- pollution, environmental degradation, and changing weather patterns, which can affect the incidence and distribution of infectious diseases, especially those, such as malaria, that are spread by insects and other vectors;
- demographic changes, which have resulted in a growing proportion of elderly people needing hospital-based interventions and thus at risk of exposure to highly resistant pathogens found in hospital settings;
- the AIDS epidemic, which has greatly enlarged the population of immunocompromised patients at risk of numerous infections, many of which were previously rare;
- the resurgence of old foes, such as malaria and tuberculosis, which are now responsible for many millions of infections each year;

- the enormous growth of global trade and travel which have increased the speed and facility with which both infectious diseases and resistant microorganisms can spread between continents.

Factors that encourage the spread of resistance

The emergence and spread of antimicrobial resistance are complex problems driven by numerous interconnected factors, many of which are linked to the misuse of antimicrobials and thus amenable to change. In turn, antimicrobial use is influenced by an interplay of the knowledge, expectations, and interactions of prescribers and patients, economic incentives, characteristics of a country's health system, and the regulatory environment.

Patient-related factors are major drivers of inappropriate antimicrobial use. For example, many patients believe that new and expensive medications are more efficacious than older agents. In addition to causing unnecessary health care expenditure, this perception encourages the selection of resistance to these newer agents as well as to older agents in their class.

Self-medication with antimicrobials is another major factor contributing to resistance. Self-medicated antimicrobials may be unnecessary, are often inadequately dosed, or may not contain adequate amounts of active drug, especially if they are counterfeit drugs. In many developing countries, antimicrobials are purchased in single doses and taken only until the patient feels better, which may occur before the pathogen has been eliminated. Inappropriate demand can also be stimulated by marketing practices. Direct-to-consumer advertising allows pharmaceutical manufacturers to market medicines directly to the public via television, radio, print media, and the Internet. In particular, advertising on the Internet is gaining market penetration, yet it is difficult to control with legislation due to poor enforceability.

Prescribers' perceptions regarding patient expectations and demands substantially influence prescribing practice. Physicians can be pressured by patient expectations to prescribe antimicrobials even in the absence of appropriate indications. In some cultural settings, antimicrobials given by injection are considered more efficacious than oral formulations. Such perceptions tend to be associated with the over-prescribing of broad-spectrum injectable agents when a narrow-spectrum oral agent would be more appropriate. Prescribing "just to be on the safe side" increases when there is diagnostic uncertainty, lack of prescriber knowledge regarding optimal diagnostic approaches, lack of opportunity for patient follow-up, or fear of possible litigation. In many countries, antimicrobials can be easily obtained in pharmacies and markets without a prescription.

Patient compliance with recommended treatment is another major problem. Patients forget to take medication, interrupt their treatment when they begin to feel better, or may be unable to afford a full course, thereby creating an ideal environment for microbes to adapt rather than be killed. In

some countries, low quality antibiotics (poorly formulated or manufactured, counterfeited or expired) are still sold and used for self-medication or prophylaxis.

Hospitals are a critical component of the antimicrobial resistance problem worldwide. The combination of highly susceptible patients, intensive and prolonged antimicrobial use, and cross-infection has resulted in nosocomial infections with highly resistant bacterial pathogens. Resistant hospital-acquired infections are expensive to control and extremely difficult to eradicate. Failure to implement simple infection control practices, such as handwashing and changing gloves before and after contact with patients, is a common cause of infection spread in hospitals throughout the world. Hospitals are also the eventual site of treatment for many patients with severe infections due to resistant pathogens acquired in the community. In the wake of the AIDS epidemic, the prevalence of such infections can be expected to increase.

The need for a global response

In September 2001, WHO launched the first global strategy for combating the serious problems caused by the emergence and spread of antimicrobial resistance. Known as the WHO Global Strategy for Containment of Antimicrobial Resistance, the strategy recognizes that antimicrobial resistance is a global problem that must be addressed in all countries. No single nation, however effective it is at containing resistance within its borders, can protect itself from the importation of resistant pathogens through travel and trade. Poor prescribing practices in any country now threaten to undermine the potency of vital antimicrobials everywhere.

The strategy recommends interventions that can be used to slow the emergence and reduce the spread of resistance in a diverse range of settings. The interventions are organized according to groups of people whose practices and behaviours contribute to resistance and where changes are judged likely to have a significant impact at both national and international levels. These include consumers, prescribers and dispensers, veterinarians, and managers of hospitals and diagnostic laboratories as well as national governments, the pharmaceutical industry, professional societies, and international agencies. Global principles for the containment of antimicrobial resistance in food-producing animals were issued by WHO in June 2000.

As much of the responsibility for containing resistance rests with national governments, the strategy gives particular attention to interventions involving the introduction of legislation and policies governing the development, licensing, distribution, and sale of antimicrobial agents. The strategy is sufficiently flexible to be applied in poor and wealthy nations alike. The process for selecting the necessary interventions to limit emerging antimicrobial resistance can be based on the diseases most prevalent in a given country. In advocating widespread adoption of this strategy, WHO aims to encourage the urgent actions needed to reverse or at least curtail trends which have major economic as well as health implications. Moreover, in view of the global nature of the antimicrobial resistance problem, the efforts of any nation to

implement the WHO Global Strategy are likely to be felt worldwide.

The strategy builds on a number of WHO activities aimed at both monitoring the global emergence and spread of antimicrobial resistance and extending direct support to countries. WHO helps countries establish laboratory-based networks for the surveillance of resistance. Specific activities include staff training, support in methods for the quality assurance of laboratory tests, and provision of laboratory reagents. In addition, WHO distributes a computer software program, WHONET. Microbiologists, clinicians, and infection control workers may use this software to improve the systematic monitoring of drug resistance in their hospitals and communities and to share their data in a common format among national networks.

Since 1977, WHO has produced Model Lists of Essential Drugs in order to help governments select the most effective and appropriate drugs in line with priority needs. The lists, which are regularly revised, also contribute to the rational

purchasing and use of drugs. At present over 120 countries have implemented an essential drugs list. With the first global strategy for containment of antimicrobial resistance now available, WHO is also in a position to advise health policy-makers and managers on the specific interventions needed to safeguard the effectiveness of vital drugs and thus ensure that their life-saving capacity remains available to future generations.

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*Aim high. Aim far.
No goal too high. No star too far.*

ROLE OF LACTATION IN FAMILY PLANNING

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ABSTRACT:

Objectives:

1. To evaluate the role of Lactational Amenorrhea Method (LAM) as a spacing method.
2. To assess knowledge attitude and practices regarding breast feeding.
3. To bring awareness regarding importance of breast feeding on child health and as a method of family planning so that exclusive breast feeding is promoted.

Study Design: Cross sectional study**Setting:** In rural village of district Wardha**Study Universe:** All the lactating mothers who had 2 children (one of which was <3 years)**Study Variables:** Duration of Breast Feeding, LAM, Importance of Breast Feeding, Knowledge of Colostrum, Awareness of Breast Feeding, etc.**Statistical analysis used:** Percentages and proportions**Result:** A total 42 families were included in the survey of which 26 (61.9%) belongs to nuclear families with majority of the women 19 (45.2%) in the age group of 20-25 yrs, 20 (47.6%) were illiterate and 18 (42.8%) families were of lower Socio Economic Status. A directly proportional relationship was found between duration of breast feeding & LAM and period of LAM & age of youngest child when the mother delivered again. Only 31% knew about the importance of breast feeding. 16.6% of woman initiated Breast Feeding within ½ hr.**Introduction:**

The benefit of breast feeding for well being and total development of baby is very well established. We know that the breast fed babies are less prone to diarrhoea and ARI. Besides this Breast feeding is important variable which protect from pregnancy through post partum amenorrhea and prolonged birth interval.

Lactational Amenorrhea Method (LAM) as an effective introductory family planning method that was presented at Bellgio consensus conference data from 13 studies done in 8 countries found that "Breast feeding provides about 98% protection from pregnancy during the 1st six months of post partum if mother is fully or nearly breast feeding and has not yet experienced vaginal bleeding after 56th day post partum".

Normally without Breast feeding the average period of Amenorrhea is only 11/2 to 2 months and in mothers who practice exclusive Breast feeding are less likely to resume menstruation than if weaning foods are started.

Breast feeding period varies from one culture to another also use of other contraceptives methods has effect on birth rate.

The exact mechanism of how breast feeding act as method of contraception is well known -- hormonal action initiated by lactation "contraceptive effect remains till the Breast feeding continues but weakness over period of time".

In condition where other family planning methods are not

available or not desired LAM can be introduced as an appropriate alternative method of fertility control.

Material and Methods:

A cross-sectional study was carried out at Sawli village, District Wardha among the mothers who had 2 children one of which was <3 years. They were interviewed by predesigned, pre tested proforma to assess the relation between period of Breast feeding & LAM, LAM & duration between two conceptions and lastly to assess knowledge attitude and practice regarding breast feeding. Following the survey a "focus group discussion" was done to share & address their experiences, queries on knowledge, attitude and practices about Breast feeding and LAM.

Results:

A total of 42 families were surveyed in village Sawli (Sastabad). One women of reproductive age group (15-45 years) from each family with at least 2 children one of which was < 3 years were interviewed except 02 who had only one child (<3 years).

Out of 42 families, 26 (61.9%) belongs to nuclear families, majority of the women 19 (45.2%) were between age group of 20-25 yrs followed by 26-30 yrs (38.0%). Most of the women 20 (47.6%) were illiterate followed by primary level in 11 (26.1%). It was found that 18 (42.8%) families were of lower Socio Economic Status, 14 (33.3%) were of upper lower SES.

Table 1
RELATION BETWEEN PERIOD OF BREAST FEEDING AND LAM

Breast Feeding (Months)	Average LAM (Months)	No. of Women
0-6th	4.5	2
7th-12th	6	4
13th-18th	13.3	9
19th-24th	16.3	17
25th-30th	18.1	8

Table 2
RELATION BETWEEN PERIOD OF LAM & AGE OF YOUNGEST CHILD WHEN SHE DELIVERED AGAIN

Duration of Average Lactational Amenorrhoea (Months)	Average age of youngest child when she delivered again	No.
0-6 th	18.2	5
7 th -12 th	22.5	6
13 th -18 th	27.5	23
19 th -24 th	29.6	6

A directly proportional relation was observed between the breast feeding vs LAM and LAM & Age of youngest child when she delivered again. (Table 1, 2).

Table 3
KNOWLEDGE ABOUT BREAST FEEDING & COLOSTRUM

	Know		Don't Know	
	No.	(%)	No.	(%)
Importance of Breast Feeding	13	30.9	29	69
Knowledge about Colostrum	6	14.2	36	85.5

Table 3 shows that only 31 % women knew about the importance of Breast Feeding and 14.2 % knew the importance of colostrum.

Table 4
AWARENESS ABOUT BREAST FEEDING

	%	No.
Aware	21.4	9
Not Aware	78.6	33

($\chi^2=27.4$, $df=1$, $p<0.05$)

Table 4 shows that only 21 % females were aware about the importance of exclusive breast feeding.

Table 5
PRACTICES REGARDING BREAST FEEDING

Duration After Birth	%	No.
Immediately within 1/2 hr	16.6	7
1/2 - 3 hrs	21.4	9
1 - 3 days	47.6	20
> 3 days	14.2	6
Total	99.8	42

Table 5 shows that 16.6 % of woman initiated Breast Feeding within ½ hr, 21.4 % within ½ - 3 hrs. 47.6% within 1-3 days and 14.2 % after 3 days.

Table 6
COLOSTRUM GIVEN OR NOT GIVEN

Colostrum	%	No.
Given	61.9	26
Not Given	38.1	16
Total	100	42

($X^2=4.76$, $df=1$, $p<0.05$)

Table 6 shows that about 62 % women gave colostrum to the new born.

Discussion :

It has been estimated that 50% of pregnancies are unwanted and / or unplanned. For several reasons including difficulty in obtaining contraceptives, no or ineffective contraception is used to prevent these unwanted pregnancies⁽¹⁾ Even though women have known for centuries that breast feeding has a contraceptive effect, family planning has only recently promoted it⁽²⁾ At a consensus conference in Bellagio, Italy, it was agreed that breast feeding confers more than 98% protection from pregnancy during the first 6 months postpartum⁽³⁾. The LAM is a highly efficient tool for the women to utilise; physiology to space births as suckling induces a reduction in gonadotropin releasing hormone, luteinizing hormone and follicle stimulating hormone release, resulting in amenorrhoea, through an intracerebral opioid pathway⁽⁴⁾. However the efficacy and effectiveness of LAM is affected by its correct usage and there are certain criteria which must be fulfilled.

In the present study the result of knowledge, attitude and practices regarding Breast feeding was found to be low as most of lactating women did not knew the use of colostrum. Almost 69% gave exclusive breast feeding till 4-6 months of age with a total duration of breast feeding of 1 ½ - 2 years that was associated with inadequate weaning practices in most of the cases.

On the other hand nobody knew the relation between

duration of breast feeding & lactational amenorrhea with average duration of 13 months.

Further to state their status regarding awareness about LAM as contraceptive cannot be very well established on the basis of FGD as the participants of discussion was less than 1/3 rd of the total respondents, although it was clear that none of them knew the role of breast feeding as a method of family planning. Varul B and colleagues also reported in their study on women of reproductive age group in India that almost 52% of the women were not aware of the contraceptive effect of breast feeding and that only 25.7% knew that lactation has a contraceptive effect. Lactation was accepted as a contraceptive method by 48.2% of the women.⁽⁵⁾ Susu B and others also reported that only 17% of women who used traditional method relied on LAM. Women mainly asked about what contraception method were available, when to start use and where to obtain contraception⁽⁶⁾.

Conclusion :

A mass education campaign about advantages of breast feeding can be initiated more so in developing countries like India. This campaign should also include Urban setup including Urban Slums, where due to increased birth rate and changing attitudes had led to bottle feeding practices. Breast feeding has strong fertility inhibiting effect and so lactational amenorrhea method can be taken as an available, reliable and introductory family planning method that simultaneously

contributes to increased family planning practices which in turn improves maternal and child health.

References :

1. Wijden C, Kleijnen J, Berk T. Lactational amenorrhoea for family planning. Cochrane Database Syst Rev. 2003; (4):C'D001329.
2. Townsend S. A new contraceptive method: breast feeding. Imbonezamuryango. 1993; 9(27):8-12.
3. Lactational amenorrhoea method: experts recommend full breast feeding as child spacing method. Network. 1998; 10(1):12.
4. Vekemans M. Fur J Contracept Reprod Health Care. 1997;2(2):105-11.
5. Vural B, Vural F, Erk A, Karabacak O. Knowledge on lactational amenorrhoea and contraception in Kocaeli, Turkey. East Afr Med J. 1999; 76(7):385-9.
6. Susu B, Ransjo-Arvidson AB, Chintu K, Sandstorm K, Christensson. Family Planning Practice before and after Child birth in Lusaka, Zambia. East Afr Med J. 1996; 73(11):708-13.



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A STUDY OF SOCIAL STIGMA BY THE NEIGHBOURS AMONG LEPROSY PATIENTS OF AGRA AND KANPUR DISTRICTS OF U.P.

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ABSTRACT

In the present study social stigma & discrimination was assessed among the leprosy patients by the neighbors using an interview schedule. Objectives : To study the social stigma & discrimination by the neighbors with the leprosy patients.

Study Design : Cross-sectional.

Setting and Participants : Male leprosy Patients attending the Government OPDs, of S. N. Medical College, Agra, G.S.V.M. Medical College, Kanpur, N.J.I.L. & OMDs (ICMR), Agra, District Hospitals and 2 CHCs & 4 PHCs of the Districts of Agra and Kanpur.

Sample Size : 200 registered & confirmed male leprosy patients aged 18-60 years (100 each from Agra and Kanpur Districts).

Results : It was observed that 43% (86) of the respondents became anxious after knowing about their disease and 29% became hopeless. It was also seen that 52% (104) patients could not sit freely with their neighbors and 50.5% (101) of the patients were made fun by neighbors once or twice. It was seen that 58.5% of the patients do not visit at their neighbors home after diagnosis of the disease and when they were asked the reason, 71% (83) were found self stigmatized followed by rude behavior of the neighbors (19%) while 5% of the patients were restricted by the family. It was also observed that most of the patients feel ashamed due to their disease.

Conclusion : The patients feel ashamed and self-stigmatized due to disease it is also concluded that respondents avoid to visit at their neighbour's home & their family functions due to bad behaviour of the neighbours.

Key words : Male leprosy patients, Social stigma & discrimination.

Introduction :

Leprosy is often called a "social disease". There are numerous social factors which favour the spread of leprosy in the community such as poverty and poverty related circumstances (e.g., overcrowding, poor housing, lack of education, lack of personal hygiene) and above all, fear, guilt and unfounded prejudices regarding the disease. (Park. K., 2007.)

As soon as people come to know that a certain individual is suffering from leprosy, the process of casting out starts. Building of a social distance starts between the patient and people. This not only affects the individual patient, his family and neighbors but also who come in contact with the patient. This social distance is expressed in many ways. Some of the patients are not invited for occasions like religious functions, social ceremonies, & other community gatherings etc. Some are refused participation in educational institutions, means of transport and communications, places of employment and also avoided for marriage. Therefore, patient is outcast first socially and later economically.

Methodology :

Two Districts Agra and Kanpur were covered in the study. Distt. Hospitals of both the Distts., SN Medical College, Agra, GSVM Medical College, Kanpur, NJIL & OMD Agra and four P.H.Cs. and two C.H.Cs were selected from both the Districts.

200 confirmed & registered male leprosy patients between the age group of 18-60 years who were getting treatment from Govt. Health Care Centers were selected by using purposive sampling technique. The data was collected through an interview schedule by face to face interview by the author.

Results :

In the present study it was observed that in the current scenario the social stigma is reduced but the self stigma is still developed in the patients.

Table 1
FIRST REACTION OF THE PATIENTS AFTER KNOWING ABOUT THEIR DISEASE

First Reaction	District		Total		Statistical Values		
	Agra	Kanpur	No.	%	χ^2	df	P
Will be Cured	16	14	30	15.0	4.473	4	>0.05
Became Hopeless	24	34	58	29.0			
Became Anxious	43	43	86	43.0			
Felt End of Life	9	4	13	6.5			
Fear of Boycott from the family & community	8	5	13	6.5			
Total	100	100	200	100.0			

Table: 1 reveals that the most common reaction after knowing about their diseases was anxiety (43%) followed by 29% (12% from Agra & 17% from Kanpur) became hopeless, while 6.5% felt that it is the end of life. The another 6.5% had fear of boycott from the family and community, Only 15% patient's reaction was that the disease will be cured completely (equal in both the Districts). Statistically insignificant different was found regarding first reaction of the patients after knowing about their disease in the two Distts. ($\chi^2=4.473$, $df=4$, $p>0.05$).

Table -2
NEIGHBOR'S BEHAVIOR REGARDING FREELY SITTING WITH THEM

Neighbors sit with patient freely	District		Total		Statistical Values		
	Agra	Kanpur	No.	%	χ^2	df	P
Yes	28	27	55	27.5	9.843	2	>0.05
No	60	44	104	52.0			
Uncertain	12	29	41	20.5			
Total	100	100	200	100.0			

Table 2: shows that most of the patients 52% do not sit with their neighbours (60% from Agra and 44% from Kanpur) however 27.5% (55) patients informed that their neighbours had no problem to sit with them while 20.5% (44) did not respond about it as they were uncertain. In Agra District, 60% patients were not allowed sit with them by neighbours as compared to 44% in Kanpur District. Statistically significant different was found regarding sitting freely by the neighbours among the patients of the two Distts. ($\chi^2=9.843$, $df=2$, $p<0.05$).

Table 3
SUFFERING WITH UNTOUCHABILITY BY THE NEIGHBORS

Untouchability	District		Total		Statistical Values		
	Agra	Kanpur	No.	%	χ^2	df	P
Yes	14	5	19	9.5	5.173	2	>0.05
No	40	49	89	44.5			
Can't say	46	46	92	46.0			
Total	100	100	200	100.0			

Table: 3 indicates that in the present study, there was the lesser degree of untouchability. It was observed that in Agra District, untouchability was 14% while it was as 5% in Kanpur District, the total being 9.5% only while 46% (92) did not respond about it as they were uncertain about it. Statistically insignificant difference was observed regarding the untouchability between the patients of Agra & Kanpur Districts. ($\chi^2 = 5.173$, $df = 2$, $p > 0.05$)

Table 4
MAKING FUN OF THE PATIENTS BY THE NEIGHBORS

Making Fun	District		Total		Statistical Values		
	Agra	Kanpur	No.	%	χ^2	df	P
Yes	42	59	101	50.5	6.433	2	>0.05
No	17	9	26	13.0			
Can't Say	41	32	73	36.5			
Total	100	100	200	100.0			

It was observed that most of the patients were made fun once or twice by the neighbors, table: 4 reveals that 50.5% of the patients (42% from Agra & 59% from Kanpur) were made fun by neighbors once or twice, directly or indirectly however 13.0% responded that they were not made fun of them by neighbors while 36.5% (41% from Agra & 31% from Kanpur) did not respond about it. Fun making of leprosy patients was more common in District Kanpur than Agra (59% & 42% respectively). Statistically significant difference was observed regarding fun making of the patients by the neighbors among the two Distt. ($\chi^2 = 6.433$, $df = 2$, $p < 0.05$).

Table 5
PATIENTS VISITING NEIGHBOR'S HOME

Patients Visiting Neighbor's Home	District		Total		Statistical Values		
	Agra	Kanpur	No.	%	χ^2	df	P
Yes	44	39	83	41.5	0.515	1	>0.05
No	56	61	117	58.5			
Total	100	100	200	100.0			
If yes, the behavior of neighbors :							
As before	29	12	41	49.0	17.095	2	>0.05
Bad than before	9	5	14	18.0			
Normal	6	22	28	33.0			
Total	44	39	83	100.0			
If no, the reason :							
Self Stigmatized	31	52	83	71.0	12.386	2	>0.05
Rude behavior of the neighbors	15	7	22	19.0			
Restricted by the patient's family	6	0	6	5.0			
Other	4	2	6	5.0			
Total	56	61	117	100.0			

In the present study it was observed that patients were self stigmatized, as the patients did not use to go at their neighbor's home due to their disease because they feel guilty and feel as being past sinner. Table: 5 indicates that 58.5% (117) of the patients do not visit at their neighbor's home but rest 41.5% (83) used to visit after the diagnosis of the disease.

Out of 83 patients who used to visit at their neighbors, 49% told about same behavior followed by 33% informed about normal/so so behavior, rest 18% (9 from Agra & 5 from Kanpur) responded about bad behavior by the neighbors. Statistically significant difference was observed regarding the behavior of neighbors between the patients of both the Districts. ($\chi^2 = 17.095$, $df=2$, $p<0.05$).

Out of 117 patients who did not go to their neighbor's home after diagnosis of the disease when asked about the reason, it was found that 71% (83) were self stigmatized followed by 19% who responded about rude behavior of the neighbors while 5% (6) of the patients were restricted by their family members. Statistically significant difference was observed regarding the reason of not to visit at neighbor's home between the patients of both the Distt. ($\chi^2 = 12.386$, $df=2$, $p<0.05$).

Table 6
FEEL ASHAMED DUE TO HAVING THE DISEASE

Feeling of Ashamed	District		Total		Statistical Values		
	Agra	Kanpur	No.	%	χ^2	df	P
Yes	79	71	150	75.0	1.707	1	>0.05
No	21	29	50	25.0			
Total	100	100	200	100.0			

Most of the patients 75% (150) informed that they feel ashamed due to disease while 25% (50) do not feel so about it. Statistically insignificant difference was observed ($\chi^2=1.707$, $df=1$, $P>0.05$) among the patients of two Districts in this regard.

Discussion :

Carcianiga (2006) and Coveying - Kwong Kam H.C. et.al. (2001) observed in their studies "Stigma is a major social complication from leprosy." Leprosy is considered to cause more social than medial problems. Ogden JA, et.al. (1999) observed in their study that "leprosy is now a disease that can be treated and cured, but it is stigmatized." Carol Shieh (2006) agreed that it is surrounded by myth, fear, and by isolation. The present study focused on this aspect in order to investigate the level of social stigma. Lesser degree of untouchability was observed in the present study. The study shows that out of total patients only 9.5% (19) were suffering with untouchability. Kushwah S S. et. al. (1981) conducted a study and estimated that 57 (62.64%) cases told that they have social stigma on touch while minimum i.e. 9 (9.89%) cases were having social stigma of speech. But in the present study it was observed that neighbors do not sit with the patients as freely as before the diagnosis/disclosure of the disease, 52% of the patients told that the neighbors do not sit with them freely, while about 50% of the patients informed that they are made fun by the neighbors once or twice, directly or indirectly. However a high level of self - stigmatization among the patients was observed, most patients (58.5%) don't visit at their neighbor's home after diagnosis of the disease because 71% (83) of them were self-stigmatized & 19% don't go to the neighbors home due to rude behavior of the neighbors. In similar studies conducted by Myint T, Ulrich M & Kumaresan JA. they concluded that many leprosy patients

also experience rejection from the societies and are not able to find complement.

In other studies of Bakirtziev Z. & Bijleveld I. it was observed that the health- care seeking behavior of people is affected by leprosy which is influenced by many factors, including the patients and the society's beliefs and perceptions about leprosy, the availability, accessibility acceptability and affordability of health services quality of the health care provider - patient relationship and the patient's socio-demographic characteristics. In a society which discriminates against leprosy sufferers, the patients would conceal their condition and will not seek or adhere to the treatment for fear of or as a result of social rejection.

Myint T., Ulrich M & Kant V. P. observed in their study that Persons affected by leprosy experience enzymatic reactions, insults and rejection from society. The stigmatization in leprosy is frequently extended to the families having suffering from leprosy. Kopparty SN. in their study revealed that the families with a patients who had deformities faced 10 times higher society problems than those having patients with no deformities.

Belief about the causation of leprosy :

Beliefs about the causation of leprosy have differed over time and between places. These beliefs affect how the disease and those who have it are perceived. Some groups believe that leprosy is caused by bad blood, contact with leprosy patient & the God's or the Goddess discretion for wrongdoing either in

this or a previous life; there is a complex mix of reasons why leprosy is a feared and shameful disease. Those affected with leprosy are avoided as they are seen sinful, and those around them do not themselves want to incur that wrath.

Conclusion :

The behaviour of the neighbours is not good with the leprosy patients, the patients avoid to attend the family functions of their neighbours, do not go to their homes because the neighbours do not feel comfort with the patients, they avoid to sit with them so the patients feel ashamed and they were self stigmatized. Self-stigmatization is a very real issue. People with leprosy may become ashamed, possibly because of local attitudes and deformity, and may isolate themselves from society thus perpetuating the idea that leprosy is something shameful to be hidden away. The self-loathing associated with leprosy can be permanent; persisting even after the disease is cured.

The status of stigma has been changed in the present scenario. The social stigma is reduced but the high level of self-stigmatization was observed in the study.

There is an urgent need for better education and more effective Health Education of the patients as well as the community regarding all aspects of leprosy.

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References :

1. Bakirtzief Z. Obstacles to compliance with treatment for Hansen's disease. *Cad Saude Publica* 1996; 12: 497-505.
2. Bijleved I. Leprosy care: patient's expectation and experience. A case study is Western Province. Kenya. Amsterdam: Royal Tropical Institute 1977.
3. Carcianiga C, Herselman S. (1999) Leprosy and anthropological insights. *SAfr J Ethnol*, 22: 157-172
4. Carol Shieh, Hsiu-Hung Wang & Ching -Feng Lin (2006) *Lepr Rev* 77: 99-113
5. Coveyng-Kwong et.al. (2001) People with leprosy (Hansen's disease) during the middle ages. *Soc Sci J*, 38: 315-321
6. Joy Rafferty. (2005) Curing the stigma of leprosy. *Leprosy Rev*. 76:119-126.
7. Kushwah S S, et.al. (1983) A study of social stigma among leprosy patients attending leprosy clinic in Gwalior. *Leprosy in India*, 53: 221-225.
8. Kumaresan JA, Maganu ET, Socio-cultural dimensions of leprosy in North-Western Botswana. *Soc Sci Med* 1994; 39: 537-541.
9. Myint T, Thet AT, Htoon MT, Win A comparative KAP study of leprosy and members of the community in Hlaing and Laung-Lon townships, *Indian J Lepr* 1992; 64: 313-324
10. Ogden JA, Proter JHD. (1999) Leprosy: applying qualitative techniques to research and intervention. *Lepr Rev*, 70: 129-135.
11. Park, K., (2007) the text book of P & SM, 19th edition.
12. Ulrich M, Zulueta AM, Caceres- Ditmar G et al. Leprosy in women: characteristics and repercussions. *Soc Sci Med* 1993; 37: 445-446.



