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- Neelam Mako and A. M. Elizabeth

Regional Medical Research Centre for Tribals
(Indian Council of Medical Research)
Jabalpur

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Email : bulletin_rmrct@yahoo.com

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LIFE STYLE INDICATORS AMONG TRIBES IN INDIA

G.K.Mini and G.K.Moli ***

Abstract: *Objective of the study is to determine the prevalence and determinants of life style indicators like smoking, chewing form of tobacco and alcoholic consumption among tribal population in India. The analysis was done using data from NFHS-II (1998-99).*

The prevalence of the three life style indicators under consideration is high among tribes compared to the general population in India. Age, marital status, and place of residence are observed to have considerable influence on prevalence of tobacco use and alcoholic consumption. The likelihood of the high prevalence of three indicators is observed among low socio-economic group of tribes. Low education is seemed to be significantly associated with high prevalence of the life style indicators. There is vital need for effective progammes to control tobacco use and alcoholic consumption among tribes in India focusing on males, low standard of living, lesser educated and older persons. Moreover prevention practices are urgently wanted among tribal population in India for this kind of modifiable behavioral practices since the high prevalence also indicates the future risk of life style related diseases.

INTRODUCTION

The global concern in the rising burden of deceases from communicable to non-communicable diseases is identified by researchers over the last several years. This trend is observed mostly in the developed countries of the world. The situation in developing countries, including India, is more vulnerable since the experience of double burden of disease is more prevalent. Researchers connect the non avoidable relationship with the currently emerging non-communicable disease prevalence to life style changes[1-3]. Even though the life style changes are slowly evolving, their negative impact on health is more crucial.

Smoking is the highest cause of all tobacco related health problems all over the world and also in India. About 4 million people die annually from tobacco related causes and by 2020 the estimate is about 10 million [4] and related deaths in India may exceed 1.5 million annually by 2020[5] .But the related morbidity is far beyond this. Tobacco related cancers account for one-third of the total cancers among men and one-fourth among women[6]. National level data on tobacco prevalence is currently inadequate except the national family health survey.

*Research Associate, Achutha Menon Centre For Health Science Studies,
Sree Chitra Tirunal Institute for Medical Sciences and Technology,Thiruvananthapuram-695011
minisureshkumar@yahoo.com
**Population Information Officer, Dept .of Demography, University of Kerala,
Kariavattom Campus.P.O, Trivandrum-695581
gkmoli@yahoo.com

Rising levels of tobacco consumption is observed in many earlier studies in India[7-10]. Judicial activism for the common weal is perhaps stronger in India than in any other countries[11]. The Supreme Court of India has banned smoking in public places and in public transport in November 2001. But the results of studies after that also show high prevalence of smoking [12].

According to World Health Organization, alcoholic consumption has many health social consequences resulting from intoxication and dependence. International comparable data on alcoholic consumption is very limited and the measurement is also in several ways. One study in Kerala reported high prevalence among males (54.2%) than females (17.4%) in alcoholic consumption [12].

The rationale for the study of life style indicators is their strong relationship with mortality as well as morbidity conditions. The relative importance of studying life style indicators among tribes is their comparatively high prevalence of tobacco use and alcoholic consumption in India[13]. The results of NFHS-II showed that among general population the smoking prevalence is 30% while among tribes the corresponding percentage is 45%. Tribal community with its distinctive cultural as well as social differentials has a key role in the overall prevalence of life style indicators. Research on undeniable role of tobacco use as well as the alcoholic consumption on health concerns is relevant in India where the prevalence of life style related diseases is in increasing trend. Addressing the socio-economic and demographic correlates could be an important step in the anti-tobacco movements especially in the community settings. The objective of the study is to determine the prevalence of life style indicators among tribes in India and its socio-demographic determinants. The risk factors studied in the present study are smoking, chewing of tobacco and alcoholic consumption. The study results will help in designing special strategies to the underprivileged groups likes tribes towards their modifiable risky behaviors.

METHODOLOGY

The study uses data from National Family Health Survey (NFHS-II), conducted in 1998-99. The survey covered a representative sample of 315 598 individuals 15 years or older from 91,196 households in India, among which the present study includes a sample of 44,993 tribal household informants. Even though the main objective of NFHS-II was to provide the national information on maternal and child health challenges, the survey also collected information on lifestyle indicators such as tobacco use and alcoholic consumption. The information is of considerable interest since these indicators have detrimental effects on health aspect.

In NFHS, the questions related to life style indicators are constructed for face-to face interview. A big methodological limitation related to life style indicators is that the questions for all the persons in the household were answered by the respondent to the household

questionnaire. The social disgrace attached to the life style indicators in India has great impact on the reporting bias. Also the respondent of the survey may not be aware of these types of behavioral characteristics of other members in their family. The taboo attached to these behavioral characteristics may also reflect the under reporting of data in the results. With all these limitations it is sure that the actual prevalence of these behavioral characteristic is more than what is reported.

We covered all the 26 states in India which have heterogeneous socio-economic and demographic characteristics. Univariate analysis was used to understand the prevalence of the life style indicators under consideration since further statistical analysis was very much depending on it. Bivariate techniques were used to recognize the relationship of socio-economic and demographic characteristics on the life style indicators. Multivariate technique such as logistic regression analysis was used in order to capture the indirect effect of socio-economic and demographic factors on each life style indicators. The odds ratio for each category of independent variable obtained from the analysis indicated the odds of prevalence of the three indicators(smoking, chewing and alcoholic consumption) under consideration, provided the effect of all other variables are kept constant. For each independent variable one is considered as the reference category.

RESULTS

The prevalence of tobacco use as well as alcoholic consumption among tribes in India is given in Table.1 As observed in most of the earlier studies among general populations[12,13] males show high prevalence of tobacco use and alcoholic consumption among tribal population in India.

Table.1 Prevalence of life style indicators among tribes in India

Indicators	Males	Females	Total
Tobacco use			
Only smoking	4053(19.8)	795(3.9)	4848(11.8)
Only chewing	4447(21.7)	4677(22.7)	9124(22.3)
Smoking and Chewing	3842(18.8)	583(2.8)	4425(10.8)
Smoking or Chewing	12342(60.4)	6055(29.5)	18397(44.9)
Non-users	8092(39.6)	14504(70.5)	22596(55.1)
Alcohol	7157(35.0)	2708(13.2)	9865(24.1)
Total	20434	20559	40993

The prevalence of smoking, chewing and alcoholic consumption with respect to some selected socio-demographic variables by gender is observed from Table 2. The prevalence of both form of tobacco is increasing with increase in age up to 54 years and then a declining trend is seen. Alcoholic consumption among men also shows the same trend with age. A slight variation in the prevalence of alcoholic consumption among females is observed with increasing trend up to the age of 64 years. But this is not as a serious matter since the prevalence of alcoholic consumption among tribal females is low compared to tribal men.

The differential place of difference with the life style related indicators is an important aspect especially for tribal people. The origin of most of the tribal people in India is from rural areas and the urban tribes may be the migrated ones and thus by analyzing the spatial differentials we can access the transitional changes in the health hazards of tribal population. Smoking is high among rural men and urban women. The prevalence of chewing form of tobacco is high in urban areas for both males and females. At the same time alcoholic consumption is high in rural areas without any gender bias. The observed significant spatial difference in the prevalence of alcoholic consumption among tribal women is a point of interest.

Table.2 Percentage distribution of life style indicators by background characteristics

Variables	Males			Females		
	Smoking	Chewing	Drinking	Smoking	Chewing	Drinking
Age	*	*	*	*	*	*
15-24	18.3	24.8	16.0	1.6	15.5	7.3
25-34	43.0	46.9	40.3	5.8	28.2	13.9
35-44	51.5	51.3	48.4	10.2	34.2	17.0
45-54	52.9	48.7	45.7	13.0	34.3	18.7
55-64	47.8	46.2	42.9	12.1	29.9	19.8
65+	42.7	38.6	36.5	11.9	28.0	13.8
Place of residence		**	*	*	*	*
Urban	39.4	42.1	23.9	8.1	36.9	3.7
Rural	38.5	40.3	37.6	6.4	23.0	15.4
Standard of Living	*	*	*	*		*
Low	43.3	44.2	43.1	7.0	26.1	16.4
Medium	37.3	39.0	31.4	6.9	25.3	12.2
High	30.0	34.7	23.0	4.9	25.5	5.3
Working status	*	**	*	*	*	*
Earning	33.9	47.6	46.6	5.9	24.9	23.8
Not earning	45.9	45.2	38.8	8.1	31.9	12.5