FACTORS INFLUENCING THE NUTRITIONAL STATUS OF UNDER FIVE (1-5 YEARS) CHILDREN IN URBAN-SLUM AREA OF VARANASI

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ABSTRACT

Research Question : To study some of the ecological factors in relation to the existing nutritional status of under five (1-5years) children in urban-slum area of varanasi. This included the following determinants in particular.

Objective : To assess the biological, socio-economic, maternal and dietary factors with nutritional status of under fives children among urban-slum population.

Study design : A cross-sectional study

Study settings : Deptt. Of PSM, I.M.S., B.H.U., Varanasi

Study subject : 400 children of under fives age group (1-5years) of urban field practice area (Sunderpur community)

Study period : July 1999 to July 2000

Study variable : Age, sex, birth order, birth interval, caste of the family, type of family, literacy status of mother, dietary habit, Colostrum, Exclusive Breast Feeding,

Result : A cross-sectional epidemiological study was carried out in field practice area of the department of Preventive & Social Medicine, IMS, BHU. Among the pre-school children aged 1-5 years the prevalence of PEM as screened out by 'weight for age' criteria using "IAP classification" was 63.3%. The prevalence was higher in 3rd year age periods as compared to 4th and 5th year. During 2nd year of life PEM prevalence was observed to be lowest. Prevalence of PEM in male children was 58.3% as compared to female children (68.6%), the difference was significant. Among the Socio-economic factors mother's literacy, and caste, were significantly associated with PEM. Children deprived of colostrum and exclusive breast feeding also showed significant difference in prevalence of PEM.

Introduction :

The period of childhood, specially the under five children who constitute about 12% of country's total population, forms the vulnerable group of community. The prevalence of malnutrition varies from country to country and from place to place in the same country. Child malnutrition is the end result of multiple overlapping and interacting factors in the community's physical, biological and socio-cultural environments.

In a vast country like ours with regional diversities and ethnic variations, it becomes important to map out the nutritional pattern of children in different areas taking into consideration the ecological and diagnosis of various causative or co-existing factors which are overlapping and interacting in the community's physical, biological and socio-cultural environment and are responsible for malnutrition in the area. This is necessary, so that a locally suited appropriate action intended to improve the nutrition and health may be initiated to fight the scourge of malnutrition. The present study, a cross-sectional, field study was undertaken in the urban practice field of PSM Department, Institute of Medical

sciences. BHU, to explore some of the epidemiological factors in relation to the PEM

Material And Methods :

The population of the study area is about 5,000. Thus the estimated number of under fives (1-5yrs) in this area was estimated to be around 600. In view of the cross-sectional study design chosen, an attempt was made to enumerate all the under five children in the study area. No sampling was done, as the intention was to cover the entire study universe.

However, inspite of best efforts the coverage of under five children in the study was 400 out of 600 children (67.0%). This sample size estimate is based on the assumption that approximate extent of the problem is around 50% with permissible error in the estimate equal to 10%.

The studied children were screened for PEM by weight for age criterion using IAP classification >80% of expected weight for age is considered normal nutrition. Criterion were chosen for standard reference weights at different ages of NCHS standards (50th percentile values) were used. The information about the following variables were elicited and recorded on a pre-designed and pretested proforma.

Table 1
PREVALENCE OF PEM ACCORDING TO "AGE AND SEX" GROUP

	Age Group (Months)					Sex of Children		
	12-24	24-36	36-48	48-60	Total	Male	Female	Total
PEM	58 (58.6%)	75 (66.4)	58 (63.7)	62 (63.7)	253 (63.3)	120 (58.3)	133 (68.6)	253 (63.3)
NonPEM	41 (41.4)	38 (33.6)	33 (36.3)	35 (36.3)	147 (36.7)	86 (41.7)	61 (31.4)	147 (36.7)
Total	99	113	91	97	400	206	194	400
χ^2 2df= 1.40019; P>0.50						χ^2 1df=4.5637; P<0.05		

Table-1 shows that, prevalence of PEM was found highest among the age group of 24-36 months and females. This may be due to the fact that dietary requirement of this age group is more, however the differences between prevalence of PEM was not found to be significant (χ^2 2df=1.40019; P>0.50) Prevalence of PEM was statistically significant among two sex group (χ^2 1df=4.5637; P<0.05), this is because of our cultural setup of gender discrimination besides environmental influences.

Table 2
PREVALENCE OF PEM ACCORDING TO "TYPE AND SIZE OF FAMILY"

	Type of Family			Size of Family			
	Single	Joint		1-5	6-10	>10	Total
PEM	115 (63.9%)	138 (62.7%)	253 (63.3%)	60 (58.8%)	132 (68.0%)	61 (58.7%)	253 (63.3)
NonPEM	65 (36.1)	82 (37.3)	147 (36.7)	42 (41.2)	62 (32.0%)	43 (41.3%)	147 (36.7)
Total	180	220	400	102	194	104	400
χ^2 1df=0.0574; p>0.80				χ^2 2df=3.7208; p>0.10			

Table-2 shows that prevalence of PEM for different type and size of family. Prevalence of PEM in single type of family was more than among members of joint family, large sized family (χ^2 1df=0.0574; P>0.80 χ^2 2df=3.7208; P>0.10)

Table 3
PREVALENCE OF PEM ACCORDING TO "LITERACY STATUS OF MOTHER AND CASTE OF THE FAMILY" GROUP

	"literacy Status" of Mother			Caste of the family			
	Illiterate	Literate	Total	Upper	Middle	Lower	Total
PEM	130 (69.9%)	123 (57.5%)	253 (63.3%)	79 (54.9%)	124 (67.4%)	50 (69.4%)	253 (63.3%)
NonPEM	56 (30.1%)	91 (42.5%)	147 (36.7%)	65 (45.1%)	60 (32.6%)	22 (30.6%)	147 (36.7%)
Total	186	214	400	144	184	72	400
χ^2 1df=6.59; P<0.02				χ^2 2df=6.9058; p<0.05			

Table-3 shows that prevalence of PEM according to literacy status of mother and according to upper, middle and lower caste. Children of illiterate mothers were most affected. The differences in prevalence of PEM were significant among illiterate mother and lower caste group (X^2 1df=6.59; $P<0.02$, X^2 2df= 6.9058; $P<0.05$)

Table 4

PREVALENCE OF PEM ACCORDING TO "BIRTH ORDER AND BIRTH INTERVAL"

	Birth order				Birth interval				
	1-2	3-4	≥ 5	Total	≤ 2	3-4	5-6	≥ 7	Total
PEM	105 (58.9%)	99 (65.6%)	49 (69.0%)	253 (63.3%)	159 (63.3%)	81 (63.8%)	11 (73.3%)	02 (50.0%)	253 (63.3%)
NonPEM	73 (41.1%)	52 (34.4%)	22 (31.0%)	147 (36.7%)	95 (36.7%)	46 (36.2%)	04 (26.7%)	02 (50.0%)	147 (36.7%)
Total	178	151	71	400	254	127	15	04	400
X^2 2df=2.758; $p>0.20$					X^2 2df=0.28028; $p>0.80$				

Table-4 shows the distribution of PEM according to birth order and birth interval. The higher birth order had higher prevalence of PEM and the lowest birth order, had lowest prevalence of PEM, however the 1-5 years birth interval were found to have highest prevalence of PEM, this may be due to small size of denominator.

Table 5

PREVALENCE OF PEM ACCORDING TO "DIETARY HABIT, COLOSTRUM AND STATUS OF EXCLUSIVE BREAST FEEDING UP TO 6 MONTHS" GROUP

	Dietary Habit				Colostrum			Exclusive B.F. U.P. to 6Months		
	Veg	Non-Veg (Occasional)	Non-Veg (Regular)	Total	Rejected	Given	Total	Present	Absent	Total
PEM	190 (61.5%)	62 (70.5%)	01 (33.3%)	253 (63.3%)	218 (68.3%)	35 (43.2%)	253 (63.3%)	55 (52.9%)	198 (66.9%)	253 (63.3%)
NonPEM	119 (38.5%)	26 (29.5%)	02 (66.7%)	147 (36.7%)	101 (31.7%)	46 (56.8%)	147 (36.7%)	49 (47.1%)	98 (33.1%)	147 (36.7%)
Total	309	88	03	400	319	81	400	104	296	400
X^2 , 1df=1.8127, $P>0.10$					X^2 , 1df=17.548, $P<0.001$			X^2 , 1df=6.38, $P<0.02$		

Table-5 shows the impact of colostrum, exclusive breast-feeding up to 6 months and dietary habit. The effect of colostrum, and exclusive breast-feeding up to 6 months on PEM was found statistically significant ($X^2_{1df}=17.548$; $P<0.001$ X^2 1df=6.38 $P<0.02$). The Prevalence of PEM was found highest among non-veg. occasional children; this may be due to children like non-veg instead of milk product but unable to use it on regular basis.

Discussion :

The biological factor of age of the child was studied, to examine if a particular age period was more vulnerable for PEM. Age-wise data on prevalence of PEM showed that overall PEM prevalence in the study children was 63.3%. During second year of life (12-24 months) PEM prevalence was observed to be lowest (58.6%). but in 3rd, 4th and 5th

year it was almost same ranging between 63.7 to 66.4%). A region wise survey in a total of 9,206 households covering 17 districts of Uttar Pradesh carried out by Vir and Nigam (2001), showed that the highest prevalence of PEM was between 12-24 months (62.0%) and 55.0% in the age group 24-36 months. The differences in this study and present study could be due to area specific variation in the factors that

play role in causation of PEM. In another study from urban slum children of Calcutta, Sen *et al.* (1994) reported overall prevalence of PEM to be 51.8%. They also observed the lowest prevalence in 12-24 month age period and it increased over subsequent age groups. Prevalence of PEM in male children was 58.3% as compared female children (68.6%). Study by Chaudhuri *et al.* (1975) in urban slum area of Calcutta also reported higher prevalence of PEM in female child. Kapil and Bali (1989) in their study of urban slum pre-school children reported that nearly 34.0% male children and 48.0% female children suffered from PEM. This is ascribed by the authors due to the neglect of female children, particularly with respect to intra familial food distribution. On the other hand, Ray *et al.* (2000) in their study in a municipal area of West Bengal reported 64.7% males and 61.6% females were malnourished. In our study the prevalence of PEM was slightly higher in single families (63.9%) as compared to joint families (62.7%). The expected lower prevalence of PEM in joint families could be due to better care of children, which on the other hand are neglected in single or nuclear type of family. Further, since majority of joint families belonged to upper caste and better income groups. This may be additional contributory factor. Cutting (1972) commented that with urbanization, joint family system is in process of disintegration and in these broken families nutritional status of children was adversely affected. In this study no relationship could be seen between the family size and prevalence of PEM. In fact the prevalence of PEM was almost same in the small family size (1-5 members) and large size family (more than 10 members). However, in the families with 6-10 members, the prevalence of PEM was higher by about 10 percent (68.0%). Antony *et al.* (1980) reported that number of family member does not affect the nutritional status. These findings are in consonance with the observation of the present study.

Prevalence of PEM in the study area was observed to be lower in children belonging to upper caste (54.9%) whereas, in the middle and lower caste groups, prevalence of PEM was higher 67.4% and 69.4% respectively. In 1976, Shukla in his study in urban slum area reported 36.9% prevalence of PEM in upper caste group and 69.7% and 72.9% in middle and lower caste groups respectively, showing a very significant difference between caste. In our study the prevalence of PEM was found to be 69.9% in children whose mothers were illiterate, as compared to children whose mothers were literate (57.5%). Prasad (1976) observed that illiterate mothers were ignorant of the basic knowledge of child nutrition and hygiene. They also observed delayed weaning among illiterate group. According to NFHS - II (1998-99) prevalence of under nutrition was 54% among children (under - 3 year group) of illiterate mothers. Similarly Ray *et al.* (2000) in his study in municipal area of West Bengal reported that the prevalence of PEM among the children of literate mothers was lower (54.9%) than the illiterate mothers (69.6%).

In the present study the prevalence of PEM increased with the increase in birth order. Prevalence of PEM was

higher after 2nd birth order i.e. 65.6% in 3-4 and 69.0% in >4 birth order as compared to prevalence of 59.0% in children of 1-2 birth order. Prevalence of PEM increased with the increasing birth order. Ray *et al.* (1985) in his study in peri-urban area of Goda also reported higher prevalence of PEM in families having more than 3 siblings. Almost similar results were also reported by Ray *et al.* (2000) in municipal area of West Bengal. Birth interval considered in this study was the gap in years between the birth of study child and birth of immediate previous child. The rationale of considering this variable was that larger the interval between the births, greater are the chances of better maternal nutrition, which in turn should contribute in better nutrition of child. In our study however, no clear cut relationship could be seen between birth interval and prevalence of PEM. For Birth Interval = 2 year and 3-4 years prevalence of PEM was more or less same 62.6% and 63.8% respectively, and it was lowest 50.0% with interval of = 7 years (though too small for drawing any inferences). However children with Birth Interval of 5-6 years, the prevalence of PEM was observed to be unexpectedly high (73.3%), which again can not be taken seriously owing to small size of denominator in this group (only 15 children). NFHS (1998-99) data have shown a clear relationship between these two variables. Prevalence of PEM was 52.2% in children with smaller birth interval (<2 years), 50.0% in children with birth interval of 2-4 years.

It was observed that prevalence of PEM was 33.3% in children with regular non-vegetarian food habit in the family. However, the number of regular non-vegetarian families were only three in this study thus no inferences could really be drawn. Similarly 62 out of 88 children (70.5%) with occasional non-vegetarian diet had PEM. In our study area majority of mothers did not give colostrum to her baby because of the belief that lactation gets established only around third day and that colostrum is heavy for the baby. The observation was that 319 out of 400 (79.75%) mothers discarded the colostrum and children were deprived of this highly nutritious and protective gift of nature. During the critical period of infancy breast-feeding play an important role in determining the growth of an infant. In this study 104 children (26.0%) were on exclusive breastfeeding up to 6 months, and prevalence of PEM was also low in these children (52.9%), as compared to those who did not receive exclusive breast feeds up to the age of 6 months (66.9%). These differences were found to be significant ($p < 0.02$). Rao *et al.* (1992), in his study among rural children of Pune also observed significant difference in nutritional status of children who were exclusively breast fed up to 6 months as compared to those who were not exclusively breast fed up to the age of 6 months.

Conclusion & Recommendations :

It was observed that prevalence of PEM was significantly higher among under five children of lower caste group and also among children who did not receive colostrum and exclusive breast feeding up to 6 months of age. Maternal literacy status also play important role.

There should be a deliberate attempt at each and every level to understand the specific needs of the area to be intervened and a policy decision and programme planning to achieve excellence in public health. The minimum child care package should include-(1)primary & booster immunization coverage(2)administration of Vitamin A doses commencing between 9 to 12 months along with measles vaccine and subsequent six monthly doses to complete nine doses by the age of five years(3)regular monitoring of growth by "weight for age" criteria using growth charts(4)Administration of iron and folic acid(5)Mass deworming programme in under fives in the study area and(6)IEC programme on child health with peoples participation through Mahila Mandal and Health Committee of the area in order to promote the child health ,coordination with the ICDS Centre should also be attempted specially in the area of supplementary feeding programme. (7) Political commitment needed to improve literacy status of female.

References :

1. Antony R, Ram B, Madam S. Under-nutrition among children and its relationship with the per capita income of the family. Ind Pediat, 17 (1): 55, 1980.
2. Chaudhuri MK, and Ramakrishnan MR. Nutritional profile of Calcutta preschool children. II Clinical Observation. Ind J Med Res. 63: 189, 1975.
3. Cutting WAM, Cutting A. Social economic, dietary and medical factors in nutrition rehabilitation. Ind Pediat. 9 (5): 238, 1972.
4. Gazzet. Govt. of Uttar Pradesh. Development of Social Welfare, 3: 107, 1965.
5. Kapil U and Bali P. Nutritional status of pre-school children of urban slum communities in Delhi. Ind Paed. 26, 1989.
6. National Family Health Survey. International Institute of Population Sciences, Bombay, 263-273, 1998-99.
7. Nelson WE. Text Book of Pediatrics, WB Saunders Co. Philadelphia, London, 1996.
8. Prasad KR, Nath LN. A controlled study of socio-culturally determined children feeding habits in relation to PEM. Ind Pediat, 13 (3): 171, 1976.
9. Rao S, Kanade AN. Prolonged breast feeding and malnutrition among rural Indian children below 3 years of age. Eur J Clin Nutr, 46 (3): 187- 195, 1992.
10. Ray SK, Lahiri A, Mukhopadhyaya BB. A short communication on some aspects of under 5- year clinic services at Goda peri-urban community. Indian J Community Medicine, 14: 114-118, 1985.
11. Ray SK, Biswas AB, Gupta SD, Mukherjee D, Kumar S, Biswas B and Joardar G. Rapid assessment of nutritional status of dietary pattern in a municipal area. Ind J Comm Med. 25 (1): 14-18, 2000.
12. Sen PK. Nutritional status of under five children in an urban slum community. Ind J Pub Hlth 38(3): 113-114, 1994.
13. Shukla KK. A Comparative Study of Nutritional Status in Preschool Children of Rural and Urban Slum Communities. Thesis submitted for the degree of MD, PSM, BHU, Varanasi, 1976.
14. Vir SC, Nigam AK. Nutritional status of children in U.P. NFI Bulletin, 4 - 6, Jan.2001.



*Not enjoyment & not sorrow
Is our destined end or way,
But to act that each tomorrow
Finds us further than to day.*

EPIDEMIOLOGY OF UNDER-NUTRITION IN CHILDREN BETWEEN 0-5 YEARS FROM RURAL AREAS OF DEHRADUN

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ABSTRACT:

Background : Under nutrition is a major problem in India. This is a study conducted in rural catchment areas of Department of Community Medicine, SGRRMC, Dehradun to assess the same.

Objectives : To find out prevalence of under nutrition in children in the age group of 0-5 years and also to study its epidemiological correlates.

Methods : All registered children of RHTC Mothrowala during October to December 2009 were studied. Detailed histories were taken & growth charting was done using growth charts provided by government of India (as recommended by Indian Academy of Pediatricians).

Results : 41.2% children suffered from under nutrition. Under nutrition was significantly correlated with age, socio-economic status, nuclear families, mother's education, immunization & feeding practices.

Conclusions : Solution to the problem lies in economic upliftment, women's education, good health services and preservation of joint family system.

5-8 keywords: under nutrition, colostrum, exclusive breast feeding, weaning, immunization.

Introduction :

Under nutrition is an important cause of childhood morbidity and mortality and leads to growth impairment. The current concept of under nutrition has been mentioned as Protein Energy Malnutrition (1) and is widely prevalent in India. Half of the world's malnourished children reside in three South Asian Countries: India, Bangladesh and Pakistan (2). With above background, this study was undertaken in catchment areas of newly established SGRRMC, Dehradun to obtain baseline data for further intervention. Material & methods.

This cross sectional study was carried out in rural field practice areas of Department of Community Medicine, SGRRMC, Dehradun from Oct to Dec 2009. All 294 children between 0-5 years in catchment area of Rural Health Centre, Mothrowala were included in the study except those not available/ away from home due to any reason. Detailed histories were taken on a predesigned structured questionnaire, anthropometric measurements were taken and weight for age recorded in standard growth charts. The data was analyzed using SPSS 10.0 software. Statistical methods used were percentages and Chi Square Test. Significance level was fixed at 95% confidence interval ($p=0.05$).

Results :

1. 41.2% children suffered from under nutrition of varying degrees.
2. Epidemiological factors related to under nutrition:
 - a. 47.6% undernourished children were in age group of 37-60 months, 40.5% in 13-36 months and only 11.9% in 0-12 months.
 - b. 38.3% males had under nutrition as compared to 44.9% females.
 - c. 55.0% mothers were educated below matriculation had underweight children as compared to 28.2% mothers educated till matriculation and above.
 - d. 47.9% children from nuclear families were under nourished as compared to 31.4% from joint families.
 - e. 61.5% children from low socio-economic classes were under nourished as compared to 37.2% and 29.4% from middle and upper classes respectively.
 - f. Home deliveries were associated with higher percentage of subsequent under nutrition in children (50.8%) as compared to institutional deliveries (36.5%) as were interventional deliveries in hospitals (62.1%) as compared to normal deliveries (37.7%).
3. Prevalence of various child feeding practices in the community:
 - a. Practice of giving colostrum - 71.1%
 - b. Practice of giving pre lacteal feeds (PLF) 28.4%
 - c. Practice of Exclusive breast feeding (EBF) 28.9%
 - d. Weaning at 6 months 28.9%
 - e. Initiation of breast feeding within 1 hour of birth 41.0%
 - f. Initiation of breast feeding within 24 hours of birth 65.7%
4. Epidemiologic correlations with child feeding practices:
 - a. 73.3% children between 0-5 years who did not

receive colostrum were under nourished as compared to 37.9% of those who received colostrum.

b. 46.6% children who were given PLF after birth were under nourished as compared to 38.7% children who were not given PLF.

c. 44.8% children who did not receive EBF were under nourished as compared to 32.2% of those who received EBF.

d. No significant correlation was observed between under nutrition and age of weaning in current study.

e. 64.7% children who were breast fed after 24 hours of birth were under nourished as compared to 34.3% children whose breast feeding was started within 24 hours of birth.

5. 39.4% of completely immunized children were under nourished as compared to 62.5% of incompletely immunized children under study.

Prevalence of low weight for age in Dehradun is less than national average of 45.9% (3) and 89.7% reported from neighboring Garhwal Himalayas (4).

Age correlation conforms to findings of Mittal, Singh & Ahluwalia (5) where peak prevalence of under nutrition was in 36-47 month age group indicating renewed focus on toddler nutrition.

No gender bias in the prevalence of under nutrition in children was also noticed in a NNMB survey and a rapid nutritional status assessment carried out by SK Ray & colleagues (6).

Likewise, other authors have also noticed a significant correlation of under nutrition in children with mother's education (5, 6).

Unlike present findings, a significant positive relation with increasing family size is reported (6), particularly in relation to birth order of the child. This can be explained as majority of families were joint families in the study area where large family does not mean high birth order of child.

A positive correlation of under nutrition with nuclear family type and low socio economic class has also been reported by other authors (7).

Low birth weight is associated with growth failure in later ages (8, 9). Contrary findings in this study can be suggestive of the fact that catch up growth is occurring with the help good health care services. Further studies can be planned to assess the same.

Good ante natal care and subsequent institutional delivery decrease incidence of low birth weight. Decision about place of delivery is influenced by socio economic factors. Hospital deliveries increase sharply with socio-economic status of the family. Home deliveries are assisted by untrained personnel. These facts justify the finding of the current work that place and type of delivery significantly affect nutritional status of children between 0-5 years of age.

Prevalence of recommended infant feeding practices in India varies in different regions. As per Ramji, EBF rate in India at 6 months is about 46%. Contrarily, EBF was not done in as many as 84.1% infants of well to do families of Uttar Pradesh while 47.3% infants of poor families were not weaned off breast milk even beyond 6 months of age. Delayed initiation of breast feeding, deprivation from colostrum and improper weaning are significant risk factors for under nutrition. Adequate complementary feeding practices go a long way in prevention of under nutrition (10).

There is a significant correlation between incomplete immunization and under nutrition in children (6). Conclusion Low weight for age is still widespread in the study area. Although social and economic reform is widely occurring we can focus our efforts on women's education and improving child feeding practices of the community. Interventions on increasing awareness about benefits of giving colostrum, exclusive breast feeding and adequate weaning foods are being planned. Children in age group of 3-5 years have come up as a vulnerable subgroup, so mothers need to focus on toddler nutrition as well. Maintenance of good health care services is the must to help mothers with low birth weight children cope without letting the child's growth falter.

Table 1

Variable	Groups	Normal Children	Under Nourished Children	Chi Square	D.F.	P Value
Age (in months)	0-12	42 (35.0%)	10 (11.9%)	7.4	4	<0.05
	13-24	20 (16.7%)	17 (20.2%)			
	25-36	27 (22.5%)	17 (20.2%)			
	37-48	22 (18.3%)	24 (28.6%)			
	49-60	9 (7.5%)	16 (19.0%)			
	Total	120 (100.0%)	84 (100.0%)			

Table Contd.

Sex	Male	71(61.7%)	44(38.3%)	0.9	1	>0.05
	Female	49(55.1%)	40(44.9%)			
	Total	120(100.0%)	84(100.0%)			
Social Class	Lower	3 (2.5%)	0	8.63	2	<0.01
	Upper lower	12 (10.0%)	24 (28.6)			
	Lower Middle	46 (39.3%)	31 (36.9)			
	Upper Middle	47 (79.7%)	24 (28.6)			
	Upper	12 (20.3%)	5 (5.9)			
	Total	120 (100.0%)	84 (100.0)			
Family Size	3 to 5	72 (54.5%)	60 (45.5%)	0.5	2	>0.05
	6 to 9	42 (66.7%)	21 (33.3%)			
	10 and Above	6 (66.7%)	3 (33.3%)			
	Total	120 (100.0%)	84 (100.0%)			
Mother's Education	Illiterate	24 (40.0%)	36 (60.0%)	7.85	2	<0.01
	Below matric	22 (53.7%)	19 (46.3%)			
	Matric and Above	74 (71.8%)	29 (28.1%)			
	Total	120 (100.0%)	84 (100.0%)			
Initiation of breast feeding	Within 1 hour	50 (59.5%)	34 (40.5%)	6.3	3	<0.05
	Within 24 hours	38 (76.0%)	12 (24.0%)			
	> 24 hours	12 (35.3%)	22 (64.7%)			
	Not known	20 (55.6%)	16 (44.4%)			
	Total	120 (100.0%)	84 (100.0%)			
Colostrum	Yes	90 (62.1%)	55 (37.9%)	5.9	2	<0.05
	No	8 (26.7%)	22 (73.3%)			
	Not Known	22 (56.4)	17 (43.6%)			
	Total	120 (100.0%)	84 (100.0%)			
EBF	Yes	40 (67.8%)	19 (32.2%)	2.8	1	<0.01
	No	80 (55.2%)	65 (44.8%)			
	Total	120 (100.0%)	84 (100.0%)			
Age of Weaning	6 months	51 (86.4%)	8 (13.6%)	26.1	1	>0.05
	Not 6 months	69 (47.2%)	76 (52.4%)			
	Total	120 (100.0%)	84 (100.0%)			

Table 2

Variable	Groups	Normal Children	Under Nourished Children	Chi Square	D.F.	P Value
Religion	Hindu	113 (94.2%)	78 (92.8%)	0.34	1	>0.05
	Others	7 (5.8%)	6 (7.2%)			
	Total	120(100.0%)	84(100.0%)			
Family Type	Nuclear	61(50.8%)	52 (61.9%)	5.87	1	<0.01
	Joint	59 (49.2%)	32 (38.1%)			
	Total	120(100.0%)	84(100.0%)			
Delivery Place	Home	33 (27.5%)	34 (40.5%)	3.77	1	<0.05
	Institutional	87 (72.5%)	50 (59.5%)			
	Total	120(100.0%)	84(100.0%)			
Delivery Type	Normal	109 (90.8%)	18 (21.4%)	6.09	1	<0.01
	Interventional	11 (9.2%)	66 (78.6%)			
	Total	120(100.0%)	84(100.0%)			
Birth Weight	Not Known	54 (45.0%)	59 (70.2%)	22.16	2	>0.05
	<2.5 kg	13 (10.8%)	14 (16.7%)			
	>2.5 kg	53 (44.2%)	11 (13.1%)			
	Total	120(100.0%)	84(100.0%)			
PLF	Not Known	7 (5.5%)	6 (7.1%)	1.08	2	<0.01
	Not given	31 (25.8%)	27 (32.1%)			
	Given	82 (68.3%)	51 (60.7%)			
	Total	120(100.0%)	84(100.0%)			
Immunization Status	Complete	114 (95.0%)	74 (88.1%)	3.26	1	<0.05
	Not Complete	6 (5.0%)	10 (11.9%)			
	Total	120(100.0%)	84(100.0%)			

References:

- Gopalan C. and Kamala Jaya Rao. Prevention in childhood of health problem in adult life Geneva, WHO, 23-24, 1980.
- Ramalingaswami V, Jonsson U, Rhode J. Malnutrition in South Asia: A regional profile, UNICEF Regional Office for South Asia, Kathmandu, ROSA Publication, 11-22, 1997.
- Available from: <http://www.nfhsindia.org/factsheet.html>
- Dutta A, Pant K, Puthia R, Sah A. Prevalence of under nutrition among children in the Garhwal Himalayas. Food Nutr Bull 2009; 30 (1): 77-81
- Mittal A, Singh J, Ahluwalia SK. Effect of Maternal Factors on Nutritional Status of 1-5 year old children in urban slum population, Indian J Community Medicine 32(4):180-84,2007.
- Ray SK, Biswas AB, Gupta SD, Mukherjee Dipankar. Rapid assessment of Nutritional Status and Dietary Pattern in municipal Area, Indian J Community Medicine 25(1):211-16, 2000.
- Medhi GK, Hazarika NC, Shah B, Mahanta J. Study of health problems and nutritional status of tea garden population in Assam. Indian J of Med Sciences 2006; 60(12): 496-505
- Sachdev HPS. Low birth weight in South Asia. Int J Diab Dev Ctries 2001; 21 (1): 13-33
- Deswal BS, Singh JV, Kumar D. A study of risk factors for low birth weight. Indian J Community Med 1999; 24(3): 127-131
- Ramji S. Impact of infant and young child feeding and caring practices on nutritional status and health. Indian J Med Res 2009; 130 (5): 624-6.



A COMPARATIVE STUDY OF PULMONARY FUNCTION TESTS IN SMOKERS AND NON-SMOKERS IN RURAL MAHARASHTRA

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ABSTRACT:

Background : In India smoking is a common habit prevalent in both urban and rural areas. Cigarette and bidi smoking has extensive effects on respiratory function and is clearly implicated in the etiology of a number of respiratory diseases.

Objectives :

1. To study and compare the pulmonary function tests among smokers and non-smokers in a rural area.
2. To study the role of possible associated factors and relation of type, quantity and duration of smoking on the pulmonary function tests.

Setting : Pravara Rural Hospital, Loni, District Ahmednagar, Maharashtra.

Study design : Cross sectional study.

Materials & Methods : The pulmonary function tests were assessed on computerized spirometer in 400 male subjects comprising of 200 smokers and 200 non smokers and results were compared.

Statistical analysis : SPSS Statistical Software.

Results & Conclusion : Almost all the pulmonary function parameters were significantly reduced in smokers and obstructive pulmonary impairment was commonest. Thus by spirometry a spectrum of lung disorders may be detected at an early stage and subsequent morbidity can be minimized.

Key words : Smoker, Spirometry, Pulmonary functions

Introduction :

Cigarettes kill an estimated 5 million people annually world wide¹. The World Health Organization reported that tobacco smoking killed 100 million people worldwide in the 20th century and warned that it could kill one billion people around the world in the 21st century². By the early 2030, tobacco related death would increase to about 10 millions a year³. Tobacco smoking rates have decreased in industrialized countries since 1975, but there has been a corresponding 50% increase in smoking rates in low- income countries⁴.

In India smoking is a common habit prevalent in both urban and rural areas irrespective of mode of smoking i.e. cigarettes, bidis, pipes, cigar, hookah etc. In India, tobacco is consumed mainly in the form of bidis (54%), followed by smokeless tobacco (27%) and cigarettes (9%)⁵.

Bidi smoke may be more injurious because bidi contains unrefined form of tobacco as compared to cigarettes^{6,7}. Cigarette smoking has extensive effects on respiratory function and is clearly implicated in the etiology of a number of respiratory diseases, particularly chronic bronchitis, emphysema, and bronchial carcinoma⁸.

Materials and Methods :

The present cross sectional study was conducted in Pravara Rural Hospital of Rural Medical College, PIMS, Loni, in district Ahmednagar, Maharashtra from January 2007

to August 2008. The study population included 400 male subjects comprising of 200 smokers and 200 non smoker controls aged between 30-60 years. Individuals with history of smoking cigarettes / bidis daily for at least one year were considered as smokers⁹. Ex-smokers or past smokers were excluded from the study. For the control group, 100 healthy non smokers of almost same age and matching other characteristics were selected. The materials used in the study were a computerized RMS Med-spirometer, weighing machine, measuring tape and Blood Pressure set. To evaluate dose and duration response relationship, quantification of tobacco smoking was performed by calculating smoking index for smokers.

Smoking Index :

It is equal to multiplication of the average number of cigarettes/bidis smoked per day and duration (in years) of tobacco smoking^{10,11}.

Habit	Smoking Index (Frequency x duration)
Non-smokers	0
Light smokers	1-100
Moderate smokers	101-200
Heavy smokers	more than 200

The observations of the study were analyzed by statistical methods like percentages, chi square test and t-test of significance.

Observations :

In the present study it was observed that there was no significant difference in the mean physical parameters like age, height, weight, body mass index and body surface area by calculating mean and standard deviation in smokers and non-smokers (Table 1). Most of the smokers smoked only bidi (62.0%) followed by both cigarette and bidi mixed (24.0%) and only cigarettes (14.0%) (Table 2). Most smokers were light smokers (42.0%) followed by moderate smokers (32.0%) and heavy smokers (26.0%) based on the criteria of smoking index (Table 3). Majority of the light smokers were in the age group of 41-50 years (51.85%), moderate smokers in 51-60 years (46.66%) and heavy smokers, 51-60 years (75.0%) (Table 4).

All Pulmonary function parameters like FVC, FEV₁, FEV₁/FVC, PEFR, FEF_{25-75%} and MVV showed statistically highly significant association between smokers and non-smokers by applying unpaired t-test of significance ($p < 0.001$) (Table 5). The association between smoking and impaired PFT was statistically highly significant. The smokers had 17.3 times more risk of having impaired pulmonary functions as compared to non-smokers (Table 6). The obstructive lung changes were most common and were observed predominantly in bidi smokers (72.22%) (Table 7).

Discussion :

In the present study it was observed that there was no significant difference in the mean physical parameters like age, height, weight, body mass index and body surface area thereby showing proper matching of smokers and non-smokers (Table 1). None of individuals smoked tobacco in any form other than bidis or cigarettes. Most smokers were bidi smokers (62.0%) (Table 2). Also the cigarette smokers usually smoked non-filter cigarettes since they are cheap and easily available in rural areas. In the present study most smokers were light smokers (Table 3) in the age group of 41-50 years (51.85%). Similarly, Burrows et al¹² reported that there is quantitative significant relationship between impaired ventilatory function and duration and frequency of smoking (Table 4). All Pulmonary function parameters showed statistically highly significant association between smokers and non-smokers by applying unpaired t-test of significance ($p < 0.001$). Similar, observations showing lung function impairment in smokers were reported by Burrows et al¹², Pandya et al¹³, and Gupta et al¹⁴.

However, several researchers like Angelo¹⁵ and Mahajan et al¹⁶ observed no change in FVC in smokers and non-smokers (Table 5). The association between smoking and impaired PFT was statistically highly significant. The smokers had 17.3 times more risk of having impaired pulmonary functions as compared to non-smokers (Table 6). The fall in FEV₁, PEFR and other flow rates indicate obstructive lung changes and fall in FVC indicates restrictive

lung changes. Padmavathy¹⁷ in a study concluded that the pulmonary function tests are more affected in bidi smokers than in cigarette smokers (Table 7).

Conclusion:

The pulmonary function tests were assessed on a computerized spirometer in 400 male subjects comprising, 200 smokers and 200 non smoker controls. The present study reveals the effect of type, duration and pattern of smoking on the pulmonary functions in smokers. Bidi smoking was most common as the study setting was in rural India. Almost all the pulmonary function parameters were significantly reduced in smokers and obstructive pulmonary impairment was commonest in smokers. By screening smokers, by computerized pulmonary function testing, the early changes in airflow obstruction may be detected and special emphasis shall be made on smoking cessation.

References :

1. Bulletin of the WHO, International Journal of Public Health, June 2006, Vol. 84, No. 6; 495.
2. WHO Report: Tobacco Could Kill One Billion by 2100, Science Daily; Aug 2008; 24: 71.
3. Yach D. Partnering for better lung health: Improving tobacco and tuberculosis control. *Int J Tuberc Lung Dis* 2000; 4: 693-7.
4. Yu JJ, Shopland DR. Cigarette smoking behavior and consumption characteristics for the Asia-Pacific region. *World Smoking Health* 1989; 14: 7-9.
5. Anonymous. IUALTD: The world tobacco situation. *IUALTD News Bull Tobacco Health* 1998; 11: 19-21.
6. World Health Organisation. Health Situation in South East Asia region 1999; 12: 83.
7. Pakhale SS, Jayant K, Bhide SV. Chemical analysis of smoke of Indian cigarettes, bidis and other indigenous forms of smoking, levels of phenol, hydrogen cyanide and benzo(a)pyrene. *Indian J Chest Dis Allied Sci* 1990; 32: 75-81.
8. WHO; World tobacco epidemic; 1993; 2nd Edition; p-47.
9. World Health Organization. Guidelines for controlling and monitoring the tobacco epidemic. WHO, Geneva, 1998; 76-101.
10. S.K. Gupta; Respiratory disorders among workers in a railway workshop; *Ind. J Tub.*, 1995, 42, 161.
11. Sanjay P. Zodpey and Suresh N. Ughade. Tobacco Smoking and Risk of Age-related Cataract in Men..Regional Health Forum; WHO South-East Asia Region; September 2006; Vol. 3: 336-46.
12. Burrows B, Khudson R.J, Martha Jeline, Lebowitz M.D. Quantitative relationship between cigarette smoking and ventilatory function. *Amer. Review. Resp. Dis.* 1977; Vol. 115, 195-205.
13. Pandya KD, Dadhani AC, Chandwani S. Effect of age,

- sex, posture and smoking on peak flow rates; Indian. J. Physiol & Pharmacol 1984; 28: 3, 38.
14. Gupta P, Dhir VS, Sharma K. Cardiorespiratory function in healthy smokers and non-smokers. Ind. Jr. Physio. And Pharm. 1984; Vol. 28:5-30.
 15. Angelo MT, Silva D, Paul Hamosh. Effect of smoking cigarettes on small airways. Jour. Appl. Physio. 1973; Vol. 34; 3: 361-365.
 16. Mahajan BK, Raghunandan V, Maini BK, Mahajan SK. Effect of cigarette smoking on airways. 1983; 27:1-37.
 17. Padmavathy KM. Comparative study of pulmonary function variables in relation to type of smoking. Indian J Physiol Pharmacol; 2008; 52 (2): 193-196.

Table 1
PHYSICAL CHARACTERISTICS OF SMOKERS AND NON-SMOKERS

Variables	Smokers Mean $\pm$ 2 S.D	Non-smokers Mean $\pm$ 2 S.D
Age (years)	48.26 $\pm$ 10.09	48.10 $\pm$ 10.54
Height (m)	1.66 $\pm$ 0.11	1.67 $\pm$ 0.12
Weight (Kg)	65.4 $\pm$ 8.8	64.4 $\pm$ 11.5
Body Mass Index (BMI)	23.52 $\pm$ 3.20	23.80 $\pm$ 3.37
Body surface area (m ²)	1.71 $\pm$ 0.06	1.74 $\pm$ 0.14

S.D. = Standard Deviation

Table 2
TYPE OF TOBACCO SMOKING IN SMOKERS

Type of smoking	No.	%
Only Bidi	124	62.0
Both cigarette/ bidi	48	24.0
Only Cigarette	28	14.0
Total	200	100.0

Table 3
DISTRIBUTION OF GRADE OF SMOKING IN SMOKERS

Grade of smoker	Number of smokers	(%)
Light smoker	108	54.0
Moderate smoker	60	30.0
Heavy smoker	32	16.0
Total	200	100.0

Table 4
AGE WISE DISTRIBUTION OF GRADE OF SMOKING

Age group (years)	Light Smoker No. (%)	Moderate smoker No. (%)	Heavy smoker No. (%)	Total No. (%)
31-40	28 (25.92)	8 (13.33)	0 (0.0)	36 (18.0)
41-50	56 (51.85)	24 (40.0)	8 (25.0)	88 (44.0)
51-60	24 (22.22)	28 (46.66)	24 (75.0)	76 (38.0)
Total	108 (100.0)	60 (100.0)	32 (100.0)	200 (100.0)

Table 5

PULMONARY FUNCTION TESTS AMONG SMOKERS AND NON-SMOKERS

Variables	Smokers Mean $\pm$ 2 S.D	Non-smokers Mean $\pm$ 2 S.D	Significance p value
FVC	2.98 $\pm$ 1.06	3.13 $\pm$ 0.98	0.03242 (S)
FEV ₁	2.48 $\pm$ 1.02	2.81 $\pm$ 0.86	0.000692 (HS)
FEV ₁ /FVC	83.93 $\pm$ 23.98	89.49 $\pm$ 10.54	0.003808 (HS)
PEFR	5.30 $\pm$ 3.46	6.80 $\pm$ 3.44	0.000034 (HS)
FEF _{25-75%}	2.99 $\pm$ 2.02	3.59 $\pm$ 1.74	0.00196 (HS)
MVV	86.1 $\pm$ 44.22	103.6 $\pm$ 33.66	0.00002 (HS)

Significance has been calculated by unpaired t test ($p < 0.001$)

Table 6

INTERPRETATION OF PFT RESULTS IN SMOKERS AND NON-SMOKERS

PFT Results	Smokers No. (%)	Non-smokers No. (%)	Total No. (%)
Obstructive	72 (36.0)	8 (4.0)	80 (20.0)
Restrictive	4 (2.0)	0 (0.0)	4 (1.0)
Mixed	8 (4.0)	0 (0.0)	8 (2.0)
Normal	116 (58.0)	192 (96.0)	308 (77.0)
Total	200 (100.0)	200 (100.0)	400 (100.0)

Chi square value = 20.84, $p < 0.001$, highly significant. (Odds' ratio = 17.3)

Table 7

RELATION OF TYPE OF SMOKING WITH PULMONARY FUNCTION TESTS

Type of smoking	Pulmonary Function Test Interpretation				Total
	Obstructive	Restrictive	Mixed	Normal	
Only Bidi	52(72.22)	0 (0.0)	8 (100.0)	64(55.17)	124 (62.0)
Both cigarette/ bidi	16(22.22)	4 (100.0)	0 (0.0)	28 (24.13)	48 (24.0)
Only Cigarette	4 (5.55)	0 (0.0)	0 (0.0)	24(20.68)	28 (14.0)
Total	72 (100.0)	4 (100.0)	8 (100.0)	116 (100.0)	200 (100.0)



SCREENING OR AGGRESSIVE CASE FINDING FOR HYPOTHYROID PATIENTS. WHAT IS THE EVIDENCE?

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ABSTRACT :

Background : Hypothyroidism enhances atherosclerosis in multiple ways. Carotid intima media thickness (CIMT) as measured by B-Mode ultrasound and color Doppler, is a risk determinant of atherosclerosis. hsCRP is a marker of inflammation and has been incriminated as a risk factor for future cardiovascular events. Our study aims at generating evidence for increased risk of cardiovascular risk factors in hypothyroid patients and thus need for population-based screening for hypothyroidism.

Methods : We included 25 consecutive patients in to each of two groups of our study. (n=50) Hypothyroid group had patients with Thyroid stimulating hormone (TSH) >10miu/l, subclinical hypothyroid (SCH) group patients with TSH 6-10miu/l. We compared CIMT and hsCRP in 2 groups along with other atherosclerotic risk factors.

Results : We found that in the subclinical hypothyroid patients the mean value of total cholesterol (TC) (208.84±6.14), LDL-C levels (157.88±33.51), total cholesterol/ LDL cholesterol ratio (5.29±1.31), LDL cholesterol ratio/ HDL cholesterol ratio (3.93±1.25) and plasma hsCRP (2.13±0.69) levels were higher than the normal values. In hypothyroid patients we found that these values and the CIMT values were statistically significantly higher than the subclinical hypothyroid patients, in addition diastolic hypertension (95.84±11.06) and higher than normal waist-hip ratio (1.03±0.19) was also seen in hypothyroid group. CIMT and hsCRP also showed positive correlation with other atherosclerotic risk factors. (Waist-hip ratio, diastolic hypertension and LDL cholesterol)

Conclusion : Cardiovascular risk factors were increased in sub clinical as well as in clinical hypothyroidism so efforts should be made to detect and treat hypothyroidism at an early stage by aggressive case finding in high risk population.

Introduction :

Cardiovascular disease is the leading cause of death and disability in developed nations and is increasing rapidly in the developing world. The role of hypothyroidism in increasing the risk of cardiovascular diseases has been well established via increase in circulating levels of highly atherogenic low-density lipoprotein (LDL), induction of diastolic hypertension, altered coagulability, and direct effects on vascular smooth muscle.⁽¹⁾

Furthermore in recent years in addition to the classical risk factors several novel risk factors for cardiovascular diseases have been identified, including, elevated hsCRP (highly sensitive c-reactive protein) levels, elevated fibrinogen levels and endothelial dysfunction as seen by CIMT measured by B-Mode ultrasound and color Doppler and many researchers have related these new risk factors to hypothyroidism.⁽²⁾

In regard to the hypothyroidism induced risk in cardiovascular (CV) system, cardiac dysfunction and heart damage may be induced via an increment of highly atherogenic low-density lipoprotein cholesterol (LDL-C) particles, induction of diastolic hypertension, stiffening of central arteries with endothelial dysfunction, and altered coagulation parameters⁽³⁻⁶⁾. Thus association of hypothyroidism in its overt form (TSH > 10 miu/L) with the

cardiovascular risk factors by inducing atherosclerosis is incontrovertible, but does the risk starts when the disease is subclinical is yet to be established. Some studies have associated the subclinical disease (TSH values between 5 - 10 miu/L) with the cardiovascular risk factors^(1,2). In landmark studies the first case-control study by Vanhaelst *et al.*⁽⁷⁾ compared autopsy findings in 25 patients with hypothyroidism with 50 age-matched controls and found a greater prevalence and severity of coronary atherosclerosis in the hypothyroid group. Similar results were found in autopsy finding in another study by Steinberg AD though in hypothyroid patients with hypertension.⁽⁸⁾

Two studies have shown that LDL is more susceptible to oxidation in patients with hypothyroidism, with normalization after restoration of the euthyroid state^(8,9). Several studies have shown decreases in the Lp(a) concentration after T4 treatment of hypothyroid patients⁽¹⁰⁻¹³⁾. A study by Walsh J P, O'Leary P *et al.*⁽¹⁴⁾, found a significant 10% decrease in mean intima-media thickness after 6 months of thyroxine replacement, with a decrease of similar magnitude in the 18 participants with TSH less than 10 mU/L.

Various studies all over the world have suggested that abnormal levels of serum thyrotropin (TSH) may represent a novel cardiovascular risk factor. It has also been seen that restoration of euthyroid state reduces the cardiovascular risk.

Thus we undertook this study with the objective to study the association of conventional (waist-hip ratio, diastolic hypertension, lipid profile) and novel risk factors (Carotid intima media thickness i.e CIMT, high sensitivity c-reactive protein i.e hsCRP and fibrinogen) in young patients of hypothyroidism and their correlation with the severity and duration of hypothyroidism, so as to gather evidence for increased risk of cardiovascular risk factors in hypothyroid patients and thus need for population-based screening for hypothyroidism and its treatment to prevent atherosclerosis and cardiovascular events.

Materials and Methods :

The present cross-section observational study was carried out in the Department of Medicine, Era's Lucknow Medical College and Hospital, Lucknow.

Patients with symptoms or signs suggestive of hypothyroidism were advised to get their TSH done. All patients newly diagnosed to have hypothyroidism with TSH > 5.0 mIU/L irrespective of the etiology (like chronic hashimoto's thyroiditis, atrophic thyroiditis, hypothyroidism due to treatment with radioactive lithium or surgery or postpartum thyroiditis) or patients who were known to have hypothyroidism but had inadequate treatment due to either irregularity or insufficient dose of levothyroxine replacement and were aged between 18 - 40 years, were included in the study.

The patients who were smokers, with history of diabetes mellitus, obese ($BMI > 30$ kg/m²), inflammatory or infectious

diseases, with a previous cardio-vascular event, on drugs (like estrogen, oral contraceptives and hypolipidemic drugs) and pregnant women were not included in the present study.

Each patient in the study group was examined and investigated according to a predesigned examination Performa. Consecutive twenty five patients with TSH values between 5 - 10 mIU/L, normal thyroxine and triiodothyronine levels were included in sub-clinical hypothyroidism group and consecutive twenty five patients with TSH values ≥ 10 were in hypothyroidism group. A total of 50 patients were included in the present study.

Results :

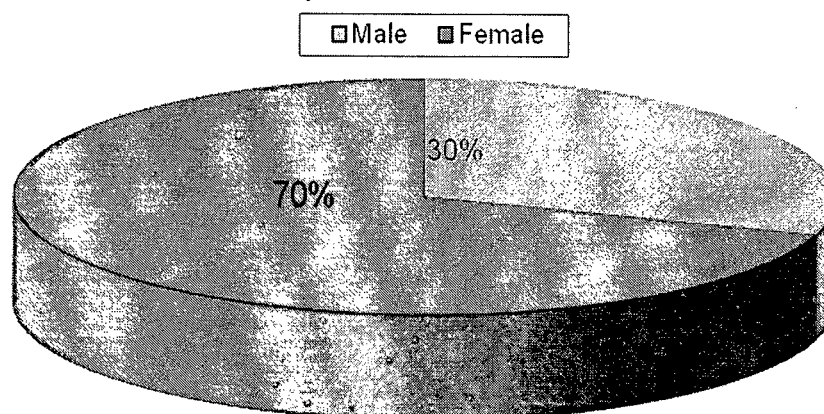
Baseline demographic characteristics of the patients:

The baseline demographic characteristics of the 50 patients enrolled in two study groups are shown in table-1. There was no statistically significant difference in them except in duration of symptoms which can be explained by their increased TSH values indicating more severe values. The mean age of sub-clinical hypothyroidism patients was $31.88 (\pm 8.57)$ years and it was $31.36 (\pm 5.57)$ years in hypothyroidism patients, there was no statistical difference between them. Majority in both sub-clinical hypothyroidism (76%) and hypothyroidism patients (64%) groups were females (Fig.1). The waist-hip ration of sub-clinical hypothyroidism patients was $0.93 (\pm 0.09)$ and it was $1.03 (\pm 0.19)$ in hypothyroidism patients. The mean duration of symptoms of sub-clinical hypothyroidism patients was $53.5 (\pm 21.1)$ days and it was $781.5 (\pm 51.6)$ days in hypothyroidism patients.

Table 1

	Sub-clinical hypothyroidism (n=25)	Hypothyroidism (n=25)	P-value
Age-years	31.88 ± 8.57	31.36 ± 5.57	0.80
Female sex%	76.0	64.0	0.36
Average duration of symptoms-Days	53.5 ± 21.1	781.5 ± 51.6	0.0001

Fig.1: Distribution of sex



Clinical Profile of patients :

The clinical profile of sub-clinical hypothyroidism and hypothyroidism patients is depicted in the Table-2. There was statistically significant difference ($p < 0.05$) in waist-hip ratio between sub-clinical hypothyroidism patients (0.93 ± 0.09) as compared to hypothyroidism patients (1.03 ± 0.19). Systolic blood pressure was higher in hypothyroid patients (133.20 ± 12.14) in comparison to hypothyroid patients (133.20 ± 12.14) though it was statistically insignificant ($p > 0.05$), but there was a statistically significant difference ($p < 0.05$) in diastolic blood pressure between sub-clinical hypothyroidism patients (88.24 ± 13.50) as compared to hypothyroidism patients (95.84 ± 11.06). The pulse rate was almost equal in both sub-clinical hypothyroidism patients (74.72 ± 7.35) and hypothyroid patients (74.32 ± 8.08).

The total cholesterol level was significantly ($p = 0.001$) lower in sub-clinical hypothyroidism patients (208.84 ± 6.14) as compared to hypothyroid patients (246.80 ± 54.32). The LDL was significantly ($p = 0.005$) lower in sub-clinical hypothyroidism patients (157.88 ± 33.51) as compared to hypothyroid patients (197.20 ± 58.35). There was statistically significant difference ($p < 0.05$) in Total cholesterol/HDL-C ratio between sub-clinical hypothyroidism patients (5.29 ± 1.31) as compared to hypothyroidism patients (7.90 ± 3.26) who had statistically significant ($3.07, 0.001$) difference with higher ratio for hypothyroidism patients.

Similar statistically significant ($3.68, 0.001$) higher values were found for LDL-C/ HDL-C ratio in hypothyroidism patients (6.44 ± 3.18) as compared to subclinical hypothyroid patients (3.93 ± 1.25).

However, the HDL was insignificantly ($p > 0.05$) higher in sub-clinical hypothyroidism patients (36.85 ± 7.17) as compared to hypothyroid patients (33.98 ± 9.77). The level of VLDL was almost similar ($p > 0.05$) in both sub-clinical hypothyroidism patients (13.16 ± 2.95) and hypothyroid patients (13.28 ± 3.08). The triglycerides level was insignificantly ($p > 0.05$) lower in sub-clinical hypothyroidism patients (68.40 ± 16.5) as compared to hypothyroid patients (75.40 ± 17.61).

There was statistically significant difference ($p < 0.05$) in CIMT between sub-clinical hypothyroidism patients (0.67 ± 0.10) as compared to hypothyroidism patients (0.74 ± 0.14) who had statistically significant ($2.10, p = 0.04$) difference with higher values for hypothyroidism patients. Similar statistically significant ($5.75, 0.0001$) higher values were found for hsCRP in hypothyroidism patients (3.42 ± 0.90) as compared to subclinical hypothyroid patients (2.13 ± 0.69).

The values of fibrinogen was insignificantly ($p > 0.05$) lower in sub-clinical hypothyroidism patients (3.68 ± 0.50) as compared to hypothyroid patients (4.00 ± 0.83).