Marital status	*	*	*	*	*	*
Never	2.0	26.0	17.9	2.3	16.3	6.5
Married	47.3	47.5	42.7	7.2	26.9	15.0
Widow	44.3	43.9	47.9	12.3	33.8	16.9
Divorced	59.2	40.8	32.4	9.5	41.4	7.1
Not living together	53.6	53.9	42.9	9.9	42.2	12.7
Religion	*	*	*	*	*	*
Hindus	35.7	40.0	37.0	4.5	18.4	13.4
Christians	47.4	42.4	24.8	10.5	36.0	4.6
Others	28.7	38.6	53.5	6.2	26.6	36.3
Education	*	*	*		*	*
Illiterates	44.5	45.6	47.1	6.8	24.4	18.1
Literates	35.6	38.0	28.7	6.5	27.3	6.8

*p<.001 **p<0.05

The economic cost involved in these behavioral factors is a major alarm particularly for the tribal community who are already living in a poor economic background. Corroborate to most of the earlier studies among general population[13-15], our results also observed high prevalence of all the three indicators among the low economic status group. Reversely the lowest prevalence is observed among tribes with high standard of living.

The work status is classified as earning persons and not earning persons since more than the working status as workers and non-workers, earning money from the current work is more significantly associated with the behavioral characteristics under consideration which need extra money other than their daily expenses. The results significantly indicate that earning is not a predictor of smoking among men as well as women. But alcoholic consumption among both the sex is high among earning people.

Regarding the marital status, smoking is more prevalent among divorced men and chewing is more prevalent among currently married men. Widowers are the highest consumers of alcohol. The relationship between marital status and behavioral characteristics is more relevant among tribal women because of the social taboo associated with tobacco use and alcoholic consumption. The prevalence of smoking and drinking is higher among widows whereas the prevalence of chewing form of tobacco is highest among the separated women.

Prevalence of any form of tobacco is more among Christians in both sexes. But

drinking is more prevalent among Hindus without any gender differential.

Even though education does not have any direct influence on the behavioral characteristics, its indirect effect in the form of awareness regarding the health consequences is an important one. The study results seemed to be significantly associated with all the three behavioral characteristics with high prevalence for illiterates with exception in case of female alcoholic consumption.

Table 3 shows the results of a logistic regression analysis to find out the effect of selected socio-demographic factors on reported prevalence of each life style indicators under consideration. Logistic regressions were independently performed for each sex separately by taking each life style indicators as dependent variable. Socio-demographic variables which are significant in the bivariate analysis were applied as independent variables. The independent variables are categorical in nature and for each variable one category was selected as the reference category. The odds ratio for each category of independent variable obtained from the analysis indicated the odds of prevalence of each life style indicators compared to the reference category, when the effect of all other variables are kept constant.

Table 3: Genderwise results of logistic regression analysis for socio-demographic determinants of each life style indicators among tribes in India

Independent variables	Odds Ratio					
	Males			Females		
	Smoking	Chewing	Drinking	Smoking	Chewing	Drinking
Age(years)						
15-29 (R)	1.00	1.00	1.00	1.00	1.00	1.00
30-44	1.65*	1.39*	1.90*	2.27*	1.76*	1.31**
45-59	1.77*	1.21*	1.72*	2.67*	1.67*	1.44*
60+	1.35*	0.97	1.22**	2.50*	1.18	1.67
Place of residence						
Urban(R)	1.00	1.00	1.00	1.00	1.00	1.00
Rural	1.03	0.85**	1.25*	0.66*	0.53*	2.05*
Standard of Living						
Low	2.01*	1.26*	1.82**	2.81*	1.67**	1.75
Medium	1.58*	1.52*	1.25*	2.29*	1.32*	1.34**
High(R)	1.00	1.00	1.00	1.00	1.00	1.00
Working status						
Earning	1.68*	0.86**	0.72*	1.39**	1.33*	0.62*
Not earning(R)	1.00	1.00	1.00	1.00	1.00	1.00
Marital status						
Never married(R)	1.00	1.00	1.00	1.00	1.00	1.00
Married	1.84	1.55*	1.88*	1.42**	1.30**	1.96*
Previously married	1.96	1.60*	2.19*	1.76**	1.70*	1.78*