Table 2
CLINICAL PROFILE OF PATIENTS (MEAN $\pm$ SD)

	Sub-clinical hypothyroidism (n=25)	Hypothyroidism (n=25)	P-value
Waist-hip ratio	0.93 ± 0.09	1.03 ± 0.19	2.29, 0.03*
Pulse rate	74.72 ± 7.35	74.32 ± 8.08	0.18, 0.86
Blood pressure			
Systolic	128.88 ± 17.03	135.28 ± 15.60	1.39, 0.17
Diastolic	88.24 ± 13.50	95.84 ± 11.06	2.18, 0.03
Total cholesterol	208.84 ± 6.14	246.80 ± 54.32	3.47, 0.001*
HDL-C	36.85 ± 7.17	33.98 ± 9.77	1.18, 0.24
LDL-C	157.88 ± 33.51	197.20 ± 58.35	2.92, 0.005*
VLDL-C	13.16 ± 2.95	13.28 ± 3.08	0.14, 0.89
Total cholesterol/HDL-C	5.29 ± 1.31	7.90 ± 3.26	3.07, 0.001*
LDL-C/ HDL-C	3.93 ± 1.25	6.44 ± 3.18	3.68, 0.001*
Triglycerides	68.40 ± 16.5	75.40 ± 17.61	1.45, 0.15
CIMT	0.67 ± 0.10	0.74 ± 0.15	2.10, 0.04*
Fibrinogen	3.68 ± 0.50	4.00 ± 0.83	1.66, 0.11
hsCRP	2.13 ± 0.69	3.42 ± 0.90	5.75, 0.0001*

*Statistically significant

Quintiles and CIMT values :

For better data presentation of newer risk factors namely CIMT, hsCRP and fibrinogen we made quintiles of all the patients with 5 groups of 20% each according to their CIMT values by arranging them in ascending order of CIMT values. The thinnest CIMT patients were in 1st Quintile and the thickest CIMT patients were in Vth Quintile, with serial arrangement of patients in ascending order according to the increasing CIMT from 1st quintile to the Vth. If more than one patient had same CIMT, than the patient with shorter duration of complaint was kept in low risk or thinner CIMT quintile and patient with longer duration of complaints in high risk or

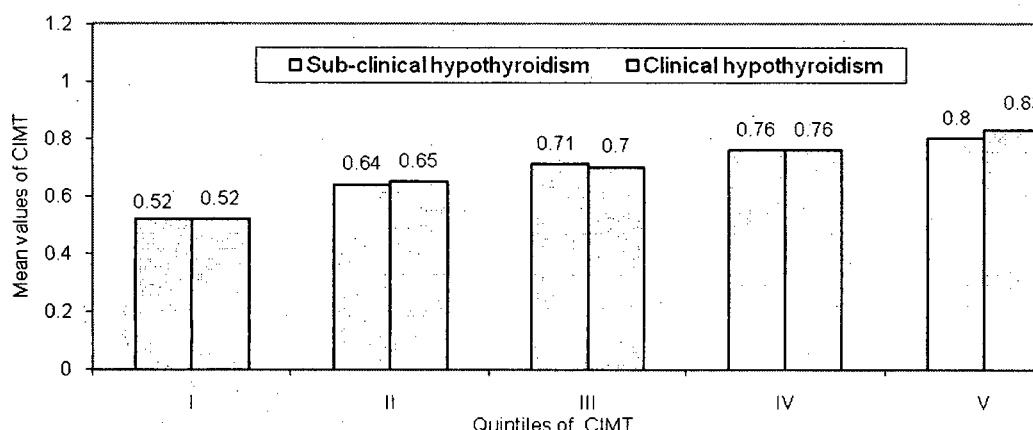
thicker CIMT quintile. The quintile-wise values of CIMT is given in the Table-3 and Fig.2. There was no significant difference in the values of CIMT in each of the quintiles of sub-clinical hypothyroidism patients as compared to respective quintile of hypothyroid patients. However, within sub-clinical hypothyroidism patients, the CIMT values were significantly higher ($p < 0.0001$) in quintile V (0.80 ± 0.001) as compared to IV (0.76 ± 0.02), III (0.71 ± 0.02), II (0.64 ± 0.02) and I (0.52 ± 0.08). Similarly, within clinical hypothyroidism patients, the CIMT values were significantly higher ($p < 0.0001$) in quintile V (0.83 ± 0.03) as compared to IV (0.76 ± 0.02), III (0.70 ± 0.02), II (0.65 ± 0.01) and I (0.52 ± 0.05).

Table 3

QUINTILE-WISE DISTRIBUTION OF PATIENTS ACCORDING TO CIMT

Quintiles	Sub-clinical Hypothyroidism		Clinical Hypothyroidism		T-Test, P-Value
	N	CIMT	N	CIMT	
I	6	0.52 ± 0.08	4	0.52 ± 0.05	0.11, 0.99
II	5	0.64 ± 0.02	5	0.65 ± 0.01	0.86, 0.43
III	7	0.71 ± 0.02	3	0.70 ± 0.02	0.87, 0.44
IV	5	0.76 ± 0.02	5	0.76 ± 0.02	0.11, 0.99
V	2	0.80 ± 0.001	8	0.90 ± 0.02	2.48, 0.03*
ANOVA-F and p-value		33.49, < 0.0001 *		109.01, < 0.0001 *	

Fig.2: Quintile-wise distribution of patients according to CIMT



Quintiles and TSH :

The quintile-wise values of TSH is given in the Table-4 and Fig.3. The values of TSH was significantly ($p < 0.01$) lower in sub-clinical hypothyroidism (5.98 ± 0.65) patients as compared to hypothyroid patients (15.79 ± 4.68) in quintile I. Similar pattern was observed for higher quintiles.

Within sub-clinical hypothyroidism patients, the TSH

values were significantly higher ($p < 0.001$) in quintile V (9.75 ± 0.21) as compared to IV (8.76 ± 0.30), III (8.28 ± 0.77), II (7.20 ± 0.36) and I (5.98 ± 0.65). Similarly, within hypothyroidism patients, the TSH values were significantly higher ($p < 0.0001$) in quintile V (70.38 ± 2.58) as compared to IV (55.56 ± 4.37), III (37.51 ± 9.82), II (24.65 ± 2.84) and I (15.79 ± 4.68).

Table 4
QUINTILE-WISE DISTRIBUTION OF PATIENTS ACCORDING TO TSH

Quintiles	Sub-clinical Hypothyroidism		Clinical Hypothyroidism		T-Test, P-Value
	N	CIMT	N	CIMT	
I	6	5.98±0.65	4	15.79±4.68	5.23, 0.001*
II	5	7.20±0.36	5	24.65±2.84	13.61, 0.001*
III	7	8.28±0.77	3	37.51±9.82	12.77, 0.001*
IV	5	8.76±0.30	5	55.56±4.37	23.89, 0.0001*
V	2	9.75±0.21	8	70.38±2.58	31.77, 0.0001*
ANOVA-F and p-value		26.89, 0.0001*		137.33, 0.0001*	

Discussion :

In the present study we have demonstrated that there is a increasing cardiovascular risk associated with rising TSH value and that this risk starts with low TSH value i.e in patients with subclinical hypothyroidism as well. We found that in the subclinical hypothyroid patients the mean value of total cholesterol($208.8, 84 \pm 6.14$), LDL-C levels(157.88 ± 33.51), total cholesterol/ LDL cholesterol ratio(5.29 ± 1.31), LDL cholesterol ratio/ HDL cholesterol ratio(3.93 ± 1.25) and plasma hsCRP(2.13 ± 0.69) levels were higher than the normal values. In hypothyroid patients we found that these values and the CIMT values were statistically significantly higher than the subclinical hypothyroid patients, in addition diastolic hypertension (95.84 ± 11.06) and higher than normal waist-hip ratio (1.03 ± 0.19) was also seen in hypothyroid group.($p < 0.05$)

Our patients mean total cholesterol value was 208.54 ± 6.14 for subclinical hypothyroid patients and 246.80 ± 54.32 for hypothyroid patients ($3.71, p = 0.001$). Similar results were seen in the Colorado thyroid disease prevalence study of 25,862 subjects, 9.5% had SCH (defined as a TSH $> 5.1 \text{ mIU/L}$) (15). In this survey, serum TC averaged 214, 224, and 251 mg=dL in euthyroid, SCH, and hypothyroid patients, respectively, with these differences being statistically significant ($p < 0.001$). Elevated levels of total cholesterol and LDL cholesterol are well documented features of overt hypothyroidism, but our study substantiates the evidence regarding their raised levels in subclinical hypothyroid patients.(16)

Average waist-hip ratio in our hypothyroid patients(1.03 ± 0.19) was higher then normal and significantly higher than subclinical hypothyroid patients. ($p = 0.03$) In 87 euthyroid obese patients with BMI $> 40 \text{ kg=m}^2$, serum TSH levels were found higher than in women with BMI $< 40 \text{ kg=m}^2$ and were positively correlated with BMI, leptin, leptin=BMI ratio, body surface area, and insulin sensitivity (HOMA) (17). It was therefore suggested that TSH may represent a marker of energy balance in markedly obese

euthyroid patients.

In quintile analysis it was observed that TSH & hsCRP of the patients increased as we moved from 1st quintile to the Vth in both the subclinical and the hypothyroid patients thus indicating that CIMT was directly proportional to TSH in both the groups(Fig 3), and hsCRP was directly proportional to TSH.(Fig.4)

In these patients percentage was determined for no. of hypothyroid patients in each quintile, out of all hypothyroid patients; similarly percentage was also determined for no. of subclinical hypothyroid patients in each quintile, out of all subclinical hypothyroid patients. (Fig. 5) In hypothyroid group the risk increased from 16 % in 1st quintile to 32 % in Vth quintile. In subclinical group of patients 8 % were in highest risk group, thus supporting evidence for cardiovascular risk in subclinical hypothyroid patients. Our findings thus were consistent with previous studies indicating presence of atherosclerosis in hypothyroid as well as subclinical hypothyroid patients.(6,7)

Rossi et al in their study in 2006(18) found that Levothyroxine replacement therapy of sub-clinical hypothyroidism was able to improve both the carotid IMT and atherogenic lipid profile. In one study by Prats(19), A total of 100 patients with SHT treated with levothyroxine were included in the study. No significant differences were detected in TC or in LDL-c after treatment with levothyroxine, this might have occurred as it was a retrospective study and selection bias may have occurred as obesity was an exclusion criteria. Recently, Kim et al (2009) determined Thyroid hormone replacement significantly decreased the C-IMT (0.67 ± 0.11 to $0.60 \pm 0.10 \text{ mm}$; $P = 0.021$) and improved the lipid profile. Thyroid hormone replacement resulted in regression of the increased C-IMT, which was attributed to the improvement in the lipid profile (20).

In a review by Martin.I.Surks et al it was recommended that aggressive case finding for subclinical and clinical

hypothyroidism in high-risk groups should be taken up. (21) Our study adds weight to their recommendations.

Conclusion :

The hypercholesterolemia and, more specifically, the elevated TC/HDL-C and LDL-C/HDL-C ratios that are often observed in SCH constitute risk factors for CVD that are probably increased by the coexistence of hypertension, being overweight, particularly in middle-aged women. Compelling data show that plasma TC and LDL-C concentrations are elevated in subclinical hypothyroid disease as well. Cardiovascular risk factors some of which induce atherosclerosis, and atherosclerosis in itself were

significantly increased as demonstrated by high CIMT values in clinical hypothyroid patients as well as in subclinical hypothyroidism. In high risk population, like those with previous radiation treatment of the thyroid gland (radioactive iodine or therapeutic external beam radiation), those who have had previous thyroid surgery or thyroid dysfunction, and those who have type I diabetes mellitus, a personal history of autoimmune disease, a family history of thyroid disease, or atrial fibrillation, TSH in itself acts like a risk factor so efforts should be made to detect and treat hypothyroidism at an early stage (preferably subclinical hypothyroidism) by aggressive case finding in such high risk population.

Fig.3: Quintile-wise distribution of patients according to TSH

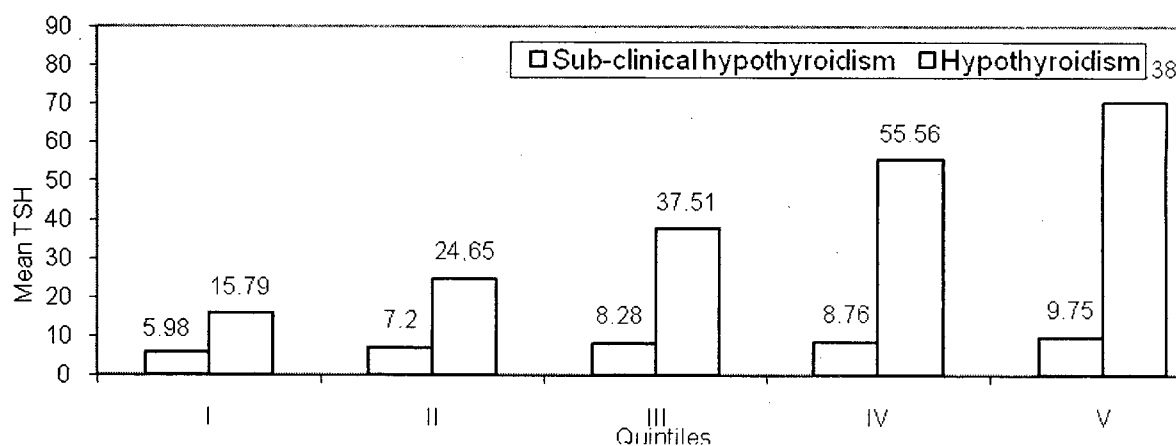


Fig.4: Quintile-wise distribution of patients according to hsCRP

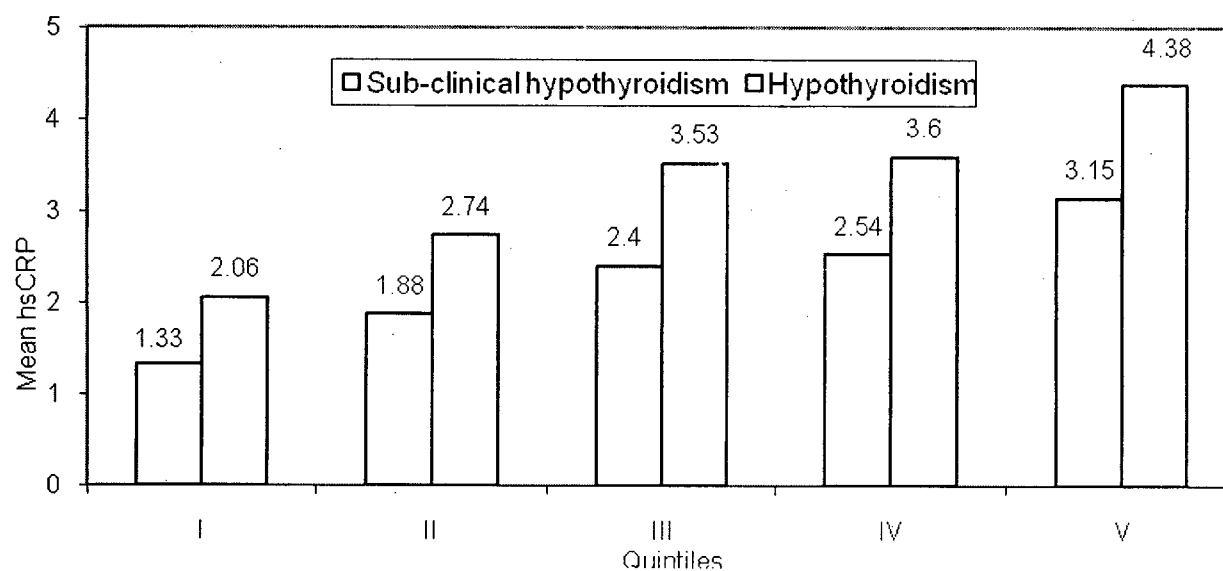
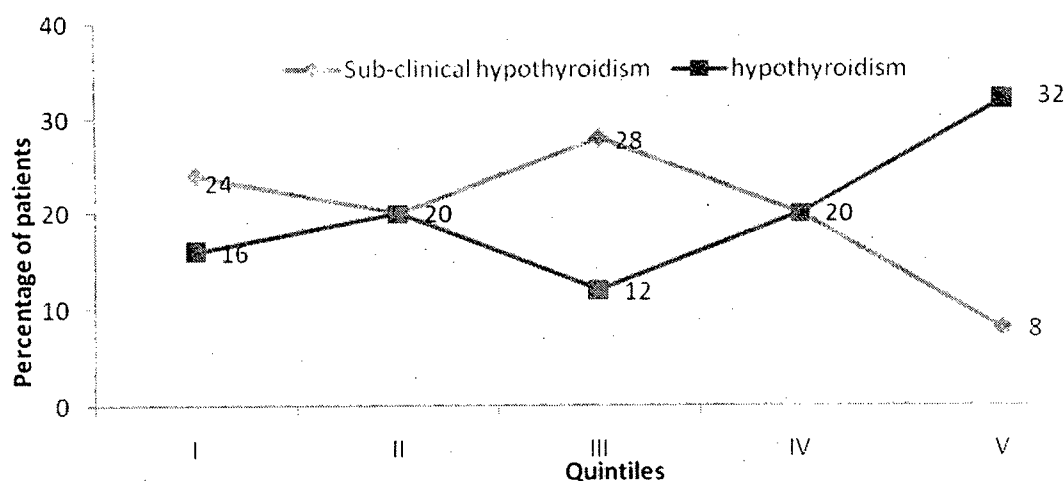


Fig.5: Quintile-wise distribution of patients according to CIMT



Bibliography:

1. Raefel Iuboshitzky Ariel Aviv, Paula Herer, and Lena Lavie 2002 Risk factors for cardiovascular disease in women with subclinical hypothyroidism. *Thyroid* 12:421-425
2. Leonidas H. Duntas and Leonard Wartofsky 2007 Cardiovascular risk and subclinical hypothyroidism: Focus on lipids and new emerging risk factors. What is the evidence?. *Thyroid* 17:8-16
3. Alber CP, Thompson CS 1964 The heart in hypothyroidism. *Am Heart J* 68:428430.
4. Ineck BA, Ng TM 2003 Effects of subclinical hypothyroidism and its treatment on serum lipids. *Ann Pharmacother* 37:725730.
5. Cappola AR, Ladenson PW 2003 Hypothyroidism and atherosclerosis. *J Clin Endocrinol Metab* 88:24382444.
6. Vanhaelst L, Neve P, Chailly P, Bastenie PA 1967 Coronary-artery disease in hypothyroidism. Observations in clinical myxoedema. *Lancet* 2:800802.
7. Steinberg AD 1968 Myxedema and coronary artery disease comparative autopsy study. *Ann Intern Med* 68:338344.
8. Sundaram V, Hanna AN, Koneru L, Newman HA, Falko JM 1997 Both hypothyroidism and hyperthyroidism enhance low density lipoprotein oxidation. *J Clin Endocrinol Metab* 82:34213424
9. Diekman T, Demacker PN, Kastelein JJ, Stalenhoef AF, Wiersinga WM 1998 Increased oxidizability of low-density lipoproteins in hypothyroidism. *J Clin Endocrinol Metab* 83:17521755
10. De Bruin TW, van Barlingen H, Linde-Sibenius TM, van Vuurst de Vries AR, Akveld MJ, Erkelens DW 1993 Lipoprotein(a) and apolipoprotein B plasma concentrations in hypothyroid, euthyroid, and hyperthyroid subjects. *J Clin Endocrinol Metab* 76:121126
11. Martinez-Triguero ML, Hernandez-Mijares A, Nguyen TT, Munoz ML, Pena H, Morillas C, Lorente D, Lluch I, Molina E 1998 Effect of thyroid hormone replacement on lipoprotein(a), lipids, and apolipoproteins in subjects with hypothyroidism. *Mayo Clin Proc* 73:837841
12. Becerra A, Bellido D, Luengo A, Piedrola G, De Luis DA 1999 Lipoprotein(a) and other lipoproteins in hypothyroid patients before and after thyroid replacement therapy. *Clin Nutr* 18:319322
13. Tzotzas T, Krassas GE, Konstantinidis T, Bougoulia M 2000 Changes in lipoprotein(a) levels in overt and subclinical hypothyroidism before and during treatment. *Thyroid* 10:803808
14. Walsh JP, Bremner AP, Bulsara MK, O'Leary P, Leedman PJ, Feddema P, Michelangeli V 2005 Thyroid dysfunction and serum lipids: a community-based study. *Clin Endocrinol* 63:670675.
15. Canaris GJ, Manowitz NR, Mayor G, Ridgway EC 2000 The thyroid disease prevalence study. *Arch Intern Med* 160: 526534.
16. Staub JJ, Althaus BU, Engler H, Ryff AS, Trabucco P, Marquardt K, Burckhardt D, Girard J, Weintraub BD 1992 Spectrum of subclinical and overt hypothyroidism: effect on thyrotropin, prolactin, and thyroid reserve, and metabolic impact on peripheral target tissues. *Am J Med* 92:631 642.
17. Iacobellis G, Ribaudo MC, Zappaterreno A, Iannucci CV, Leonetti F 2005 Relationship of thyroid function with body mass index, leptin, insulin sensitivity and adiponectin in euthyroid obese women. *Clin Endocrinol* 62:487 491.
18. Rossi M, Galetta F, Franzoni F, Antonelli A, Santoro G. (2006). **Cardiovascular remodelling in patients with sub-clinical hypothyroidism.** *Minerva Cardioangiol.* 2006 Dec;54(6):807-10.
19. Prats Julià M 2009. Effect of treatment with levothyroxine in the lipid profile of the patients with subclinical hypothyroidism. *Endocrinol Nutr.* Jan;56(1):13-7
20. Kim SK, Kim SH, Park KS, Park SW, Cho YW. Regression of the increased common carotid artery intima media thickness in subclinical hypothyroidism after thyroid hormone replacement. *Endocr J.* 2009;56:753-758.
21. Martin I. Surks, Eduardo Ortiz, Gilbert H. Daniels, Clark T. Sawin, Nananda F.Col, Rhoda H. Cobin, Jayne A. Franklyn, Jerome M. Hershman, Kenneth D. Burman, Margo A. Denke, Colum Gorman Richard S. Cooper, Neil J. Weissman. 2004 **Subclinical Thyroid Disease : Scientific Review and Guidelines for Diagnosis and Management** *JAMA* Jan;291(2):228-238



KAP STUDY ON CONTRACEPTIVE METHODS IN KANPUR DISTRICT OF UP

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ABSTRACT:

*Research question- what is the status of knowledge, attitude and practices about family planning**Objectives :*

1. To study the knowledge about various contraceptive,
2. To study the prevalent attitude and practices regarding family planning,
3. To study the influence of social factors affecting contraceptive use &
4. To find out reasons for not adopting contraception.

*Study design : Cross sectional study**Setting and participants : Rural block of Kanpur District and married women of reproductive age group i.e. 15-49yrs**Study period : July to December 2005**Sample size : 280 Married women of reproductive age group i.e. 15-49yrs.**Study variable : Knowledge status, attitude, practices, social factors, reasons for not using contraceptives*

Results : Awareness about contraception was more than 90 percent for all available methods except vasectomy and injectables which was 31.5% and 8.6% respectively. Only 29.3% of women were currently practicing contraceptive and nearly half (46.42%) had never used. OCP and Condoms are most commonly accepted methods. Most common reasons observed for contraceptive defaulter were unavailability (30.88%) and adverse effect (26.47%) and for never user, need not felt (36.92%) and desire of more children (13.84%). Educational status and joint family structure has positive impact on contraceptive acceptance.

Key words : Contraceptive, family planning, reasons,

Introduction :

Uncontrolled population growth is the main hurdle for speedy and positive development of the nation. The growth of our resources to meet the needs is much behind the population growth. Inadequate attention to alarmingly rising population and its deleterious effect on developmental efforts and food situation has led to us a disastrous situation. India is the first country in the world to launch a national family planning programme with the aim to reduce the birth rate and thus stabilizing the population. Initially the approach was clinic based; later on extension education approach was adopted to motivate the people for the acceptance of small family norm. Effect of population stabilization will be reflected only if an integral package of essential services is directed to village and household levels. Meeting his, programme was made an integral part of MCH activities of PHCs and their sub centers^(1,2,3,4) From the initiation of the programme till date the awareness regarding family planning reached to more than 90 percent but this is not converted into the practices which are less than 50%.⁽⁵⁾ Among those who are aware but not using any type of contraceptive method, they have the reasons which can be removed /solved if they are convinced at individual level through ANM, ASHA workers.

Materials and Methods :

A cross sectional study was done. Pre-designed and pre-tested semi structured schedule were used for obtaining information. First author himself filled the schedules. The women of reproductive age groups i.e. 15-49 years were considered as a respondent unit. Multistage random sampling technique was adopted to reach the respondent unit. Study was conducted in rural block of Kanpur district of Uttar Pradesh. In first stage one PHC (Primary Health Center) i.e. Bithoor PHC of Kalyanpur block was selected randomly. Selected PHC caters about 38,000 populations through five-sub centers and the populations were spread over 50 villages and helmets. For the study, all sub centre villages of Bithoor PHC were taken. In second stage the sub center area was divided into four quadrants corresponding to four geographical directions. One village/helmet (equivalent to sub center quadrant) was selected randomly from each quadrant. Thus 20 villages/helmets were selected from five subcentres of the PHC. The sub center villages were considered as intensive service village while other villages/helmets were considered as twilight area villages. Thus there were 5 intensive service area villages and 20 twilight area villages. In third stage one lane of the twilight village or quadrant of intensive village was selected randomly

by using currency note last digit number. Purposively, from each quadrant, and from each village, seven respondent units were interviewed. Thus making sample size to a total of 280 of which 140 respondents were from intensive and 140 respondents were from twilight area villages. From selected

lane house-to-house visit were done in each selected village or quadrant, till the required seven respondent units were interviewed.

Results :

Table 1
KNOWLEDGE ABOUT FAMILY PLANNING METHODS (MULTIPLE RESPONSES)

Contraceptive method	Intensive (n=140)		Twilight (n=140)		Total (n=280)	
	n	%	n	%	n	%
Spacing methods						
1. Condom	128	91.4	125	89.3	253	90.4
2. OCP	138	98.6	134	95.7	272	97.1
3. IUDs	134	95.7	125	89.3	259	92.5
4. Injectables	12	8.6	12	8.6	24	8.6
Terminal						
	54	38.6	51	36.4	105	37.5
2. Tubectomy	138	98.6	138	98.6	276	98.6

Except for Inject able (8.6%), knowledge level about other spacing method was found to be good being 90.4% for condoms, 92.5% for IUDs, and 97.1% for OCP. About terminal methods, tubectomy was almost universally known method (98.6%) in comparison to vasectomy (37.5%). Similar trend was observed in intensive and twilight areas for both spacing and terminal methods.

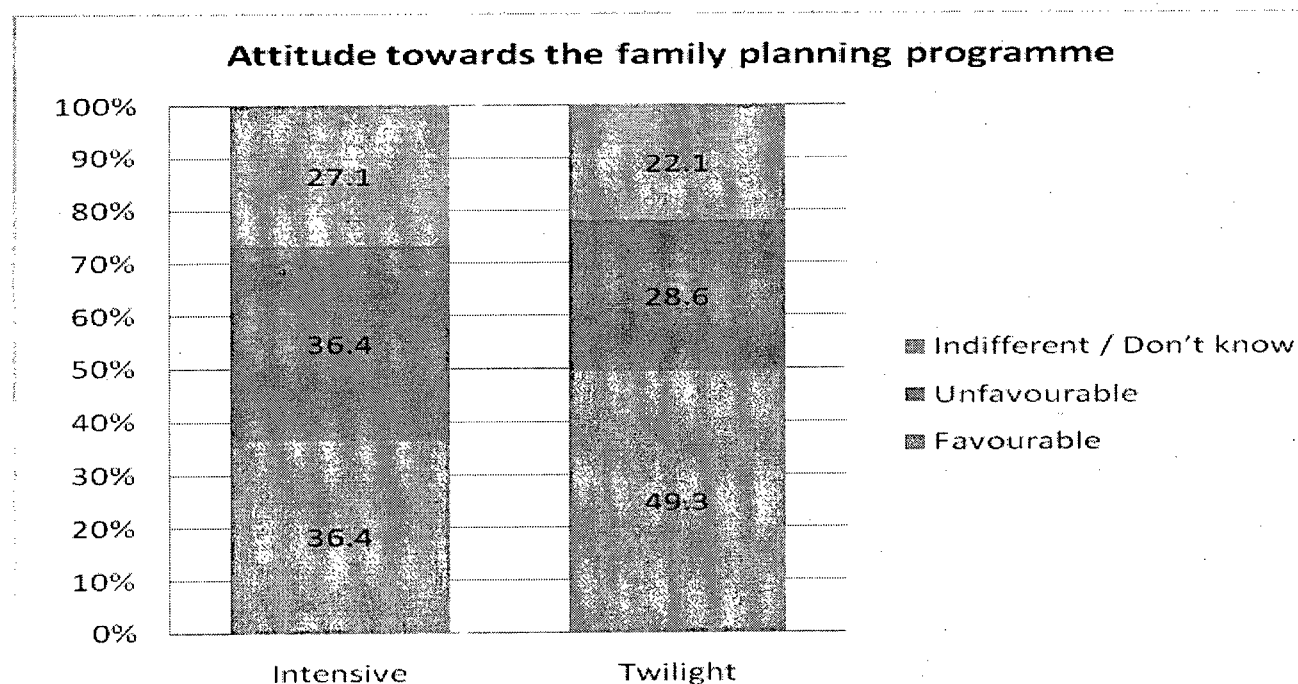


Figure depicts the attitudes towards family planning programme of the respondents. Almost half of them (42.9%) were in favour of family planning programme and only 32.5% were against it. 24.6% showed indifferent attitude towards the programme. Proportion of people having favorable and unfavorable attitude in Intensive area was found to be equal but favorable attitude was more in twilight area 49.3% as of intensive 36.4%.

Table 2
PROFILE OF FAMILY PLANNING PRACTICES AMONG RESPONDENTS

Profile	Intensive (n=140)		Twilight (n=140)		Total (n=280)	
	n	%	n	%	n	%
Practicing some or other methods	41	29.3	41	29.3	82	29.3
Had used in past	32	22.85	36	25.71	68	24.88
Never used	67	47.85	63	45.00	130	46.42
Total	140	100	140	100	280	100

Out of 280 eligible respondents 70.7% were not practicing any method of family planning currently and the observed pattern was identical in both intensive and twilight areas. Only 29.3% respondents each in intensive and twilight areas were practicing some or other method of family planning methods.

Table 3
PATTERN OF FAMILY PLANNING METHOD USAGE

Method	Intensive		Twilight		Total	
	currently	Used in past	currently	used in past	currently	used in past
Spacing						
Condom	11	11	8	10	19	21
	(26.8)	(34.4)	(19.5)	(27.8)	(23.2)	(30.9)
OCP	23	18	18	19	41	37
	(56.1)	(56.2)	(43.9)	(52.8)	(50.0)	(54.4)
IUD	3	3	7	7	10	10
	(7.3)	(9.4)	(17.1)	(19.4)	(12.2)	(14.7)
Terminal						
Vasectomy	0	0	0	0	0	0
Tubectomy	4	0	8	0	12	0
	(9.8)	32	(19.5)	36	(14.6)	68
Total	41		41		82	

Among all 82 eligible respondents currently in use of some of other family planning, methods only 14.6% had accepted tubectomy with not a single case of vasectomy as terminal methods. Out of remaining 85.21% respondents, 50% were currently using OCP followed by condom 23.2% by their partners and IUD by 12.2% respondents. Out of 68 respondents who are not practicing any contraceptive at present but had used in past were 54.9% for OCP, 30.9% for condom and 14.7% for IUDs.

Table 4
PATTERN OF FAMILY PLANNING METHOD USAGE

Reasons	Intensive (N=140)				Twilight (N=140)				Total (N=280)			
	Intensive (N=140)		Intensive (N=140)		Intensive (N=140)		Intensive (N=140)		Intensive (N=140)		Intensive (N=140)	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Needs a child at present	10	15.2	10	31.25	8	12.69	5	13.88	18	13.84	15	22.05
Wanting a male child	6	9.1	0	0	3	4.76	0	0	9	6.92	0	0
Undesired effect _____	9	13.6	8	25.0	6	9.52	10	27.77	15	11.53	18	26.47
Un-sustained availability	6	9.1	7	21.87	4	6.34	14	38.88	10	7.69	21	30.88
Inconvenience	5	7.46	5	15.62	4	6.34	6	16.66	9	6.92	11	16.17
Too young for use	4	5.97	0	0	2	3.17	0	0	6	4.61	0	0
Need not felt	24	35.82	0	0	24	38.03	0	0	48	36.92	0	0
Family apposition	3	4.47	2	6.25	12	19.04	1	2.77	15	11.53	3	4.41
Not aware	0	0	0	0	0	0	0	0	0	0	0	0
Total	67	100	32	100	63	100	36	100	130	100	68	100

Among those 68 women who discontinued the use of contraceptive after having used for sometime the most common reason was un-sustained availability of contraceptive (30.88%) followed by undesired effect of use (26.47%) and need of more children 22.05%. Among those 130 women who had never used contraceptive the most common reason was "need not felt" (36.92%) followed by needed more children (13.84%) and undesired effect of use (11.52%) and family opposition (11.53%). Almost similar pattern was observed in both areas.

Table 5
INFLUENCE OF EDUCATION OF RESPONDENT WOMEN ON CONTRACEPTIVE USE

Education	Total					
	Never used (N=130)		Used / Using (N=150)		Total (N=280)	
	No.	(%)	No.	(%)	No.	(%)
Illiterate	69	50	69	50.00	138	100
Primary	40	55.56	32	44.44	72	100
Middle	19	38	31	62.00	50	100
Secondary	2	11.74	15	88.24	17	100
Graduate & above	0	0	3	100	3	100
Total	130		150		280	

$\chi^2=15.37$ d.f. =4 $p=0.05$

Among 138 illiterate respondents the proportion of those who have never used any contraceptive and those who have either used or currently using contraceptive is equal, being 50% in each group. Otherwise with increase in literacy level from middle to secondary to graduate and above the frequency of contraceptive use was also found to increase being 62% in middle, 88.2% in secondary and 100% among graduate and above level respondents. Association between acceptance of contraceptive and education of the respondents was found to be significant.

Discussion :

Bithoor PHC is situated just 1 Km from the right bank of river Ganga. Most of the villages, catered by PHC, were lacking Basic facilities, and are difficult to access. Majority belong to Schedule Caste & Other Backward Caste category and labors or Agricultural by occupation. Awareness regarding family planning method was good for most of the spacing method ranging from 90 - 97% and minimal for Injectable contraceptive (8.6%). Awareness regarding terminal methods, it was as high as 98.6% for tubectomy and as low as (37.5%) for vasectomy. **Sharma and Sharma (1991)⁽⁶⁾, Kumar et al (1999)⁽⁷⁾ and Bhasin et al (2005)⁽⁸⁾** also found the highest awareness ranging from 75 - > 90 percentage regarding contraceptive methods which in matching with our observation. Only 32.5% were not in favor of family planning program **Khar et al (1999)⁽⁹⁾** observed that the limited number of women had a positive view regarding family planning programme. In contrary to this in our study about half of women had positive view towards family planning programme, which may be because of increased awareness and change in attitude towards family planning program. 29.3% of women were using contraceptive currently, 24.28% ever used and 46.92% never used any method. Among the currently using women, almost half of them were using OCP followed by condom (23.2%), IUD (12.2%) and 14.6% had used tubectomy and among ever user most commonly accepted method were OCP (54.4%), condom (30.9%) and IUD (14.7%). **Das et al (2001)⁽¹⁰⁾** reported that contraceptive use rate was 28%, which is almost similar to our observation. **Bhasin et al (2005)⁽⁸⁾** reported that among women who were currently practicing contraceptive method, most common method accepted was condom (33.4%) followed by tubectomy (27.3%), OCP (16.6%) and IUD (15.7%). In our study, commonest method was OCP followed by condom, IUD and tubectomy. Thus, our observation somewhat similar to above observation except for OCP, which is more prevalent in our study area, may be because of increase availability and acceptance. **Kumar et al (1999)⁽⁷⁾** found somewhat higher percentage of defaulter for ever user i.e. 59%. Contrary to this in our study, it was 24.28%. That may be because of increased awareness and better understanding of benefit of contraceptive uses. They also included the terminal method acceptor among the group of ever user thus diluting our findings. They also found that among ever user 33.6% accepted IUD followed by condom 17.9%, OCP 5% in contrary to this in our study the highest accepted method was OCP (54.4%) followed by condom (30.9%) and IUD (14.7%). **Khokhar and Gulati (2000)⁽¹¹⁾, Khokhar and Mehra (2005)⁽¹²⁾** observed that 61.36% of women were never practiced any method but in our study it is only 46.47% which again reflect the changing behaviors of community towards family planning acceptance. The main reasons cited for never used contraceptive were "need not felt" (36.92%) followed by need of a child at present 13.84%, undesired effect of contraceptive use and family opposition by 11.53% and among those who ever used, the main reason found

"unsustained availability" (30.88%) followed by "need a child at present" (22.05%) and undesired effect (26.47%) and inconvenience to use (16.17%). **Rama et al (2000)⁽¹³⁾** Das et al (2001) found in their study, the main reason for not using any contraceptive were "eagerness to have more children" (39%), Opposition from family members (23%), lack of information (26%), side effect and unsatisfactory services (25%). These observations are in confirmatory to our observation. **Khokhar and Gulati (2000), Chandhick et al (2003)⁽¹⁴⁾ and Bhasin et al (2005)⁽⁸⁾** found the reason among never user were mainly ignorant, fear side effect to use and desire for more children. We also found these main reasons behind not using any contraceptive. Among the women who were not practicing any method at present or used in past or never used, the proportion of illiterate were identical i.e. 50% but as the literacy level increases, attitude towards accepting contraceptive were increasing. Education level middle and above, the proportion of contraceptive acceptor were more than non-acceptor. **Rama et al (2000)⁽¹³⁾ Khokhar and Gulati (2000)⁽¹¹⁾ Banerji (2004)⁽¹⁵⁾ and Kansal et al (2005)⁽¹⁶⁾** found in their studies that the low use of contraceptive were associated with literacy.

Conclusions :

Family planning related knowledge was found excellent; with 2/3rd respondents having positive attitude as well. Main identified reason for contraceptive defaults were unsustained availability, undesirable effects, need of a child and also unfelt need and family opposition.

Reference :

1. Govt. of India: Manual on Decentralized participatory planning in Family Welfare Programme 1996, 1-3.
2. Govt. of India: Ministry of Health and Family Welfare, Deptt. Of family welfare. Manual on community needs assessment approach in family welfare programme. 1998, 1-3.
3. Govt. of India. Ministry of Health and Family Welfare, Deptt. Of Family Welfare. Reproductive and child health programme. Scheme for implementation. Oct. 1997, 3-8.
4. Govt. of India. Ministry of Health and Family welfare, Deptt. Of Family welfare. Project Implementation plan for vulnerable groups under RCH II Dec. 2004, 4-10.
5. Govt. of India: DLHS RCH RHS (Data). 2003, 57-69.
6. Sharma V, Sharma A: Family planning practices among tribal of South Rajasthan India. J. Res. Edu Indian Med, 10(4), 1991, 5-9.
7. Kumar R, Singh MM, Kaur M: Dynamics of contraceptive use in rural community of Harayana. Indian J. Med Sci. 53(5), 1999, 201-211.
8. Bhasin SK, Pant M, Metha M, Kumar S: Prevalence of usages of different contraceptive methods In East Delhi A cross sectional study. IJCM, 30(3), 2005, 53-55.
9. Khar MK, Gupta RB, and Patel BC: The quality and coverage of family Planning services in Uttar Pradesh:

Client Perspective. Population Council 1999, 49-69.

10. Das R, Amit A, Nath P : utilization and coverage of services by women of Jawan block in Aligarh, IJCM, 26(2), 2001, 92-100.
11. Khokhar A, Gulati N : A study of never users of contraceptive from an urban slum of Delhi. IJCM, 25 (1), 2000, 26-30.
12. Khokhar A, Mehru M: Contraceptive use in women from a resettlement area in Delhi. IJCM, 30 (1), 2005, 21-23.
13. Rama R, Ghosh MN, Bhattacharya S: Study of unmet need for family planning among married women of reproductive age attending immunization clinic in a medical college of Calcutta. IJCM, 25 (1), 2000, 22-25.
14. Chandhick N, Pillan BS, Kamba Saxena NC : contraceptive knowledge practices and utilization of services in rural area of india. IJMS, 57(3), 2003 , 303-310.
15. Banerjee B: A qualitative analysis of MCH services of an urban health center, by assessing client perception in terms of awareness, satisfaction and service utilization. IJCM, 28 (4), 2003, 153-156.
16. Kansal A, Chandra R, Kandpal SD, Negi KS: Epidemiological correlated of contraceptive prevalence in rural population of Dehradun district : IJCM 30 (2), 2005, 60-62.



*The heights by great men
Reached and kept
Were not attained in a single flight,
But they while their neighbours slept
Were toiling upward in the night.*

A STUDY OF HEALTH RISK BEHAVIOUR AMONGST 14-19 YEAR ADOLESCENT STUDENTS IN URBAN AREAS OF DISTRICT JHANSI

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ABSTRACT:

Objectives: To study the prevalence of health risk behaviours amongst 14-19 year adolescent students in urban areas of District Jhansi (Uttar Pradesh).

Study design: Cross-sectional study.

Units of study and Study area: 14-19 year old adolescent students studying in various Colleges of Jhansi.

Sampling technique: Two stage cluster sampling.

Participants: 366 students [263 (71.86%) male and 103 (28.14%) female].

Results: Main risk behaviour among students found to be cigarette/bidi smoking, drinking alcohol and tobacco use.

15.30% students tried cigarette/bidi smoking at least once in lifetime while 5.46% smokers tried smoking at age less than 14 years. 0.82% students were found doing heavy smoking. Among smokers 21.03% never tried to quit smoking in past 6 months. All these behaviours were more common among male than in female. Out of all students, 19.95% had ever drink alcohol and 4.64% had their first drink of alcohol at age ≤ 14 years. Drinking habits were also more common among male than in female. Favourite celebrity were the most common role models seen smoking (38.79%) and drinking (16.94%) followed by father smoking (24.60%) and drinking (14.48%).

Key word: Adolescent.

Introduction:

The main health risk behaviour in adolescent is substance abuse. The problem of substance abuse has become a global public health concern and is fast assuming alarming proportions not only in developed countries but also in developing countries. Seven million deaths have been attributed to cancer in 2001, of these 35% were attributable to nine potentially modifiable risk factors, including smoking and excessive alcohol consumption. Alcohol consumption is a leading risk factor for cancer of the upper aerodigestive tract (esophagus, pharynx, larynx and oral cavity), liver and colon, while smoking increases the risk of mouth, oropharyngeal, and esophageal cancers as well as cancer of the trachea, bronchus, lung, liver, stomach and urinary bladder.⁽¹⁾

The trend of urbanization made adolescent age group much vulnerable to substance abuse.⁽²⁾ The use of illicit substances frequently starts among school children during adolescence.⁽³⁾ The population groups at great risk are those undergoing rapid socio-economic and cultural changes.⁽⁴⁾ Their age and often sudden wide exposure to new environments may render them extremely vulnerable for substance abuse.⁽⁵⁾

This study was carried out to find the main risk behaviours

and their magnitude among adolescent so that reformatory measures can be taken on time to prevent further complications arising from health risk behaviour.

Material and Method:

The study was a cross sectional analysis of the subject population. Units of study were 14-19 years students studying in various schools and colleges of Urban Jhansi. Two stage cluster sampling design was used. In 1st stage random selection of schools and colleges was done. 2nd stage comprised of random sampling of one class each from standards IXth, Xth, XIth and XIIth & 1st, 2nd Year of graduation from the selected colleges. Principles of the identified schools and colleges were contacted and informed about the purpose of the study. They were apprised of the fact that anonymity and confidentiality of the students will be maintained in the study. Students within age group of 14-19 years and wishing to participate in the study were only included. The data collection was done in selected class room with no teacher or staff being present in the room. At the beginning of the data collection students were informed not to write their name or any identification mark on the paper.

Data analysis was done using Microsoft excel software.

Results and Discussion :

Table 1
AGE AND GENDER WISE DISTRIBUTION OF STUDY POPULATION

Age (years)	Male	Female	Total
	N (%)	N (%)	N (%)
14	30(66.7)	15(33.3)	45
15	41(69.5)	18(30.5)	59
16	58(72.5)	22(27.5)	80
17	49(77.7)	14(22.2)	63
18	47(73.4)	17(26.5)	64
19	38(69.1)	17(30.9)	55
Total	263(71.8)	103(28.1)	366

Out of total 366 participants 263(71.86%) were male and 103 (28.14%) female.

Table 2
HEALTH RISK BEHAVIOURS CONCERNING TOBACCO USE

Behaviour	Male (N=263)	Female (N=103)	Total (N=366)
	(%)	(%)	(%)
Ever tried cigarette/bidi	19.01	5.83	15.30
Age at first smoking a whole cigarette/bidi =<14 years	6.84	1.94	5.46
Current cigarette/bidi use (>=1 time in past 30 days)	8.37	1.94	6.56
Current heavy smoking (>5/day on days of smoking)	1.14	0.0	0.82
Smokers not tried to quit smoking in past 6 months	30.10	0.0	21.03
Ever tried smokeless tobacco Forms	11.03	2.91	8.74
Current smokeless tobacco use (>=1 time in past 30 days)	7.99	0.97	6.01

15.30% (n=56) students tried cigarette/bidi smoking at least once in lifetime. 5.46%

(n= 20) smokers tried smoking at age less than 14 years.

Table 3
HEALTH RISK BEHAVIOUR CONCERNING ALCOHOL USE

Behaviour	Male (N=263) (%)	Female (N=103) (%)	Total (N=366) (%)
Ever had a drink of alcohol	20.91	17.48	19.95
Age at first drinking alcohol ≤ 14 years	4.94	3.88	4.64
Current alcohol use (≥ 1 time in past 30 days)	5.70	3.88	5.19
Episodic heavy drinking (binge drinking) ≥ 1 time in life	7.60	0.0	5.74

The percentage of students who had ever drink alcohol is 19.95%. (20.91% boys and 17.48% girls). In all 17 (4.64%) students have their first drink of alcohol at age ≤ 14 years. Their mean age for initiation of alcohol drinking was 15.2 years (+ 2 years SD). While the youngest age reported was 9 years.

Table 4
BEHAVIOUR CONCERNED WITH SUICIDE

Behaviour	Male (N=263) (%)	Female (N=103) (%)	Total (N=366) (%)
Seriously considered attempting suicide in past 12 months	3.42	4.85	3.82
Actually attempted suicide ≥ 1 time in past 12 months	0.76	0.97	0.81

Suicidal thoughts and attempting suicides was more in females than males. 4.85 % female students seriously considered suicide in comparison to 3.42% male. 0.97 % females went ahead and actually attempted suicide. 3 female (2.91%) and 2 male (0.76%) students reported having made multiple tries at committing suicide.

Table 5
ROLE MODELS SEEN SMOKING CIGARETTES AND / OR DRINKING ALCOHOL

Behaviour	Male (N=263) (%)		Female (N=103) (%)		Total (N=366) (%)	
	Smoking drinking		smoking drinking		smoking drinking	
Father	25.86	15.59	20.39	6.63	24.60	14.48
Mother	1.14	0.76	0.55	0.0	1.09	0.55
Brother/sister	4.56	3.42	4.85	2.76	4.64	3.82
Best friend	17.11	6.46	1.10	0.0	12.84	4.64
Favourite teacher	10.27	1.14	11.65	1.14	10.66	1.37
Favourite celebrity	33.84	16.73	51.45	9.94	38.79	16.94

Nearly 1/4th (24.60%) of the students have seen their father smoke, more boys than girls. 14.48% seen their father drinking. A very small number of students had seen their mother smoking (1.09%) and drinking (0.55%). Sibling had been seen smoking by 17(4.64%) and drinking by 14 (3.82%) and best friend by 12.84 & 4.64% respectively. Favourite teacher seen smoking by 10.66% & drinking by 1.37% while Favourite celebrity by 38.79% and 16.94% respectively.

Main risk behaviour among students found to be cigarette/bidi smoking, drinking alcohol, tobacco use and suicidal attempts. Suicidal thoughts and reporting of attempted suicides was more in females than males. All the behaviours regarding tobacco use were significantly higher among male than in female. Tobacco use was found to be significantly more among students who had seen their brother/sister, best friend smoke. Alcohol use was found to be more among college students, with increasing age and male gender. It was significantly more among students whose parents were graduates/post graduates, among children of working mothers.

Conclusion :

Prevalence of smoking, drinking alcohol and tobacco use is common among adolescent students and majority of them do not try to quit. Alcohol and drug abuse cost society an estimated \$86.1 billion from direct costs and losses in productivity related to crime, social welfare expenditures, motor vehicle crashes, and fire destruction. Drugs are responsible for about 25 to 30 percent of property damage and 4 to 5 percent of violent crime (the causal values are slightly different for the specific offenses within types). Alcohol is responsible for about 25 to 30 percent of violent crime and 3 to 4 percent of property crime. So there is a urgent need to educate the students about the harmful behaviour, their short term and long term consequences and convince them to quit these habits

References:

1. Narayan KM, Chadha SL, Hanson RL, Tandon R, Shekhawat S, Fernandes RJ, et al . Prevalence and patterns of smoking in Delhi: Cross sectional study. Br Med J 1996;312:1976-9.
2. www.who.org : WHO: Young girls using tobacco almost as much as boys in many regions of the world.
3. Alcohol, tobacco and cancer ; Chi Hin Cho Hong Kong, Vishnudutt Purohit Bethesda, Md.
4. Park K. Park's textbook of preventive and social medicine. 19th ed. Jabalpur: Banarsidas Bhanot Publishers; 2007.
5. Sinha DN, Gupta PC, Pednekar M. Tobacco use among students in Bihar (India). Indian J Public Health 2004; 48: 111-7



***SUCCESS IS NEVER ENDING,
FAILURE IS NEVER FINAL.***

AN ASSESSMENT OF THE STATUS OF HIV COUNSELING AND TESTING FACILITIES IN GOVERNMENT HOSPITALS OF DISTRICT JHANSI, UTTAR PRADESH

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ABSTRACT :

Background : Counseling is the face to face communication by which counselor can help the person/ client to make decisions and act on them. Effective Counseling and Testing programs can help patients identify and limit- behaviors that increase the risk of HIV infection or transmission.

Objective : To Assess the status of HIV Counseling and Testing facilities in Government Hospitals of District Jhansi.

Study design : Cross-sectional study

Settings : Four Government Hospitals namely Medical College, District Hospital, Railway Hospital and Military Hospital of district Jhansi.

Study Period : Two months (15th August to 15th October 2008.)

Statistical Analysis : Percentages

Results : In most (87.5%) of the sessions of all the centers only signature of the patients was taken instead of filling the full consent form whereas rapport with the patients by the counselor was maintained only in 37.5% sessions. In 80% of the sessions the patients were not been told about "window period" by the counselors. In 75% of the sessions counselors were not fully attentive towards patient's concerns. Only in 5% sessions patients were correctly informed about HIV/ AIDS. In all the centers, there was no provision for group- session and usually the test results of HIV infection (positive or negative) was not provided on the very same day, due to heavy patient load.

Key Words : HIV/AIDS, VCTC/ICTC, Counselor, Rapid test/ELISA.

Introduction :

The Human Immunodeficiency Virus (HIV) infection is a global pandemic and has grown into a public health problem of unprecedented magnitude. There are more than 4,000 Counseling and Testing Centers (CTC) all over the country. The Voluntary Counseling and Testing Centre (VCTC) now known as the ICTC (Integrated Counseling and Testing Centre) provides a key entry point for the 'continuum of care in HIV/AIDS' for all segments of the population. Counseling is a confidential dialogue between a client and counselor aimed at enabling the client to cope with stress and make personal decisions related to HIV/AIDS. It is the face to face communication by which counselor can help the person/ client to make decisions and act on them.

Voluntary Counseling and Testing Centers (VCTC) focus not only on prevention of HIV infection and HIV testing, but also deals with social and emotional impact of a HIV positive test. HIV counseling is the confidential dialogue between individuals and their care providers that helps patients to examine their risk of acquiring or transmitting HIV infection. Effective Counseling and Testing programs can help patients identify- and limit- behaviors that increase the risk of HIV infection or transmission. The rationale of the study was the assessment of the working status of these Counseling and Testing Centers.

Objective :

To Assess the status of HIV counseling and testing facilities like pre-test & post-test counseling basic counseling skills, role and responsibilities of HIV counselors and group information sessions in Government Hospitals of District Jhansi

Material And Methods :

The present study was conducted in government hospitals of district Jhansi having facility of ICTC /VCTC namely Medical College, District Hospital, Railway Hospital and Military Hospital.

Study type : Observational type.

Duration of Study- The study was conducted from 15th August to 15th October 2008.

Methodology; Total 40 counseling & testing sessions were observed in all the hospitals. In each hospital ten sessions were observed separately. The data was collected by observation as per pre-designed proforma by Revised Training Curriculum Participant Manual-Dec.-2004 by NACO.

The data was tabulated and analyzed in percentages.

Results :

Total 40 sessions were observed 10 from each 4 hospitals.

Table 1
PRE-TEST COUNSELING

S.NO.	Question	YES (No.)	Percentage (%)
	Confidentiality maintained	40	100
	Pt. kept private	40	100
	Any private room/venue	40	100
	Pt. assured for confidentiality and support	40	100
	Consent taken properly /only signature of the pt. is taken	5/35	12.5/87.5
	Rapport maintained by the counselor with the pt	15	37.5
	Pt. been told about HIV/AIDS & modes of transmission	40	100
	Approach is adopted for counseling (opt-in/ opt-out)	0/40	0/100
	Type of the process of HIV testing- Rapid test/ELISA	40/0	100/0

For maintaining the confidentiality of the pt. there was a private room for counseling in all the hospitals. In most (87.5%) of the sessions in all the centers only signature of the pt. was taken on behalf of proper consent before starting the HIV counseling. Rapport with the patients by the counselor was maintained only in 37.5% sessions. The approach adopted by the counselor for the counseling of HIV status was opt-out approach in all the sessions and the method of HIV testing was adopted by Rapid Test method in all the centers.

Table 2
POST-TEST COUNSELING

S.NO.	Question	YES (No.)	Percentage (%)
	Result of HIV testing been provided to the pt	40	100
	Pt. been told about the meaning of the result (+/-) & "window period"	8	20
	Encouragement of pt. for risk reducing behavior	12	30
	Pt. been told about partner testing	40	100
	Pt. been told about the interventions for reducing the risk of Mother to Child Transmission	15	37.5
	Pt. been encouraged to keep all of her follow-up appointments	10	25
	Confidentiality of HIV status been maintained	40	100
	Partner testing & couple Counseling been encouraged	40	100

The results of HIV testing were provided to the patients in all the centers (but in most of the centers it was provided one day after the testing because of heavy patient load). In most (80%) of the sessions the patients were not been told about "window period" by the counselor. The patients were encouraged for risk reducing behavior from the HIV infection in only 30 % of the sessions and the interventions for reducing the risk of Mother to Child Transmission is told in only 37.5 % sessions. In 75% of the sessions the patients were neither been told about follow up nor been encouraged to keep all of her follow-up appointments.

TABLE -3
GROUP INFORMATION SESSIONS

S.NO.	Question	YES (No.)	Percentage (%)
	Group session provision	00	00
	Teaching modality, such as Printed Charts, Videos or Role Play	5	12.5

In all the centers, there was no provision for group- session though in some centers, printed charts and facilities for video presentation were available but were not in use.

Table 4

BASIC COUNSELING SKILLS & ROLE AND RESPONSIBILITIES OF HIV COUNSELORS

S.NO.	Question	YES (No.)	Percentage (%)
1.	Rapport maintained by the counselor with the pt	10	25
2.	Counselor allow his own personal values or prejudices to influence his counseling	00	00
3.	Counselor -judgmental	00	00
4.	Pt. been encouraged by the counselor to ask the questions openly	5	12.5
5.	Counselor listen actively to patient's concerns	10	25
6.	Pt. been maintained stay focused on the goals of the counseling sessions	10	25
7.	Pt. getting correct information	2	5

In 75% of the sessions the rapport between counselor and patient was not maintained and counselors were not fully attentive towards patient's concerns. Patients were been maintained stay focused on the goals of the counseling sessions only in 25 % sessions. The patients were not been encouraged by the counselor to ask the questions openly in 87.5 % sessions. As for as the correct information about HIV/AIDS was concerned, only in 5% sessions patients were been told correct information about HIV/AIDS.

Discussion and Conclusion :

In this study it was observed that in 87.5% of the sessions of all the centers only signature of the patients was taken and rapport with the patients by the counselor was maintained in 37.5% sessions. The method of HIV testing was adopted by Rapid method in all the centers. In most (80%) of the sessions the patients were not told about "window period" by the counselor. In 75% of the sessions counselors were not fully attentive towards patient's concerns. The patients were been encouraged by the counselor to ask the questions openly, only in 12.5 % sessions. The correct information about HIV/AIDS is given only in 5% sessions. In all the centers, there was no provision for group- session though in some centers Printed Charts and facility for Video Presentation was available but not functioning.

In most of the centers it was observed that due to heavy patient input Counselor was unable to give enough time to one patient for counseling. Some of them cited that "MARIJ BAHUT JYADA HAIN AUR MUJHE COUNSELING KI KOI TRAINING ABHI NAHI DI GAYI" and they have only 8 to 10 minutes for one patient.

Thus for proper counseling and testing of HIV/AIDS, Counseling & Testing Centers should be increased both in government and private sectors so that patient load in one center could be decreased. Training about counseling and testing of HIV/AIDS should be provided to the Counselors so

that patient can get correct information about HIV/AIDS. As in most of the centers there was no provision for group information session, the facilities like Printed Charts and facility for Video presentation should be provided and get assured for proper functioning in each centers. It needs periodic monitoring of these centers by appropriate authorities.

References :

1. Sweat M, Gregorich S, Furlonge C, Kamenga C, Grinstead O, Wates T. Cost effectiveness of Voluntary HIV Counseling and testing in reducing sexual transmission of HIV in Kenya and Tanzania. *Lancet* 2000;356: 113-21 (Pub Med).
2. Introduction: HIV Counseling Training Module, Facilitator's Guide National AIDS Control Organization 2007 pp. 11-21.
3. Indian J. Public Health 2007; Jan- Mar 57 (1) 39-40.
4. Gomes LA, Somu G, Rinkoo AV, Vinay GM. Utilization of Integrated Counseling and Testing Centre (ICTC): a comparative study between a tertiary care teaching hospital and a government district hospital in Karnataka. *Indian J Public Health* 2007; 51: 39-40 (Pub Med).
5. J. Kishore's National Health Programs of India, 7th Edition.



EVALUATION OF BIOMEDICAL WASTE MANAGEMENT PRACTICES IN MULTI-SPECIALITY TERTIARY HOSPITAL

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ABSTRACT :

Background : Biomedical Waste (BMW) collection and proper disposal has become a significant concern for both the medical and the general community. The scientific " Hospital waste Management " is of vital importance as its improper management poses risks to the health care workers ,waste handlers , patients ,community in general and largely the environment.

Objectives :

(i) To assess current practices of Bio-medical Waste management including generation, collection, transportation storage, treatment and disposal technologies in tertiary health care center.

(ii) To assess health and safety practices for the health care personnel involved in Bio-Medical waste Management.

Materials and Methods : Waste management practices in tertiary care-centre was studied during May 2010 June 2010. The information / data regarding Bio-Medical Waste Management practices and safety was collected by way of semi structured interview, proforma being the one used for WASTE AUDITING QUESTIONNAIRE. The information collected was verified by personal observations of waste management practices in each ward of hospital.

Results : SRMS-IMS generates 1.25Kgs waste per bed per day and maximum waste is generated in wards. The institute has got separate color coded bins in each ward for collection of waste but segregation practices needs to be more refined. The safety measures taken by health care workers was not satisfactory, it was not due to unavailability of Personal protective measures but because of un-awareness of health hazards which may occur due to improper waste management practices. Thus it is concluded that there should be strict implementation of a waste management policy set up in the institute, training and motivation must be given paramount importance to meet the current needs and standard of bio-medical waste management.

Keywords : Biomedical waste management, Evaluation, Waste treatment facility.

Introduction :

During last few decades, the need for better health- care has been felt globally and to cater the needs and demands of the increasing population, a rapid mushrooming of hospitals, both in private and Government sector has occurred. Consequently there has been a proportionate increase in the quantum of waste generated by these health care centers. Ironically the hospitals hoped to bring relief to the sick are themselves creating health hazards to the community due to improper management of waste generated in the course of health care activities.

Health care waste refers to all the waste generated by health care establishments .It is estimated that 10-25% of health care waste is hazardous, with the potential for creating a variety of health problems also known as "Biomedical Waste"⁽¹⁾ According to "Biomedical Waste" (Management and Handling) Rules, 1998 of India means "any waste which is generated during the diagnosis, treatment or immunization of human- beings or animals or in research activities pertaining thereto or in the production or testing of biological and including categories mentioned in schedule I."⁽¹⁾

Though 75-90% of the waste produced by health care institutions is non-risk being generated from administrative and housekeeping /maintenance of health care establishment ,the remaining 10-25% waste is regarded as 'hazardous' and may create a variety of health risks . According to WHO 85% of hospital waste is nonhazardous, 10% infective and remaining 5% non infective but hazardous.⁽¹⁾

Rationale Of Study :

The scientific " Hospital waste Management " is of vital importance as its improper management poses risks to the health care workers , waste handlers , patients , community in general and largely the environment. Keeping this in view, bio-medical waste management at this tertiary care was studied.

Methodology :

The study was carried out in 650 bedded private medical college Sri Ram- Murti Institute of Medical Sciences Bareilly.

Study type : Observational study

Duration of Study : 1 May to 15 June 2010

Data Collection :

(i) The information / data regarding Bio-Medical Waste Management practices and safety was collected by way of semi structured interview, with the house-keeping in-charge of the hospital , proforma being the one used for Waste Auditing Questionnaire.

(ii) Information derived from interview was verified by personal observations of Biomedical waste management practices in each ward of hospital, starting from source, handling, collection, transportation, and final disposal.

Results are shown in terms of percentages.

RESULTS :

Bio-medical waste generation in SRMS-IMS Hospital depends on different sites, which includes:

Table 1
RECORD OF BIO-MEDICAL WASTE GENERATED / PER DAY IN KG.

S.NO.	Dept.	Black bag	Yellow bag	Red bag	Blue bag
1.	T.B chest	26	--	--	3
2.	Gynae ward	11	--	--	10
3.	Gynae OT/Labour room	6	8	20	4
4.	Ortho ward	28	--	9	18
5.	Pediatric ward	23	--	6	6
6.	NICU/PICU	5	--	5	3
7.	Cardiac / Cath. Lab	15	--	--	6
8.	Medical Ward	29	--	16	13
9.	ICU	34	--	13	13
10.	OT	32	16	10	17
11.	Central Lab	13	--	5	7
12.	OPDs	11	--	6	5
13.	Blood bank	9	--	9	5
14.	Others	124	22	99	100
15.	Total	820 Kg/day			

$$\begin{aligned} \text{Waste produced per bed per day} &= \frac{\text{Mean waste generated per day}}{\text{No. of beds}} \\ &= 1.5 \text{ kg} \end{aligned}$$

This is in support of previous studies which suggests that most hospitals in India generate 1-2kgs per day, except the tertiary care hospital, which produce on higher side. In patient areas contribute to 71.6% of waste generated.

Table 2
OBSERVATION AT LEVEL OF SEGREGATION OF WASTE

S. No.	Dept.	Black Bag	Yellow Bag	Red Bag	Blue Bag
1.	Located at right place	Yes	Yes	Yes	Yes
2.	Placed on stand	No	Yes	No	Yes
3.	Contains waste as in schedule I	No			
4.	Respective bins fitted with closed fitting cover	No			
5.	Labeling of Bags as in Schedule III	Yes			
6.	Daily disinfection of bins with 1% hypochlorite solution	No			
7.	Collected daily	Yes			

The color-coded bins were placed on stand in respective wards but closed fitting covers on them were missing. The bins were labeled accordingly as in Schedule III. However bins are disinfected once in 3-4 days. The waste generated in each ward is collected by in-service sanitation staff (sweepers) about 3-4 sweepers in each ward. The segregation practices of waste were not satisfactory as it was primarily done by sweepers only.

Table 3
OBSERVATION AT LEVEL OF TRANSPORTATION OF BAGS

1.	Separate route for transportation of Waste	No
2.	Separate timings for transportation of BMW and general waste to avoid mixing of waste	Yes
3.	Covered wheeled trolleys used for transportation of bags	No
4.	Trolley used for transportation of BMW is labeled	Yes

The Bio-Medical Waste generated is transported in trolleys, the waste is collected and transported twice daily. However there is no separate route for transportation of waste and neither the trolleys are covered ones.

Table 4
OBSERVATION AT LEVEL OF STORAGE FACILITIES OF WASTE

1.	Separate room for storing waste after collection	Yes
2.	Storage area impermeable with supply of water	No
3.	Storage room locked to prevent entry of unauthorized person	No
4.	Weighing machine present in storage room	Yes
5.	Waste not stored for more than 48 hrs.	Yes

Bio-Medical waste collected each day is stored at a single dumping site near incinerator in a open space, wherefrom it is taken to pyrolytic incinerator. The yellow bag as well as red bag is incinerated and the incineration ash left behind is dumped in black bags, in the remote pit in the medical college itself.

Table 5
TYPE OF PERSONAL PROTECTIVE CLOTHING WORN BY WASTE HANDLERS /SWEEPERS DURING COLLECTION, TRANSPORTATION, STORAGE AND TREATMENT OF BMW.

S. No.	Personal protective clothing	No. (N = 100)	%
1.	Gloves	50	50
2.	Apron	0	0
3.	Long boot	0	0
4.	Eye shield	0	0
5.	Mask	15	15
6.	Hepatitis B vaccination	2	2

The safety practices adopted by the sanitation staff for collection of Bio-Medical waste is rudimentary. Only 50% sweepers were using gloves while managing wastes, whereas apron, long-boots, eye-shield and mask was worn by none. This was not because of unavailability of Personal Protective equipments but because of unawareness of health hazards to which they are exposed to while handling such waste. Only two workers were immunized for Hepatitis B.

Table 6
TRAINING OF WASTE HANDLERS AND PARTICULARS REGARDING
RISK INVOLVED IN WASTE HANDLING

S. No.	Training and other particulars	No. 100	%
1.	Received special training in bio-medical waste handling	30	30
2.	Aware of risk involved in BMW handling	30	30
3.	Any injury / infection in past 6 months	6	6
4.	Accidents reported to higher authority	0	0

Regarding sensitization of Bio-Medical Waste management practices only 30% sweepers were trained for waste management practices and were aware of risks involved in waste handling. Six workers reported of prick injury during segregation of waste.

Waste Treatment Practices :

Regarding treatment of waste the needles and sharps were buried in pits of dimension 4ft x 4ft. after disinfection. The institute has incinerator plant for management of yellow bags and red bags. The black bag is dumped in the pit.

Discussion :

SRMS-IMS generates 1.5Kgs waste per bed per day and maximum waste is generated in wards, similar observations were found in a study at "Sher- I- Kashmir" Institute of Medical Sciences, Srinagar for a period of three months. Study showed that quantity of, solid waste generated per bed per day was found to be 2.02Kgs. Inpatient area generated maximum solid waste (71.6%) followed by supportive services. Other areas like Operation Theatre, Emergency and O.P.D together produced lesser amounts (12.9%).⁽²⁾

Chauhan and Malviya (2002) analyzed solid waste management practices in sixteen hospitals of Indore city and found that hospital authorities think that their basic responsibility is to take care of the health of the patients whereas the waste disposal in an environmentally compatible manner has been given a low priority.⁽³⁾

A study at S.N Medical College Agra by S.V.S Chauhan and S. Sharma found many garbage dumps, in and around the health care facilities, which have been frequently visited by rag pickers. These rag pickers collect used needles, disposed drugs, syringes and PVC items from the garbage dumps. This practice not only encourages disposables being repacked and sold without proper disinfection but they also expose themselves to injuries with sharps and other infections.⁽⁴⁾

These findings are in agreement with those of Nema and Ganesh prasad (2002). They have observed that except for a few Hospitals, waste is mostly dumped in the open space enabling rag Pickers to collect syringes, cotton, plastics etc. In many hospitals, medical waste is burnt at dumpsites in an open environment.⁽⁵⁾

Conclusion :

Though the waste management practices in the hospitals is far better than other hospitals in state. The institute has

taken the authorization for waste treatment. Still the waste management activities like collection, segregation, transportation, needs to be done on more scientific basis.

In the waste management process, segregation practice needs to be practiced more strictly and by the waste generators itself. Day to day collection of waste was done but there is no separate route for transportation of waste. Regarding treatment of waste the institute has got its own incinerator plant.

The safety practices adopted by the sanitation staff for collection of Bio-Medical waste is rudimentary. Only 50% sweepers were using gloves while managing wastes, whereas apron, long-boots, eye-shield and mask was worn by none. **This was not because of unavailability of Personal Protective equipments but because of unawareness of health hazards to which they are exposed to while handling such waste.** Only two workers were immunized for Hepatitis B. Regarding sensitization of Bio-Medical Waste management practices only 30% sweepers were trained for waste management practices and were aware of risks involved in waste handling.

Recommendations :

Following recommendations were made for improving the waste management practices of the hospital

- Segregation should start at the source of generation and by the generator itself
- Transportation of Black and Yellow bag should preferably be done separately to avoid mixing of waste.
- Transportation should be done in closed trolleys and by separate route.
- Sensitization of waste generators and health care providers should be done more frequently, and separate sensitization programs should be organized for sweepers and fourth class health care workers, in local language emphasizing the importance of using personal protective measures and immunization for Hepatitis B

- Last but not least is effective implementation of rules by surprise visits and inspection by appropriate authorities and fixing accountability of each and every person involved in management of Bio-Medical waste.

References :

1. Biomedical Waste (Management and Handling) Rules 1998, 2000, Ministry of Environment and Forests Notification, New Delhi
2. Pandit NA, Tabish SA, Qadri GJ, Ajaz Mustafa. Biomedical waste management in a Large teaching hospital. JK-Practitioner 2007;14(1):57-59
3. Chauhan, Maya Singh and Kishore Malviya: Existing solid waste management in hospitals of Indore city. Indian J. Environ. Sci., 6,43-49 (2002).
4. Sharma Shalini, Chauhan SVS. Assessment of bio-medical waste management in three apex Government hospitals of Agra. Journal of Environmental Biology March 2008;29: 159-62
5. Nema, S.K. and K.S. Ganeshprasad: Plasma pyrolysis of medical waste. Curr. Sci., 83, 271-278 (2002).
6. Kedar Rijall and Ashok Deshpande. Critical Evaluation of Biomedical Wastes Management Practices in Kathmandu Valley. Proceedings of the International Conference on Sustainable Solid Waste Management 5 - 7 September 2007, Chennai, India. pp.



*Laughter is medicine
for the heart.*

MORBIDITY PROFILE OF ELDERLY A CROSS SECTIONAL STUDY OF URBAN AGRA

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ABSTRACT :

Research Question : What is the morbidity profile of geriatric population in urban Agra?

Objectives : 1. To assess the morbidity profile of geriatric population in Urban Agra.

2. To make comparison of above findings among urban slum and elite area.

Settings : Urban Agra.

Study Subject : 500 people aged 60 years and above.

Statistical Analysis : Percentages, chi-square and z test.

Results : Morbidity load was found to be increased with increasing age. 89.2% population of elderly were having morbidities in urban areas. Most common cause of morbidity observed was anaemia (26.20%) followed by cataract (24.4%), hypertension and arthritis both as 22.2%. System wise musculoskeletal problems were most common (37.2%) and problems of nervous system were least (1.8%).

Key words : Geriatrics, morbidity profile, urban.

Introduction :

The elderly are a precious asset for any country. With rich experience and wisdom, they contribute their might for sustenance and progress of the nation. Their special health and economic issues differ from those of the general population¹. The increasing number of older people in Indian society has been well perceived. While population ageing is a success story of socioeconomic development and good public health practice, it has also lead to economic and social crisis due to crumbling support system, with increased demand for health and welfare services². Goel PK et al³ reported that 46.3% elderly were not aware of any geriatric welfare services and 96.0% of them had never utilized any of the geriatric welfare services. The SRS estimates for the year 2003 were that 7.2% of total population were 60 plus in India⁴. India has thus acquired the label of an ageing nation, with presently 7.7% of its population being more than 60 years old⁵. The old age people suffer from health problems which are of mainly two types i.e. medical and psychosocial. Common medical problems are cardiovascular, visual, musculoskeletal and gastrointestinal diseases etc. The common psychosocial problems are reported to be impaired memory and intelligence, rigidity of outlook, anxiety, depression, dependency & unsatisfaction with family members, occupation and earning. In light of above facts, the present study was conducted with the objective to assess the morbidity pattern of elderly and to make comparisons among urban slum and elite of Agra district.

Material and Methods :

A cross sectional study was conducted in the department of Social & preventive medicine, S.N. Medical College, Agra

on the persons aged 60 years and above living in the urban areas of Agra district. Study was conducted from July 2009 to June 2010. Many studies have been conducted on elderly in different parts of our country, which report different prevalence of morbidities in their field practice area. SPS Bhatia et al⁶ found 86.1% morbidity load, likewise Parray SH⁷ et al reported 89% prevalence rate. In Uttar Pradesh Gupta SC et al⁸ observed 79%, Ravishankar et al⁹ found 88.8% and Goel PK et al¹⁰ reported 74.2% morbidity load during their study period. Psychosocial problems studied by Rahul Prakash et al¹¹ observed 42% prevalence. The prevalence of psychosocial problem which was lower was taken as the basis for sample size calculation. Sample size was calculated by using the prevalence as 42%, with a relative precision (d) as 15% and a confidence level of 95%, using the formula¹²: $z^2(1 - \frac{d^2}{2})pq/d^2$. So sample size obtained was 245. As we compared the results in urban mohallas & urban slums a minimum sample of 245 aged persons from both areas was taken to draw the valid conclusions. Since urban slums constitute 51% and urban mohallas 49% population, therefore 245 aged persons from urban mohallas & 255 from urban slums were taken. Thus total sample size came out to be 500. Multistage simple random sampling technique was adopted. In first stage list of wards were obtained from Agra Municipal Corporation. In next stage out of total 15 wards, 6 were selected randomly, from those 6 wards 3slum and 3 elite localities were selected randomly. In the last stage household were visited in selected locality and from each locality we took 80-90 aged persons assuming the average population of each locality to be 1000-1500 and population of elderly to be 7.5%. Each individual above the age of 60 was interviewed. Information regarding history of current and past illness were taken and general

examination was performed. Prescription of doctor regarding illness was also checked and was taken in to consideration for classifying illnesses. The information was collected on

predesigned and pretested schedule. The data collected were compiled and analyzed with the help of MS- excel software and following observations were made.

Table- 1
DISTRIBUTION OF STUDY POPULATION AS PER NUMBER OF MORBIDITIES

Age (Years)	Number of Morbid Persons														
	Urban Slum					Urban Elite					Total				
	N	Single Morbidity		Multiple Morbidities		N	Single Morbidity		Multiple Morbidities		N	Single Morbidity		Multiple Morbidities	
		No.	%	No.	%		No.	%	No.	%		No.	%	No.	%
60-64	109	45	41.28	57	52.29	108	39	36.11	42	38.89	217	84	38.71	99	45.62
65-69	71	30	42.25	40	56.34	50	17	34	29	58	121	47	38.84	69	57.02
70-74	39	9	23.07	27	69.23	50	5	10	34	68	89	14	15.73	61	68.54
75-79	20	3	15	16	80	7	2	28.57	5	71.42	27	5	18.52	21	77.78
80+	16	1	6.25	15	93.75	30	6	20	24	80	46	7	15.22	39	84.78
Total	255	88	34.51	155	60.78	245	69	28.16	134	54.69	500	157	31.4	289	57.8

For Single morbidity: $\chi^2 = 52.81$ $p < 0.05$

For multiple morbidities: $\chi^2 = 13.58$ $p < 0.05$

Table 1 depicts the distribution of study population as per no. of morbidities and it was observed that 95.29% elderly were morbid in slum area and 82.85% in elite area. The load of single morbidity was more in 60-69 years age group and multiple morbidities were more among 70 plus population, this trend was common in both slum and elite area. With increasing age the number of morbidities were found to be increasing and this association with age was found to be statistically significant. Highest load of morbidity was found in 80+ population in both slum (93.75%) and elite area (80%). Least load of morbidities were observed in 60-64 years age group (45.62%).

Table 2
DISTRIBUTION OF LEADING CAUSES OF MORBIDITY

S. No.	Morbidity	Urban Slum N=255		Urban Elite N=245		Total N=500		Z Test
		No.	%	No.	%	No.	%	
1.	Anemia	98	38.43	33	13.47	131	26.20	5.08*
2.	Cataract	76	29.80	46	18.04	122	24.40	1.52
3.	Hypertension	44	17.96	67	27.35	111	22.20	1.62
4.	Arthritis	62	24.31	49	20.0	111	22.20	0.79
5.	Hearing Impairments	55	21.57	28	11.43	83	16.60	1.83
6.	Dental caries	61	23.92	14	5.71	75	15.00	3.33*
7.	Chronic pain	41	16.07	13	5.31	72	14.40	1.87
8.	COPD	45	17.65	26	10.61	71	14.20	0.85
9.	Constipation	12	4.71	38	15.51	50	10.00	1.27

Table Contd.

10.	Diabetes	6	2.35	25	10.20	31	6.20	0.91
11.	Skin lesions boils, pustules	17	6.67	14	5.71	31	6.20	0.11
12.	Urinary tract infection	15	5.88	15	6.12	30	6.00	0.02
13.	Epilepsy/Psychiatric prob./	2	0.78	7	2.86	9	1.80	0.24
	CNS prob.							
14.	Chronic gastritis	2	0.78	7	2.86	9	1.80	0.24
15.	Blindness	7	2.75	-	-	7	1.40	-
16.	Hypo/hyperthyroidism	-	-	7	2.86	7	1.40	-
17.	Spondylosis	-	-	7	2.86	7	1.40	-
18.	Hernia	-	-	7	2.86	7	1.40	-
19.	Fracture	6	2.35	-	-	6	1.20	-
20.	Gall Stones	-	-	5	2.04	5	1.00	-
21.	BPH	2	0.78	3	1.22	5	1.00	0.05
22.	Nephropathy	-	-	4	1.63	4	0.80	-
23.	Angina/Coronary block	3	1.18	13	5.31	16	0.03	0.45
24.	Diarrhoea	10	3.92	-	-	10	0.02	-

*significant ($p < 0.05$)

Table 2 shows the distribution of leading causes of morbidity in elderly of two study area. The most common morbidity found was anemia (26.20%) followed by cataract (24.40%), hypertension (22.20%), arthritis (22.20%), hearing impairments (16.60%), dental caries (15.00%), chronic pain (14.40%) and COPD (14.40%). Slum elderly were found to be more affected with anaemia and dental caries as compared with elite area and this difference was found to be significant. Diabetes, skin problems and urinary tract infections account for less than 10% individually. Nephropathy, angina and diarrhoea were having less than 1% prevalence rate.

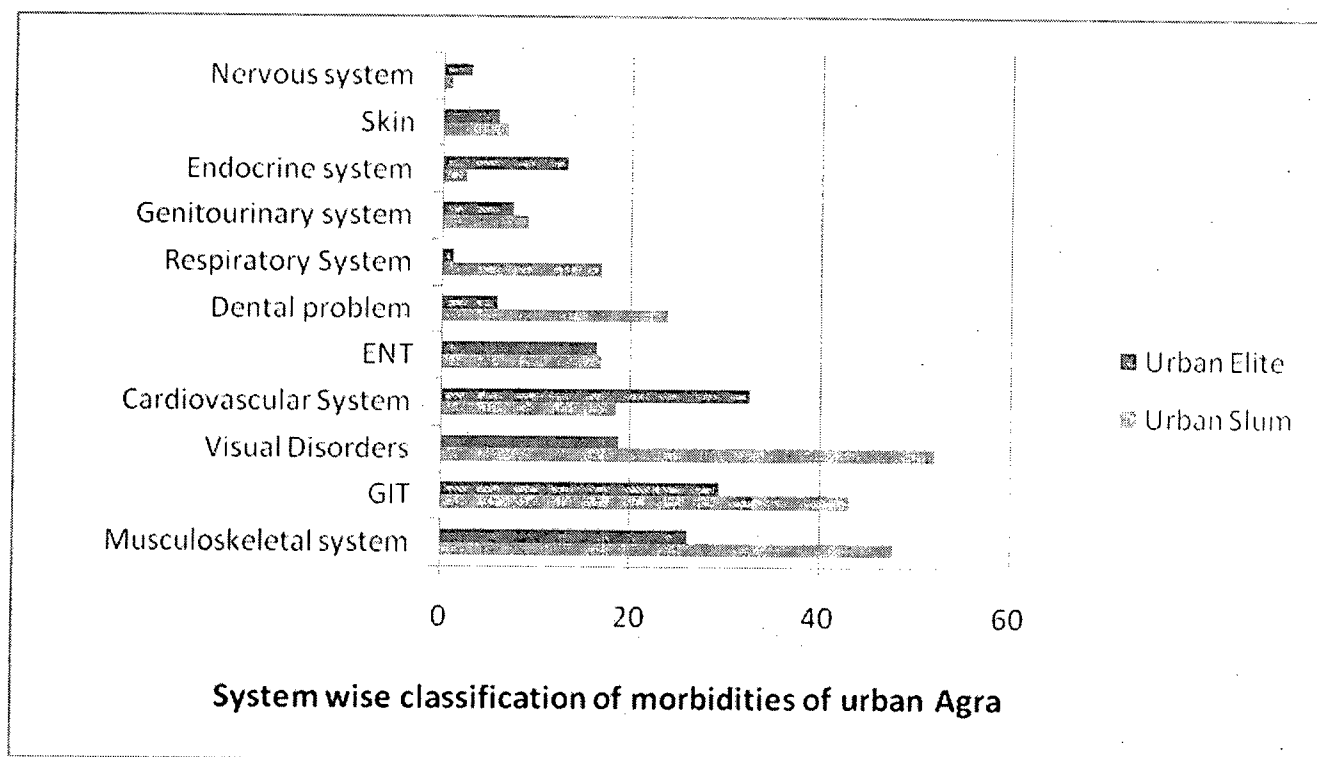
Table 3

SYSTEM WISE CLASSIFICATION OF THE MORBIDITIES IN STUDY POPULATION

S. No.	Diseases	Urban Slum N=255		Urban Elite N=245		Total N=500		Z Test
		No.	%	No.	%	No.	%	
1.	Musculoskeletal system	122	47.84	64	26.12	186	37.20	3.05*
2.	GIT	110	43.14	72	29.39	182	36.40	1.92
3.	Visual Disorders	133	52.16	46	18.78	179	35.80	4.62*
4.	Cardiovascular System	47	18.43	80	32.65	127	25.40	2.51*
5.	ENT	43	16.86	40	16.33	83	16.60	0.06
6.	Dental problem	61	23.92	14	5.71	75	15.00	3.33*
7.	Respiratory System	43	16.86	26	1.06	69	13.80	1.10
8.	Genitourinary system	23	9.02	18	7.34	41	8.20	0.2
9.	Endocrine system	6	2.35	32	13.06	38	7.60	1.73
10.	Skin	17	6.67	14	5.71	31	6.20	0.16
11.	Nervous system	2	0.78	7	2.86	9	1.80	0.33

*significant ($p < 0.05$)

Table-3 shows System wise classification of the morbidities in study population and most common morbidity among geriatrics came out to be of musculoskeletal system (37.20%) followed by GIT problems (36.40%) and problem of low vision (35.80%). Problems of cardiovascular system, ENT and dental system accounted for 25.40%, 16.60%, and 15 % respectively. Problems related to respiratory, genitourinary, endocrine, skin and nervous system together contributed to 37.60% morbidity load. Musculoskeletal problems, visual disorders and dental problems were found to be more among slum dwellers than elite area and this difference was statistically significant. Cardiovascular problems were more in elite area and this difference was statistically significant.



Discussion :

It was observed in our study that health problems have significant relationship with age. As age increases number of health problems also increases. This relationship of age and morbidity was statistically significant. Highest morbidity was seen among 80 plus population (84.78%), Goel PK¹⁰ also observed prevalence of morbidity as 98% in this population group. Diseases of Musculoskeletal system constituted the major fraction of illnesses (37.20%). In our study higher prevalence was seen in slum dwellers (47.84%) compared to elite (26.12%). Arthritis was the major musculoskeletal problem contributing to 22.2% in our study group. Similar results were reported by Prakash R et al (14.8%)¹¹. Diseases of gastrointestinal tract contributed to 36.40% in our study with higher prevalence in slum dwellers (43.14%), it may be due to malnutrition and anaemia. Anaemia makes a major fraction for gastrointestinal problems (26.20%) for both slum and elite group. Padma et al¹³. studied acid peptic disease (5.87%) and hernia (4.3%) in his study. Ocular disorder constitute 35.80% in our study, which is similar as found by RB Gaurav et al¹⁴ as 32.8%, Parry SH et al⁷ (39%) and Naveen KH et al¹⁵ (36%). Cataract was most common ocular disability and was higher in slum population (29.80%). 25.4% population

complained about Cardiovascular problems. Hypertension (22.2%) was the main culprit for cardiovascular problems and it was found to be higher in elite aged (27.35%) compared to slum population (17.96%), showing the effect of western life style. Different studies reported its prevalence as 11.25%⁹ and 33%¹⁶. Major ENT problem was hearing impairments contributing to 16.60% load in urban aged and was found to be more among slum population (21.57%). Its prevalence was found as 20% by Naveen KH et al¹⁵. Among dental problem dental caries was sole problem found in study population. Poor hygiene was supposed to be responsible for more caries in slum (23.92%) compared to elite (5.71%). Khokhar A et al¹⁷ seen 90.62 % suffered from dental problems. 13.8% urban aged suffered from Respiratory system problems. Among respiratory problem chronic obstructive pulmonary diseases was most common (14.20%). Chandwani et al¹ reported bronchial asthma as 12.2%. Other system problems were less than 10% like genitourinary, skin, nervous system and endocrine.

As we have seen that aged suffered from various health problems as mentioned above, so strategies are required to bring about an improvement in their quality of life. The need of the hour is to set up geriatric wards that would fulfill the

specific needs of the geriatric population by provision of distinct OPD services. Providing screening services as well as curative and rehabilitative services and convalescent homes to provide long-term care, which may be a part of designated hospitals, is also a priority.

Bibliography :

1. Chandwani H, Jivarajani P, Jivarajani H. Health And Social Problems Of Geriatric Population In An Urban Setting Of Gujarat, India. *The Internet Journal of Geriatrics and Gerontology* 2009; 5:PP.
2. Mathur A. Editorial ,Action Begins. *Journal of The Indian Academy of Geriatrics* 2007;3:PP.
3. Goel PK, Garg SK, Singh JV, Bhatnagar M, Chopra H, Bajpai SK. Unmet needs of the elderly in rural population of Meerut. *Indian J Community Med* 2003; 28: 165-6. (s)
4. K. Park, Park's Text Book of Preventive & Social Medicine, published by Banarasi Das Bhanot, Jabalpur, 19th Edition, p-475.
5. Ingle GK and Nath A: Concerns and solutions for problems in geriatric health in India .*Indian Journal of Community Medicine*, Vol. 33, Issue 4, October 2008
6. SPS Bhatia, HM Swami, JS Thakur, V Bhatia A study of health problems and loneliness among the elderly in Chandigarh, *Indian Journal of Community Medicine*, 2007 vol. 32, no. 4, pp-255-258.
7. Parray SH, Ahmed D, Ahmed M, Gaash B: Morbidity Profile of Geriatric Population in Kashmir (India). *Indian Journal of Community Medicine*, Vol. 4, Issue 6, October 2008.
8. Gupta S.C. et al., Morbidity status of rural aged population in Agra district, *Indian Journal of Community Health*, 1994, vol.8, no.4, pp18-22.
9. Shankar R, Tondon J, Gambhir IS, Tripathi CB, Health status of elderly population in rural area of Varanasi district, *Indian J Public Health*, 2007, Vol. 51, no. 1, pp 56-8.
10. Goel PK. "A Socio-Medical Profile of the Elderly People in a Rural Area of Meerut with Special Reference to Availability and Utilisation of Geriatric Welfare Services", 2003, A thesis for M.D. submitted to L.L.R.M. Medical College, Chaudhary Charan Singh University, Meerut.
11. Prakash Rahul et al, A study of morbidity pattern among geriatric population in an urban area of Udiapur, Rajasthan, *Indian Journal of Community Medicine*, 2004, vol XXIX, no.1.
12. Lwanga Sk, Lemeshow S. Sample size determination in health studies: A practical manual. Geneva: WHO; 1991.
13. Padda A.S., Mohan V., Singh J., Deepti S.S., Singh G., Dhillon H.S. : Health Profile of Aged Persons in Urban & Rural Field Practice Areas of Medical College Amritsar : *Ind. Jour. Comm. Med.* XXIII (2), 1998 :72-76.
14. RB Gaurav, S KARTIKEYAN. Problems of geriatric population in an urban area. *Bombay Hospital Journal*.
15. Naveen K.H: An epidemiological study of morbidity pattern of geriatric population in rural area of Allahabad. 2008, A thesis for M.D. submitted to Motilal Nehru Medical College, University of Allahabad.
16. J Sheela, M Jayamala. Health condition of the elderly women: a need to enhance their well being. A survey report. *IJSAS* 1(1) 2008
17. Khokhar A., Mehra M: Life style & morbidity profile of geriatric population in an urban community of Delhi. *Indian Journal of Med. Science*, Vol.55, Issue 11, November, 2001, pp- 609-615.



COMPARATIVE STUDY OF NUTRITIONAL STATUS OF PRIMARY SCHOOL CHILDREN IN AN URBAN AREA OF JHANSI

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ABSTRACT:

The present study is an attempt to find out the nutritional status including anthropometric assessment. A cross-sectional study was conducted in primary section of two governments and two convent schools of Jhansi city during the study period of March 1999 to Feb 2000. Selected school children (n=840) aged 5-11 years. 453 children from municipal school and 387 children from convent school comprised the study material. Following results were observed - out of total children surveyed, 52.98% were male and rest 47.02% were females. Hindu formed majority (70.90%) of children in both types of schools. Mean height and weight of boys and girls were higher than ICMR standards in both type of school. The mean mid arm circumference of all girls and boys from both type of schools had higher value than the ICMR standards but did not come up to WOLANSKI standard. Statistical analysis - percentage, mean, chi-square test.

Key- words : Midarm circumference, Indian council of medical research, Wolanski standard

Introduction :

Primary school age is a dynamic period of physical growth and mental development of the child. Research indicates that nutritional deficiencies and poor health in primary school age children are among the causes of low school enrolment, high absenteeism, early dropout and poor classroom performance. The present position with regard to the health and nutritional status of the children in our country is very unsatisfactory. Apart from mid-day meal programme, which is run by the Government of India in government run schools, there are no other efforts for children in age group 5-14 years. The NFHS data shows that 53% of children in rural areas are underweight in India and this varies across states². The extent of stunted growth of children is also of concern and has consequences.

Causes of malnutrition are complex, multidimensional and interrelated. In children, malnutrition is most likely to strike those who lack nutritionally adequate diets, are not protected from frequent illnesses and do not receive adequate care. Factors pertaining to shelter, women's workload and decision making opportunities, traditional beliefs and practices and men's attitude towards child care contribute to malnutrition and eventually to maternal and child deaths.

Nutritional assessment in the community is essential for accurate planning and implementation of intervention programmes to reduce morbidity and mortality associated with under-nutrition. Extensive surveys have been carried out in different parts of India and the finding shows that sickness morbidity and mortality rates of children in India are among the highest in the world.³ The study was therefore, carried out to determine and compare the **nutritional status of children** attending convent and municipal primary schools in Jhansi city.

Material And Methods :

The present study is an attempt to ascertain the nutritional status of primary school children of Jhansi city. Four schools were selected following cluster sampling from the Jhansi city. Selected schools were two Government schools namely Basic D.C Talpura and Arya Kanya Inter College (primary section) and two convent schools - Christ the King and Kendriya Vidhyala No-II.

The present Cross-Sectional study was carried out from March 1999-Feb 2000. Children of age group 5-11 years, attending the two convents and two municipal school of Jhansi, comprised the study material. Only 840 children could be examined after repeated survey, 453 children from municipal schools and 387 children from convent schools. A child schedule was employed to collect the required information which was field tested to ensure accuracy and work ability. Nutrition status of children was assessed by the help of anthropometric measurements, that include weight, height and mid arm circumference as per standard methods (Jelliffe, 1966)³. Mid-arm circumference was measured while left arm hanging freely at its mid point (between acromian process of scapula and olecranon process of ulna). Data so obtained from the study was subjected to the statistical analysis and means were compared by ICMR standard. The difference between convent and municipal schools were examined statistically.

Results & Discussion :

In the present study a total of 840 primary school children aged 5-11 years were examined. Out of which 453 children were from municipal schools and 387 children were from convent schools of Jhansi city. Following observation were made in the present study.

Table 1
SOCIO-DEMOGRAPHIC PROFILE OF SCHOOL CHILDREN

Diseases	Municipal School			Convent School			Total
	Boys	Girls	No. (%)	Boys	Girls	No. (%)	No. (%)
Religion							
Hindu	168	109	277(61.15)	235	84	319(82.43)	596(70.95)
Muslim	117	59	176(38.85)	08	-	08(2.07)	184(21.91)
Others	-	-	-	51	09	60(15.50)	60(7.14)
Total	285	168	453(100)	294	93	387	840(100)
Caste							
Scheduled	59	17	76(16.77)	07	01	08(2.07)	84(10.00)
Backward	126	84	210(46.36)	34	34	68(17.57)	278(33.10)
Others	100	67	167(36.87)	252	59	311(80.36)	478(56.90)
*Food habits							
Vegetarian	159	101	260(57.40)	193	67	260(67.18)	520(61.90)
Non-vegetarian	126	67	193(42.60)	101	26	127(32.82)	320(38.10)

* Chi-square value-24.47, d.f=1, $p < 0.001$ The majority of children in both type of schools were Hindus (70.95%) followed by Muslims (21.91%) and children belonging to others religion were only 7.14%. Out of total children studied, 56.90% were from other caste, 33.10% backward caste and 10.00% children were from schedule caste. 80.36% of the children in convent school belong to other caste as compared to 36.88% in municipal schools.

Of the total children studied, 61.91% were vegetarian and remaining 38.09% were non-vegetarians. In both the school children having vegetarian diet were more as compared to non-vegetarian and this difference was found to be statistically highly significant. (Table-1)

Table 2
MEAN WEIGHT OF BOYS OF CONVENT AND MUNICIPAL SCHOOLS
IN COMPARISON WITH ICMR VALUES

Age in years	Municipal School (N=453)		Convent School (N=387)	
	Mean wt (kg)	ICMR standard	Mean wt (kg)	ICMR standard
5-6	15.3(± 1.9)	14.8	16.5(± 2.3)	14.8
6-7	18.2(± 3.0)	16.3	19.5(± 1.8)	16.3
7-8	19.4(± 2.4)	18.0	20.0(± 2.3)	18.0
8-9	20.8(± 3.4)	19.7	22.4(± 2.6)	19.7
9-10	22.6(± 3.2)	21.15	23.4(± 3.4)	21.5
10-11	24.5(± 2.4)	23.5	26.5(± 2.5)	23.5

(Figures in brackets are S.D) Mean weight of convent school boys had higher value than the municipal school boys for all ages. Mean weight of all school boys in both type of schools had higher values as compared to the ICMR standards.

Table 3
MEAN WEIGHT OF GIRLS OF CONVENT AND MUNICIPAL SCHOOLS
IN COMPARISONS WITH ICMR VALUES.

Age in years	Municipal Shcool (N=453)		Convent School (N=387)	
	Mean wt (kg.)	ICMR standard	Mean wt (kg.)	ICMR standard
5-6	15.0(±1.9)	14.5	15.6(±1.5)	14.5
6-7	16.5(±2.5)	16.0	19.0(±3.1)	16.0
7-8	18.7(±2.5)	17.4	21.8(±2.5)	17.4
8-9	22.8(±2.9)	19.4	23.8(±2.9)	19.4
9-10	23.4(±2.4)	21.3	25.8(±2.1)	21.3
10-11	25.4(±2.8)	23.6	26.8(±3.1)	23.6

Mean weight of convent school girls had higher value than the municipal school girls for all ages. Mean weight of all school girls in both type of schools had higher values as compared to the ICMR standards. (Table-3)

Table 4
MEAN HEIGHT OF BOYS OF CONVENT AND MUNICIPAL SCHOOLS
IN COMPARISONS WITH ICMR VALUES

Age in years	Municipal Shcool (N=453)		Convent School (N=387)	
	Mean height (cm)	ICMR standard	Mean height (cm)	ICMR standard
5-6	104.5(±4.2)	102.1	112.0(±5.5)	102.1
6-7	112.3(±5.9)	108.5	114.5(±5.8)	108.5
7-8	118.5(±6.3)	113.9	119.5(±6.6)	113.9
8-9	123.5(±5.3)	119.3	125.6(±5.2)	119.3
9-10	125.0(±5.8)	123.7	128.9(±5.3)	123.7
10-11	129.8(±5.9)	124.4	134.8(±5.2)	124.4

The average height of boys for all ages was higher than the ICMR standards. The average height of boys from convent schools was higher than their counterpart in municipal schools.

Table 5
MEAN HEIGHT OF GIRLS OF CONVENT AND MUNICIPAL SCHOOLS
IN COMPARISON WITH ICMR VALUES

Age in years	Municipal Shcool (N=453)		Convent School (N=387)	
	Mean height (cm)	ICMR standard	Mean height (cm)	ICMR standard
5-6	103.8(±3.2)	101.4	110.0(±5.8)	101.4
6-7	108.9(±3.8)	107.4	116.0(±8.3)	107.4
7-8	115.4(±7.5)	112.8	119.0(±5.2)	112.8
8-9	120.0(±6.0)	118.2	125.5(±5.2)	118.2
9-10	129.5(±7.4)	122.9	130.5(±7.6)	122.9
10-11	132.8(±4.2)	128.4	134.6(±8.9)	128.4

The average height of girls for all ages was higher than the ICMR standards. The average height of girls from convent schools was higher than their counterpart in municipal schools.

Table 6

**MEAN UPPER MID- ARM CIRCUMFERENCE OF BOYS OF CONVENT AND MUNICIPAL SCHOOL
IN COMPARISON WITH ICMR VALUE AND WOLANSKI STANDARD**

Age in Years	Municipal school(n=453)			Convent school(n=387)		
	Mean mid arm circumference (cm)	ICMR standard	Wolanski standard	Mean mid-arm circumference	ICMR standard	Wolanski standard
5-6	14.3($\pm$ 1.0)	13.6	15.7	15.5($\pm$ 0.8)	13.6	15.7
6-7	15.9($\pm$ 1.2)	14.9	17.5	16.7($\pm$ 1.5)	14.9	17.5
7-8	16.0($\pm$ 1.3)	14.9	18.1	16.9($\pm$ 1.5)	14.9	18.1
8-9	17.1($\pm$ 1.7)	14.9	18.7	17.8($\pm$ 0.5)	14.9	18.7
9-10	18.5($\pm$ 1.5)	16.5	19.3	18.9($\pm$ 1.5)	16.5	19.3
10-11	19.1($\pm$ 1.2)	16.5	20.0	19.5($\pm$ 1.2)	16.5	20.0

The midarm circumference values revealed that mean mid-arm circumference values of boys were found to higher than the ICMR standards but did not come up-to the Wolanski standards.

Table 7

**MEAN UPPER MID- ARM CIRCUMFERENCE OF GIRLS OF CONVENT AND MUNICIPAL SCHOOL
IN COMPARISON WITH ICMR VALUE AND WOLANSKI STANDARDS**

Age in Years	Municipal school(n=453)			Convent school(n=387)		
	Mean mid arm circumference	ICMR standard	Wolanski standard	Mean mid-arm circumference	ICMR standard	Wolanski standard
5-6	16.2($\pm$ 1.2)	13.6	15.6	15.6($\pm$ 1.0)	13.6	15.6
6-7	15.0($\pm$ 1.0)	14.9	17.5	16.2($\pm$ 1.3)	14.9	17.5
7-8	16.1($\pm$ 1.1)	14.9	18.1	17.1($\pm$ 1.2)	14.9	18.1
8-9	16.6($\pm$ 1.0)	14.9	18.7	17.5($\pm$ 1.8)	14.9	18.7
9-10	17.1($\pm$ 1.2)	16.5	19.5	18.1($\pm$ 1.5)	16.5	19.5
10-11	18.2($\pm$ 1.2)	16.5	20.3	19.5($\pm$ 1.5)	16.5	20.3

The midarm circumference values revealed that mean mid-arm circumference values of girls were found to higher than the ICMR standards but did not come up-to the Wolanski standards. The mean mid arm circumference of girls of convent school were higher than the municipal school.

In the present study a total of 840 children aged 5-11 years were surveyed in different schools of Jhansi. 453 students were examined from municipal school and 387 from convent schools.

Of the total 840 children surveyed 52.98% were male and rests of 47.02% were female. Children belonging to schedule caste 10.0%, backward caste 33.0 and others caste 56.90%. Hindu children formed a majority 70.95%, rest of them belong to Muslims 21.91% and other religion 7.14%. Other studies also reported the similar finding.⁵

Mean weight and height of convent school boys and girls had higher value than the municipal school boys and girls for all ages. Lower value could be due to low socio economic and poor nutrition status. Similar finding were reported by others.^{5,7} Whereas others study found contrary to present study.¹ The reason for dissimilarity of the present study with the other study quoted may be due to natural variation as this study performed in different field area and in different socio-economic group.

The mid arm circumference values of the present study

revealed that mean mid-arm circumference values of both boys and girls were found to higher than the ICMR standards but did not come up-to the Wolanski standards. Similar findings were reported by others^{1,5}.

Conclusion :

The present study was conducted with the objective of assessing the nutrition status of primary school children of Jhansi city. The nutrition status of children from municipal school was comparatively poor. The value of all anthropometric measurement were found to be lower in municipal school children. Boys showing higher value than girls for same age group in both types of schools. Mean value of weight, height and mid-arm circumference were higher than the ICMR standards in both type of school. Convent school children had a higher muscle mass than their counterparts in municipal schools.

References :

1. Chandna S and Sehgal S (1994): Nutritional status of of school children-A comparative study of boys and girls. Indian Journal of Nutrition and Dietet; 31:323-328.
2. IIPS and ORC Macro (2000) National Family Health Survey (NFHS-2) 1998-99: India, IIPS, Mumbai.
3. Jelliffe, D.B.: The Assessment of Nutritional Status of Community. Monograph Series No. 53, World Health Organization, Geneva (1966).
4. Khalid S and Khan Z: Physical growth and nutritional status of rural school going children (6-14 years) of Aligarh Indian Journal of Preventive and Social Medicine.35,(3 & 4),2004:90-98.
5. Parwathi EP and Poorani R (1991): Nutritional status of tribal school going children. Indian Journal of Nutrition and Dietet; 28:207-214.
6. Promoting Health through Schools. Report of a WHO Expert Committee on Comprehensive School Health Education and Promotion. Geneva, World Health Organization, 1997 (WHO Technical Report Series, No. 870).
7. Semwal J, Srivastava AK, Gupta S, Kishor S and Chandra R: Nutritional status of school children in rural areas of Dehradun district. Indian Journal of Preventive and Social Medicine.37,(1 & 2),2006:76-81.
8. Yaima E, Chandrahas PH and Datta SN (1981): Morbidly pattern in urban school children. Indian Journal of Public Health; 25:42-46.



*Be the kind of person
who is part of the solution,
not part of the problem.*

A STUDY ON PREVALENCE OF OBESITY AMONG COLLEGE GOING GIRLS IN AGRA DISTRICT OF U. P.

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ABSTRACT:

Research question: What is the prevalence of obesity among urban college going girls of Agra in the age group of 18-24 years?

Objectives:

1. To study the anthropometric characteristics of study subjects.
2. To study the magnitude of obesity among them.
3. To compare the prevalence of obesity by WHO & Revised Indian Guidelines

Study design: Cross sectional study.

Setting and participants: Non professional colleges of Agra city and college going girls of 18-24 years.

Study period: July to December 2008.

Sample size: 400 college going girls of 18-24 years.

Study variable: Height, Weight, Waist circumference, Hip circumference.

Results: According to WHO, 2000 guideline, the prevalence of overweight and obesity was 18.5% and 4.5% respectively. 45.5% of the subjects had normal weight and 31.5% were underweight. According to revised Indian guideline, surprisingly, 42.5% were classified as overweight/obese amongst which 23% were obese with remaining 19.5% overweight and 57.5% of subjects were either classified as normal (26%) or below normal (31.5%).

Conclusion: Higher prevalence of obesity especially by Indian guidelines, calls for the prevention and control of this problem with prime attention.

Introduction:

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. Once considered a problem related to affluence, obesity is now fast growing in many developing countries. Even in countries like India, which is multi-ethnic having multi socio-economic levels, is typically known for high prevalence of under nutrition; significant proportions of overweight and obese now coexist with the undernourished.⁽¹⁾

Paradoxically coexisting with under nutrition in developing countries, the increasing prevalence of overweight and obesity is associated with many diet-related chronic diseases including diabetes mellitus, cardiovascular disease, stroke, hypertension and certain cancers. The great prevalence of this condition, its severe consequences for physical and mental health and the difficulty of treating it make the prevention of obesity a major public health priority.

Considering all these points, the present research work has been carried out with the following objectives to throw a limelight on the prevalence of obesity that could be pursued to help urban college going girls more appropriately achieve and maintain a healthy body weight.

Objectives:

1. To study the anthropometric characteristics of study subjects.
2. To study the magnitude of obesity among them.
3. To compare the prevalence of obesity by WHO & Revised Indian Guidelines.

Material and methods:

The list of colleges was obtained from Agra University. There were 12 degree colleges in urban Agra among which 6 were non- professional. All these six colleges were selected for the study purpose from the list. Around 70 subjects within the age range of 18-24 years were included from each of these colleges to complete the sample size.

Subjects were studied from each of these colleges randomly whoever present at the time of visits to colleges till the sample size was completed. Each girl was interviewed personally to collect the required information on pretested schedule. All experiments were performed in accordance with relevant guidelines and regulations and informed verbal consent and cooperation was sought from all subjects prior to their participation in the study. The research described was compliant with basic ethical standards.

Anthropometrical measurements:

For the assessment of overweight and obesity, anthropometrical measurements were taken using standard

apparatus with the subjects wearing light clothing and without shoes. Weight was measured in the upright position with a weighing scale to the nearest 0.1 kilogram (kg). Each day the scale was calibrated with a standard weight. Height was measured to the nearest 0.5 cm. Waist and hip circumferences were measured by using non-flexible tape to an accuracy of 0.1 cm. Waist was measured horizontally at the level just above the uppermost border of the iliac crest at a normal minimal respiration. Hip was measured as the maximum circumference over the buttocks. Body mass index (BMI) was calculated as weight (kg) divided by height squared (m^2)

to estimate overall body fat distribution and was classified into four categories according to WHO, 2000 criteria⁽²⁾ and revised Indian guideline, 2008⁽³⁾ (Table 2 & 3).

Statistical methods :

The database so prepared was analyzed with the help of statistical program available in SPSS version 16.0 (Statistical package for social sciences) which is among the most widely used programs for statistical analysis in social science. The parameters taken were analyzed statistically to find out the mean, standard deviation and range for the anthropometric measurements.

Table 1
ANTHROPOMETRIC CHARACTERISTICS OF STUDIED SUBJECTS

Variables	Mean	S. D.	Range
Age (y)	20.71	± 1.588	18-24
Height (m)	1.57	± 0.072	1.40-1.76
Weight (kg)	53.51	± 8.35	36-81
Waist circumference (inch)	29.39	± 2.984	23-38
Hip circumference (inch)	36.34	± 3.372	29-47

Anthropometric characteristics of the subjects are shown in the above table. The mean age of the study subjects was 20.71 years with a range from 18-24 years. The mean height of the participants was $1.57m \pm 0.072$ ranging from 1.40-1.76. The mean weight was $53.5kg \pm 8.35$, though it ranged widely from 36kg to 81kg. The mean waist circumference was 29.39 inches ± 2.984 . It ranged from 23-38 inches. The subjects had a mean hip circumference of 36.34 ± 3.372 with a range from 29-47 inches.

Table 2
CLASSIFICATION OF COLLEGE GOING GIRLS ACCORDING TO BODY MASS INDEX (WHO, 2000)

Classification	BMI cut-off points (kg/m^2)	No. of subjects	% prevalence
Underweight	<18.50	126	31.5
Normal	18.50-24.99	182	45.5
Overweight	≥ 25.00		
Pre-obese	25.00-29.99	74	18.5
Obese class-I	30.00-34.99	18	4.5
Obese class-II	35.00-39.99	--	--
Obese class-III	≥ 40.0	--	--
Total		400	100

Using these cut-off points, the findings revealed that 23% of the subjects were either overweight (18.5%) or obese (4.5%), only 45.5% were having normal BMI and 31.5% had below normal BMI. All who were obese (4.5%), fell into category of obese class I, there were none in obese class II & III.

Table 3

**CLASSIFICATION OF COLLEGE GOING GIRLS ACCORDING TO REVISED INDIAN GUIDELINES
(UNION HEALTH MINISTRY OF INDIA, 2008)**

Classification	BMI cut-off points (kg/m ²)	No. of subjects	% prevalence
Underweight	<18.5	126	31.5
Normal	18.50-22.9	104	26
Overweight	23.0-24.9	78	19.5
Obese	≤ 25.0	92	23
Total		400	100

Alarmed by Indian scenario of Diabetes, Union Health Ministry of India along with other 20 organizations has proposed a revised guideline for obesity, by reducing the cut-off points for early detection of overweight and obesity, which is in process for finalization. According to these guideline, surprisingly, 42.5% were classified as overweight/obese amongst which 23% were obese with remaining 19.5% overweight and 57.5% of subjects were either classified as normal (26%) or below normal (31.5%).

Discussion :

The present study reported mean age, weight & height 20.71years±1.6, 53.5kg±8.3 & 157.0cm±7.2 respectively. Bellisle F et al. (1995)⁽⁴⁾ reported almost similar mean age but relatively higher mean weight and height of university students in Europe as compared to our study. The difference is due to the fact that their study was conducted among both male & female university students against the only female participants of our study, also in the different demographic and socio-economic environments. Shamail Zafar et al. (2007)⁽⁵⁾ also reported relatively higher mean weight, height & waist circumference however, almost similar hip circumference as compared to our study. This is due to again the fact that the former one has included male participants as well and has been conducted in a different milieu. J. Singh et al. (1999)⁽⁶⁾ reported relatively lower mean height and weight of urban adolescent girls of slums in Lucknow in their study as compared to ours. The study quoted was conducted almost ten years back; overall development during past decade might be the reason. Our study reported a mean weight of 53.51±8.35 which is in concordance with the similar study conducted by Augustine & Poojara(2003)⁽⁷⁾ among urban college going girls of Ernakulam. This finding of the present study is also very close to Indian reference women weight as per ICMR standards.⁽⁸⁾ The mean waist circumference in the present study was 29.39 inches±2.984 which is below the cut-off point for obesity (under the guidelines of the International Diabetes Federation, a normal waist line for a woman is 32 inches or less). Li C et al. (2004) reported a relatively higher mean waist circumference for girls (18-19 years) in US of 33.5 inches, the difference from our study is due to the fact that their study was conducted in a different socioeconomic environment with a difference in lifestyle and food habits. Study conducted by NIN, Hyderabad (2005)⁽⁹⁾ among adolescent girls of Andhra Pradesh reported a slightly lower mean hip circumference (HC) as compared to our study. This can be due to the fact that their study was conducted among

adolescents of 12-17 years age.

According to World Health Organization (WHO, 2000), body mass index (BMI) provides the most useful, albeit crude, population level measure of obesity, and it can be used to estimate the prevalence of overweight/obesity within a population and the risks associated with it. According to this criteria, the present study shows that nearly one fourth (23%) of girls were either overweight (18.5%) or obese (4.5%) while only close to half (45.5%) of the study population were having a normal BMI and slightly less than one third (31.5%) of them were under weight. The study thus also exposed the fact that under nutrition is still prevailing in the state along with rise in over nutrition. The socioeconomic development of recent decades in Agra has generated a neo middle class, both at the rural and urban level which may be responsible for rise in prevalence of overweight. The study done by Sharda Sidhu and Prabhjot(2002)⁽¹⁰⁾ have reported a higher prevalence of overweight and obesity of 28.2% & 15% respectively among college girls of more than 18 years of age in Punjab as compared to our study. The higher prevalence of obesity/overweight may be because the study was done in a economically more developed state. Also the difference in culture and food habits in Punjab might be responsible for it. Study conducted by M. Mehta et al. (2002)⁽¹¹⁾ among affluent adolescent girls of New Delhi found relatively higher and lower prevalence of obesity & overweight respectively than the present study. The higher prevalence of obesity in their study could be because the study was done among affluent societies which are transitioning to westernized lifestyles and probably experiencing an obesogenic environment. The lower prevalence of overweight as compared to our study can be attributed to the age group of the subjects (16-17 years). The findings of study conducted by Augustine and Poojara (2003)⁽⁷⁾ on urban college going girls of Ernakulam also showed the higher prevalence of overweight and obesity of 24% & 10.5% respectively, the difference from our results is due to different criteria(WHO Regional Report,2000) used to

determine the weight category status in their study. National Family Health Survey (NFHS-3, 2005-06)⁽¹²⁾ showed 2.8% obese women with BMI 30 or more and 12.6% overweight with BMI 25-30 among both urban and rural Indian female population which is quite lower than the present study reason obviously is different age group & women of all walks of life were included in NFHS. Similar study conducted by Priyanka Tiwari and Aarti Sankhala(2007)⁽¹³⁾ had given the nearly same prevalence of obesity of 4.4% among college going girls of Udaipur as ours.

In Asian subjects, the risk associated with diabetes and cardiovascular diseases occurs at lower levels of BMI. This is attributed to body fat distribution; Asian Indians tend to have more visceral adipose tissue, causing higher insulin resistance, despite having lean BMI. Wang J et al. (1994) have proved this by his study.⁽¹⁴⁾ In that context, Lower BMI cut-points have been suggested to evaluate overweight and obesity specifically for Asian populations by WHO Expert Consultation (Appropriate body-mass index for Asian populations and its implications for policy and intervention strategies. Lancet. 2004). The Union Health Ministry of India in association with the Diabetes Foundation of India, the All-India Institute of Medical Science (AIIMS), Indian Council of Medical Research, the National Institute of Nutrition and 20 other health organizations has released new guidelines (India reworks obesity guidelines, makes fitness norms tighter, The Hindu, 25 November 2008)⁽¹⁵⁾ for prevention and management of obesity and metabolic syndrome which was earlier proposed by WHO in 2000. If these criteria are taken into account as against WHO proposed criteria, nearly half of the subjects (42.5%) would be classified as either obese (23%) or overweight (19.5%).

The study conducted by Augustine and Poojara (2003)⁽⁷⁾ had also explored relatively higher prevalence of overweight but lower obesity, 24% and 10.5% respectively among college going girls of Ernakulam by using the similar cut-off points of overweight & obesity for Asia pacific inhabitants suggested earlier by WHO Regional report, 2000. Study conducted by Priyanka Tiwari and Aarti Sankhala(2007)⁽¹³⁾ had revealed quite lower prevalence of overweight & obesity of 5.6% & 4.4% respectively among college going girls of Udaipur by using similar BMI cut off points suggested by WHO, 2000 for Asia Pacific inhabitants. The differences in the prevalence of these studies from the present study may be attributed to different socio cultural environment along with diverse regional food habits.

Conclusion :

The overall prevalence of overweight and obesity among college going girls was about 18.5% and 4.5% respectively by WHO, 2000 criteria. The prevalence of obesity was noted as high as 23% according to revised Indian guidelines. The prevention and control of this problem must, therefore, claim prior attention. Weight is usually positively related to increased morbidity and mortality whereas height is often

associated with good health. Therefore, among obese subjects, the BMI have reflected the negative effects of both fatness and shortness in our study.

References :

1. B. Popkin, "The Nutrition Transition and Obesity in the Developing World," *Journal of Nutrition* 131, no. 3 (2001): 871S873S.
2. WHO/IASO/IOTF: The Asia-Pacific perspective: redefining obesity and its treatment. Health Communications Australia: Melbourne. 2000.
3. India reworks obesity guidelines, makes fitness norms tighter, The Hindu, 25 November 2008.
4. Bellisle F, Monneuse MO, Steptoe A, Wardle J. Weight concerns and eating patterns: a survey of university students in Europe. *Int J Obes Relat Metab Disord* 1995; 19:723-30
5. Shamail Zafar, Israr ul Haque et al. Relationship of body mass index and waist to hip ratio measurement with hypertension in young adult medical students. *Pak J Med Sci* 2007; 23(4): 574-579.
6. J Singh, JV Singh, AK Srivastava. Health Status of Adolescent Girls in Slums of Lucknow. *Ind. J. Comm. Medi* 2006; 31(2): 102-04.
7. Augustine, L.F. and Poojara. Prevalence of obesity, weight perceptions and weight control practices among college girls. *Ind. J. Comm. Medi* 2003; 25(4): 189-90.
8. I.C.M.R. Nutrient Requirements & Recommended Dietary Allowances for Indians. National institute of Nutrition, Hyderabad, 1992, 8,129.
9. N.I.N. Report. Assessment of overweight and obesity among urban Adolescents in Hyderabad, Andhra Pradesh. 2005.
10. Sharda Sidhu and Prabhjot Prevalence of Overweight and Obesity Among the College-going Girls of Punjab *Anthropologist*, 2004; 6(4): 295-297.
11. M. Mehta, S.K. Bhasin, K. Agrawal and S. Dwivedi Obesity Amongst Affluent Adolescent Girls *Indian J Pediatr* 2007; 74(7): 619-622
12. National Family Health Survey. International Institute for Population Sciences (IIPS) and ORC Macro, 2005-06. Mumbai: IIPS, NFHS-3. 2007
13. Priyanka Tiwari and Aarti Sankhala: Prevalence of Obesity, Weight Perception and Dietary Behaviour of Urban College Going Girls *J. Hum. Ecol.* 2007; 21(3): 181-183
14. Wang J, Thorton JC, Russell M, Burastero S, Heymsfield S, Pierson RN., Jr Asians have lower body mass index (BMI) but higher percent body fat than do whites: comparisons of anthropometric measurements. *Am J Clin Nutr.* 1994;60:2328.



AWARENESS REGARDING MODES OF TRANSMISSION AND RELATED MISCONCEPTIONS ABOUT HIV/AIDS AMONG SECONDARY SCHOOL GOING FEMALES OF PUBLIC AND GOVT. SCHOOLS

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ABSTRACT:

Research Question : *What is the level of awareness about different modes of transmission and related misconception about HIV/AIDS among secondary school going females of public and Govt. Schools of Kanpur city.*

Study Area : *Public and Govt. Schools of Kanpur city.*

Participants : *120 Govt. and 120 Public secondary School females students.*

Results : *100% Public school female students knew about heterosexual mode of transmission of HIV/AIDS as compared to 80% of Govt. School students. Among Public School students knowledge about transmission of HIV/AIDS by contaminated needle and syringe, intravenous drug abuse, blood transfusion and mother to child was known to almost 80% student. Among Govt. School students except for knowledge about transmission by contaminated needle and syringe (60%) and mother to child transmission (55%) the other modes were poorly known (<50%).*

Key word : *HIV/AIDS, Public School, Govt. School.*

Introduction :

HIV/AIDS is undoubtedly the most talked about disease of our times. Its unabated spread and lack of cure has made this disease to the magnitude of an epidemic. WHO predicts that HIV infected cases in India by 2010 AD would be around 6 million. Since neither treatment nor vaccine is available for this incurable disease, the best approach remains prevention of this infection.

WHO estimated that at least half of the infected people worldwide are of 15-24 years of age. So judging from the seriousness of the problem and vulnerability of this age group, it is necessary that adolescent and youth should have proper knowledge and understanding regarding this disastrous disease. The only alternative left to us at this moment is to minimize the possibility of HIV transmission through behavioral modification and this could be achieved by encouraging AIDS education programmes especially in educational institutions, i.e. schools and universities.

Women account for 44% of the 52 million adults now living with HIV. Because of biological and socio-economic vulnerability of women, the risk of women contracting HIV is

rising worldwide. The sex ratio of AIDS cases in the South East Asia region is reported to be 4 males to 1 female.

In light of above facts the present study was conducted with the objective to assess the awareness regarding modes of transmission and related misconception about HIV/AIDS among secondary school going females of public and government schools.

Material and Methods :

Present study was carried out in one public school and one Govt. School of Kanpur City selected by **Multistage stratified random sampling technique**. In stage 1 selection of school's was done. For this purpose two strata i.e. Public and Govt. School were identified. From the list of secondary Public Schools and Govt. Schools, one school from each was selected. In stage 2 using random sampling technique 120 secondary school going females from each school were selected. In all, 240 students were taken as study sample. Pre designed and pre tested HIV/AIDS awareness questionnaire was administered. Data collected was analysed quantitatively using percentages.

Table 1
KNOWLEDGE REGARDING MODES OF TRANSMISSION OF HIV/AIDS

S. No.	Items	Public School (n=120) Correct responses		Govt. School (n=120) Correct responses	
		No.	%	No.	%
1.	Heterosexual relationship	120	100	102	85.0
2.	Homo sexual relationship	62	51.7	31	25.8
3.	Blood transfusion	97	80.8	48	40.0
4.	Intravenous drug abuse	85	70.8	46	38.3
5.	Contaminated needles and syringes	98	81.7	72	60.0
6.	Mother to child	96	80.0	66	55.0
7.	Ear and nose piercing	48	40.0	27	22.5
8.	Acupuncture	46	38.3	23	19.2
9.	Tattooing	46	38.3	21	17.5
10.	Breast feeding	71	59.2	35	29.2
11.	Sharing of razors and blades	63	52.5	45	37.5

From Table 1, it is observed that all 100% Public school female students knew about heterosexual mode of transmission of HIV/AIDS as compared to 80% of Govt. School students. Among Public School students knowledge about transmission of HIV/AIDS by contaminated needle and syringe, intravenous drug abuse, blood transfusion and mother to child was known to almost 80% student. Among Govt. School students except for knowledge about transmission by contaminated needle and syringe (60%) and mother to child transmission (55%) the other modes were poorly known (<50%).

Table 2
MISCONCEPTION ABOUT HIV/AIDS TRANSMISSION

S. No.	Items	Public School (n=120) Correct responses		Govt. School (n=120) Correct responses	
		No.	%	No.	%
1.	Kissing	47	39.2	71	59.2
2.	Sharing utensils	26	21.7	61	50.8
3.	Mosquito bites	13	10.8	66	55.8
4.	Playing and working	18	15.0	52	43.3
5.	Blood donation	49	40.8	81	67.5
6.	Sneezing and coughing	29	24.2	54	45.0
7.	Hugging	13	10.8	63	52.5
8.	Sharing toilets	45	37.5	78	65.0
9.	Sharing food	31	25.8	63	52.5
10.	Sharing clothes	17	14.0	58	48.3

Table 2 Shows that most prevalent misconceptions about transmission of HIV/AIDS among students of public school were by blood donation (40.8%), by kissing (39.2%) and by sharing toilets (37.7%). However misconception about HIV/AIDS transmission by mosquito bite, hugging, sharing clothes and towels and playing-working together was less prevalent. Among Govt. students in comparison to public school student, higher prevalence of misconception about HIV/AIDS was observed which was more than 50% for all the myths.

Discussion & Conclusions :

Public school students had poor knowledge about tattooing (38.3%) acupuncture (38.3%) and ear/nose piercing (40%) as possible modes of transmission of HIV/AIDS and this knowledge was comparatively lesser among Government School female students.

Misconception about transmission of HIV / AIDS was more prevalent among Govt. School females than Public School Female students. Majority of students had misconception about transmission by kissing, blood donation and by sharing toilets.

On the basis of major findings of the study it can be concluded that students seeking secondary level of education in Govt. School areas are grossly deficient in HIV/AIDS related awareness and constitute a specific target group for school level educational interventions specially designed to sensitize them for the importance of the HIV/AIDS related issues.

References :

1. Agarwal, A.K.; Kumar, R. (2006) "Awareness of AIDS

among school children in Haryana". Indian Journal of Public Health, April-June 2006, 40(2), 38-45.

2. Bhardwaj, A. Sehgal, N and Sharma, A.K. (2007). "Knowledge, attitude, belief and practice study on AIDS among senior secondary students". Indian Journal of Community Medicine, 2007, Vol. XXII (4), 168-171.
3. Chowdhary, S. Gill, J.S. and Francis, P.T. (2004), "Knowledge, beliefs and attitudes regarding AIDS among senior secondary students in Delhi". Indian Journal of Community Medicine, 2004 Vol. XIX (1), 16-20.
4. Cherian, L. (2003). "AIDS awareness of secondary school pupils in the Northern province of South Africa". Psychology Reptot, December 2003, 83(1), 955-958.
5. Genesh, K. Naik, E, Sankaranarayan, S. and Reddy, P.S. (2001). "Impact of School based HIV and AIDS education for adolescents in Bombay". South East Asian Journal of Public Health. Vol. 27(4), 692-695.



*Team work divides the task
and doubles the success.*

A STUDY OF EPIDEMIOLOGICAL CORRELATES OF PHYSICAL DISABILITY AMONG STUDENTS OF AN EDUCATIONAL INSTITUTE OF KANPUR

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ABSTRACT:

Objective: To study the epidemiological correlates of physical disability among students in an educational institute of Kanpur.

Study Design: Cross-sectional study.

Study Setting: Dr. Ambedkar Institute of Technology for Handicapped, U.P., Kanpur.

Study Subjects: Physically disabled diploma students in the age group 15 years and above of Dr. Ambedkar Institute of Technology for Handicapped U.P., Kanpur were taken as study subjects. Data was collected on pre-designed and pre-tested questionnaire.

Statistical Analysis: Analysis was done using percentages.

Results: Physically disabled students predominantly belonged to age-group of 18-20 years (47.62%), birth order third (28.10%), Hindu religion (95.24%), OBC Caste (47.14%) and social class V (51.90%). Poliomyelitis was the most common probable cause of disability in majority of students (77.14%) and right lower limb was the most common site (36.67%) affected.

Key words: Physical disability, Epidemiological correlates, Adolescents.

Introduction:

Disability is a physical or mental impairment that limits an individual's activities of life. Globally, some 180 million young people between the ages of 10-24 live with a physical, sensory, intellectual or mental health disability significant enough to make a difference in their daily lives. The vast majority of these young people, some 150 million (80%) live in the developing world. Some studies have been carried out abroad, as far as developing countries are concerned such studies particularly in age group 15 years and above are very negligible. Realizing dearth of studies on physically disabled adolescents in India, the present was planned.

Material and Methods:

The study was conducted in Dr. Ambedkar Institute of Technology for Handicapped, U.P., Kanpur. All the physically disabled diploma students, who were present at the time of study, in the age group 15 years and above were taken as study subjects. The present study was carried out in the year 2009-2010. The social classification was done according to modified B. G. Prasad (AICPI, April 2010). The data was collected in the pre-designed and pre-tested questionnaire by interview method. Analysis was done using Percentages.

Results:

Table-1 reveals that maximum (47.62%) students belonged to

age group 18-20 years followed by 32.38% students in the age group 21-23 years & least 10% each in age group 15-17 years & 24 years and above.

It was observed that birth order of maximum (28.10%) students was third, followed by 18.11% students with birth order first and the least (8.57%) students with birth order more than fifth.

It was also seen that most of the students (95.24%) were Hindus while Muslims were only 4.76%. None of the students belonged to Christian & other religions.

It was noted that maximum (47.14%) students were OBCs followed by 31.91% General & least (20.95%) belonged to SC/ST.

It was observed that majority of students (51.90%) belonged to social class V, followed by 31.43% social class IV, 8.57% social class II, 6.67% social class III and least (1.43%) belonged to social class I.

Table-2 shows that Poliomyelitis was the most common probable cause of disability in majority of the students (77.14%), followed by congenital causes (11.43%).

Table-3 reveals that in the majority (36.6%) of physically disabled students the site of disability was Rt. Lower limb followed by 27.14% in Lt. lower limb.

Table 1
DISTRIBUTION OF PHYSICALLY DISABLED STUDENTS
ACCORDING TO THEIR BIO- SOCIAL CHARACTERISTICS

Bio-Social Characteristics	Number	Percentage
AGE GROUP		
15-17	21	10.00
18-20	100	47.62
21-23	68	32.38
24 and above	21	10.00
Total	210	100.00
BIRTH ORDER		
1	38	18.11
2	37	17.62
3	59	28.10
4	29	13.81
5	29	13.81
>5	18	08.57
Total	210	100.00
RELIGION		
Hindu	200	95.24
Muslim	10	4.76
Christian	0	0.00
Others	0	0.00
Total	210	100.00
CASTE		
General	67	31.91
OBC	99	47.14
SC/ST	44	20.95
Total	210	100.00
SOCIAL CLASS (according to modified B.G Prasad Classification)		
I	03	01.43
II	18	08.57
III	14	06.67
IV	66	31.43
V	109	51.90
Total	210	100.00

Table 2
DISTRIBUTION OF PHYSICALLY DISABLED STUDENTS
ACCORDING TO THE PROBABLE CAUSE OF DISABILITY

Probable Cause	Physically Disabled	
	No.	%
Poliomyelitis	162	77.14
Congenital	24	11.43
Injuries other than burn & medical/surgical interventions	14	6.67
Others*	10	4.76
Total	210	100.00

*Includes injuries due to burns, medical and surgical interventions

Table 3
DISTRIBUTION OF PHYSICALLY DISABLED STUDENTS ACCORDING TO SITE OF DISABILITY

Site of Disability	No.	%
B/L lower limb	34	16.19
Rt. Lower limb	77	36.67
Lt. lower limb	57	27.14
B/L upper limb	05	2.38
Rt. upper limb	08	3.81
Lt. upper limb	18	8.57
Rt. upper limb & Rt. lower limb	01	0.48
Rt. upper limb & B/L lower limb	01	0.48
Lt. upper limb & B/L lower limb	02	0.95
B/L lower limb & spinal deformity	03	1.43
Rt. lower limb & spinal deformity	01	0.48
Lt. lower limb & spinal deformity	03	1.43
Total	210	100.00

Discussion :

Maximum 47.62% of physically disabled students belonged to age group 18-20 years followed by 32.38% students in the age group 21-23 years. It was observed that birth order of maximum (28.10 %) students was third.

Among physically disabled students maximum 95.24% belonged to Hindu religion while minimum 4.76% belonged to Muslim religion. The same pattern was observed in NFHS-3(2005-2006)¹, where corresponding figures were 82% & 13% respectively.

Among physically disabled students majority belonged to OBC caste followed by General (31.91%), while the same trend was observed in the findings of NFHS-3 (2005-2006)¹. It was found that the majority of students (51.90%) belonged to social class-V while minimum 1.43% belonged to social class-I.

In the present study, in majority of students 77.14% the cause of disability was poliomyelitis and the same trend was observed by Singhi P.D. et al (1990)² and NSSO (1991)³. In the present study, monoparesis was most common (63.81%) site of disability and this is higher than observation made by Singhi P.D. et al (1990)².

Conclusion :

Maximum 47.62% of physically disabled students belonged to age group 18-20 years. It was observed that birth order of maximum (28.10 %) students was third. Among physically disabled students maximum 95.24% belonged to Hindu religion. majority of students belonged to OBC caste. It was observed that majority of students (51.90%) belonged to social class V. In the present study, in majority of students 77.14% the cause of disability was poliomyelitis. monoparesis was most common (63.81%) site of disability.

References :

1. National Family Health Survey (NFHS-3) : Indian Institute of Population Science, Ministry of Health and Family Welfare, Mumbai, India, Vol. I, 2005-2006
2. Singhi PD, Goyal L, Pershad D, Singhi S, Walia BN: Psychosocial problems in families of disabled children. Br J Med Psychol. 1990 Jun;63 (Pt2):173-82.
3. NSSO : Report no. 485, Ministry of statistics and program implementation NSSO (National sample survey organization, 58th round 2002), 2002



A STUDY OF BEHAVIOURAL ATTITUDE OF ASHAs IN PRIMARY HEALTH CENTRES OF A COMMUNITY DEVELOPMENT BLOCK OF KANPUR NAGAR

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ABSTRACT:

Objective: 1. To assess the bio-social characteristics of ASHAs.

2. To analyse behavioural attitude of ASHAs.

3. To suggest measures for behavioural changes and further strengthen the NRHM programme implementation at grass-root level.

Study Design: Cross sectional

Study Period: March 2009- March 2010.

Statistical Analysis: Percentage and Chi-square test.

Methodology: All the 135 ASHAs of randomly selected CDB Kalayanpur, Kanpur Nagar were studied by questionnaire method.

Observations: Predominantly ASHAs belonged to age group of 30-35 years (45.2%), Hindu religion (99.3%), OBC caste (54.1%), educated upto 8th class (57.8%) and Social Class IV (68.9%). Amongst all the ASHAs, the behavioural attitude of majority of them (88.1%) was found communicative.

Conclusions: In view of above observations, it is concluded that higher education level of ASHAs increases positive behavioural attitude other than their own temperament.

Introduction:

Under NRHM programme ASHAs are the main grass root level workers to strengthen the services of already existing Govt. health service providers. The behavioural attitude of these workers may affect their performance as expected by the Govt., therefore the present study was planned with following objectives-

1. To assess the bio-social characteristics of ASHAs.
2. To analyse behavioural attitude of ASHAs.
3. To suggest measures for behavioural changes and further strengthen the NRHM programme implementations at grass-root level.

Methodology:

A cross-sectional study was carried out amongst all the 135 ASHAs of randomly selected CDB Kalayanpur, Kanpur Nagar. All the study units were personally interviewed by visiting their field work areas and relevant informations were collected on predesigned and pretested questionnaire.

Results:

Predominantly the ASHAs belonged to age group of 30-35 years (45.2%), Hindu by religion (99.3%), OBC caste (54.1%), educated upto middle standard (57.8%) and from Social Class IV (68.9%) (Table-1).

Amongst all the ASHAs, the behavioural attitude of

majority of them (88.1%) was found communicative (Table-2).

Overall 88.1% of ASHAs were found communicative in their attitude, however out of Intermediate level ASHAs 94.4% were communicative whereas all graduate (100%) were communicative (Table-3).

ASHAs having higher age group (40-45yrs) showed higher communicability (100%) (Table-4).

Discussion:

1. Bio-social Characteristics

Majority i.e., 45.2% and 40% were from age group 30-35yrs and 35-40yrs. Although in the selection criteria of ASHAs (according to Training Module of ASHA Workers-NRHM 2005-2012), the minimum age of selection is 25years but in our study group, the ASHAs in age group of 25-30yrs were only 8.1%. Predominantly 99.3% ASHAs were Hindus by religion and only 1 (0.7%) was Muslim. More than half i.e., 54.1%, ASHAs were belonging to OBC caste followed by 25.2% Scheduled Caste and 20.7% General Caste. More than half i.e., 57.8% ASHAs were educated upto middle standard only, which were the minimum educational criteria laid down for their selection. Next in order were high school 23%, intermediate 13.3% and graduate 5.9% only. This indicates that lesser number of higher educated women opted for this task.

Srivastava D.K. (2009)¹ also found 95% ASHAs educated upto class 8th or above in his study.

P. Ram Milan et al. (2009)² found that more than 3/4th ASHAs of study sample were from the younger age group (<30 and 30-35 yrs) and only a few ASHAs (4.3%) were from age group $\geq$ 40yrs. Most of the ASHAs (97.3%) were Hindus and Muslim ASHAs constituted only 2.7% of the total sample. Amongst Hindu ASHAs, 42.7% were belonged to Scheduled caste while about 40.0% were OBCs followed by 17.5% were from general category.

The above finding of bio social characteristics is almost similar to our finding.

No ASHAs was found to fall in category of social class I and II. 68.9% ASHAs of social class IV were in preponderance followed by social class III (30.4%) and only ASHA worker (0.7%) was social class V.

These observations indicate that majority of ASHAs were from lower socio-economic class.

Level of education and socio-economic profile of ASHAs showed that nearly 2/3rd of ASHAs (66.7%) belonging to social class IV were educated upto middle standard only, whereas remaining, about 1/3rd were high school and above. In social class III high school and above educated constituted about 2/3rd of ASHAs and middle level educated were only 36.6%. This shows a higher proportion of educated ASHAs in social class III in comparison to social class IV.

Majority of ASHAs from all caste were belonging to middle level educated group. However lowest level strata (middle level) was found maximum in Scheduled Caste category (76.5%) followed by OBC (54.8%) and general category (42.5%). Graduate level ASHAs were maximum in General caste category (14.3%) followed by OBC (5.5%) and none in Schedule Caste category. High school level educated ASHAs were also found in increasing order with increase in

level of caste. Intermediate level educated ASHAs were maximum in OBC category (29.4%). The above pattern showed that the level of caste and level of education of ASHAs was directly proportionate in its trend.

All caste groups i.e., Scheduled caste, OBC and General caste categories of ASHAs predominantly belong to social class IV i.e., 76.5%, 67.1% & 64.3% respectively, but a higher strata of social class III, the general caste ASHAs contributed maximum (35.7%) and minimum (23.5%) by scheduled caste category. This trend indicates that lower caste ASHAs workers were more likely to fall in lower social class.

2. Behavioural Attitude:

Behavioural attitude of studied ASHAs was found predominantly communicative 88.1% and only 11.9% were reserved type.

This attitude profile was further studied in relation to educational level of ASHAs and it was found that all 8 (100%) graduate ASHAs were communicative in their behaviour followed by intermediate level (94.4%). The proportion of reserved type ASHAs was relatively higher in middle and high school level educated ASHAs in comparison to intermediate and graduate. It was evident that level of education may have an influence on behavioural pattern of ASHAs besides their own temperament.

On average (81.8%) ASHAs were having positive behaviour attitude and were found communicative but age group wise data revealed that higher age group ASHAs belonging to age group 35-40yrs & 40-45yrs were relatively more communicative (87% & 100% respectively). This showed elderly ASHAs exhibit better behavioural attitude.

Bhatnagar R (2009)³ also revealed that almost 50% in the blocks were covering population ranging from 1000-1500 and all the ASHAs have good coordination with local community and they were participating in community meeting regularly.

Table 1

DISTRIBUTION OF ASHAs ACCORDING TO THEIR BIO-SOCIAL CHARACTERISTICS

Bio-Social Characteristics	Number	Percentage
AGE GROUP (yrs)		
25-30	11	8.1
30-35	61	45.2
35-40	54	40.0
40-45	9	6.7
Total	135	100.0

Table Contd.

RELIGION		
Hindu	134	99.3
Muslim	1	0.7
Christian	0	0
Sikh	0	0
Total	135	100.0
CASTE		
SC	34	25.2
OBC	73	54.1
General	28	20.7
Total	135	100.0
EDUCATION		
Middle	78	57.8
High School	31	23.0
Intermediate	18	13.3
Graduate	8	5.9
Total	135	100.0
SOCIAL CLASS (according to modified B.G Prasad Classification, AI CPI, April 2010)		
III	41	30.4
IV	93	68.9
V	1	0.7
Total	135	100.0

Table 2
DISTRIBUTION OF ASHAs ACCORDING TO THEIR BEHAVIOURAL ATTITUDE

Behavioural Attitude	Number	Percentage
Communicative	119	88.1
Reserved	16	11.9
Total	135	100.0

Table 3
BEHAVIOURAL ATTITUDE WISE AND EDUCATION PROFILE OF ASHAs

Behavioural Attitude	Education				Total
	Middle	High School	Intermediate	Graduate	
Communicative	68 (87.2)	26 (83.9)	17 (94.4)	8 (100)	119 (88.1)
Reserved	10 (12.8)	5 (16.1)	1 (3.6)	0 (0)	16 (11.9)
Total	78 (100)	31 (100)	18 (100)	8 (100)	135 (100)

Table 4
AGE GROUP WISE BEHAVIOUR ATTITUDE PROFILE OF ASHAs (n=135)

Age Group of ASHA Workers		Behaviour Attitude			
Age Group	Number	Communicative		Reserved	
		Number	Percentage	Number	Percentage
25-30	11	9	81.8	12	18.2
30-35	61	51	83.6	10	19.6
35-40	54	47	87.0	7	14.9
40-45	9	9	100	0	0
Total	135	116	85.9	19	14.1

$\chi^2=18.97$, C.I=95%, df=3, $p<0.05$

References :

1. Bhatnagar R, Singh K, Bir T, Dutta U., Rai S, Nandan D: An assessment of performance based incentive system for ASHA Sahyogini in Udaipur, Rajasthan. Indian Journal of Public Health 2009 Jul-Sep: 166-70.
2. P.Ram Milan et al. (2009); "To study the performance of accredited social health activists (ASHA) under National Rural Health Mission". Thesis M.D, CSMMU, Lucknow.
3. Srivastava DK, Prakash S, Adhish.V, Nair KS, Gupta S, Nandan D (2009): A study of interface of ASHA with the community and the service providers in Eastern Uttar Pradesh. Indian Journal of Public Health 2009 Jul-Sep; 53(3):133-6.