Marital status						
Never married(R)	1.00	1.00	1.00	1.00	1.00	1.00
Married	1.84	1.55*	1.88*	1.42**	1.30**	1.96*
Previously married	1.96	1.60*	2.19*	1.76**	1.70*	1.78*
Religion						
Hindus(R)	1.00	1.00	1.00	1.00	1.00	1.00
Christians	2.48*	1.24*	0.77*	3.61*	2.22*	0.70*
Others	1.04	1.25*	2.86*	2.25*	2.26*	9.73*
Education						
Illiterates	1.19*	1.05	1.36*	0.97	0.93	2.05*
Literates(R)	1.00	1.00	1.00	1.00	1.00	1.00

R: Reference Category
*p<0.001, **p<0.05

Age seemed to be an important determinant of the prevalence of all the three life style indicators under consideration for both sex. Compared to the young age group smoking is more prevalent in the age group of 45-59 years for tribal men and women whereas chewing was more prevalent among 30-44 year old tribes. The chance to have the use of the three indicators is high in older tribes compared to the younger one except for men chewers. Tribal rural men have higher tendency to have smoking and drinking along with lower chance to use chewing form of tobacco, compared with men living in urban area. In case of tribal women the odds ratio of tobacco use (both smoking and chewing) was lower for rural residents compared to urban women but rural women shows double chance of drinking alcohol than urban women.

The significant relationship between standards of living and life style indicators observed is to be noted. The higher chance to have the prevalence of tobacco use and drinking alcohol among the tribes with lower standard of living compared to the higher standard is a point of interest. It is noted that earning men have 68 percent more chance of smoking whereas 14 percent lower chance of chewing form of tobacco compared to men with no earning. But among females, earning is observed to be a significant indicator of using any form of tobacco.

The analysis also shows the significant and unavoidable relationship between marital status and the three behavioral characteristics under consideration. Compared to unmarried tribal men and women, currently married people shows higher chance of use of the three indicators under consideration.

Religion is significantly associated with all the behavioral characteristics. Smoking among Christian tribal men observed to be more than double chance compared to Hindu tribal men. And the chance of using any form of tobacco among females is more than double for Christians than Hindus. Overall results of religion show comparatively better picture for Hindus among males and females. Logistic regression results confirmed the role of education in the prevalence of behavioral characteristics like smoking, chewing and

drinking alcohol. The higher prevalence of behavioral characteristics of illiterate tribal people shows the indirect strong influence of education on the unawareness of hazards of these indicators.

DISCUSSION

According to WHO by the year 2020, tobacco will become the largest single cause of death, accounting for 12.3 per cent of global deaths[16] and tobacco deaths in India may exceed 1.5 million annually by 2020[5]. Among general population in India, according to NFHS-II, thirty per cent of the population 15 years or older (47% men and 14% of women) either smoked or chewed tobacco, where as the corresponding percentage from the present study among tribes is 45% (males 60% and females 30%). Prevalence of alcohol use among general population is 16.7% for males and 9.6% for females while the figures for tribal population are 35.0% for males and 13.2% for females. Thus our analysis shows high prevalence of tobacco use and alcoholic consumption among tribal people in India. Sex wise differential is seen in the three indicators under consideration with men showed higher prevalence. About 45 per cent of reported tobacco use among tribal population in India is actually creating load to the existing double burden of disease situation in the country. The information on the use of tobacco can predict the future burden of tobacco relate diseases. Our results of higher prevalence of smoking in the middle age group is of curiosity since deaths related to smoking is increasing in the middle age groups in India[17] and also as from clinical observations in some areas in India have revealed that over 60 per cent of heart disease patients under 40 years of age are tobacco users and over half of the patients aged 41-60 are also smokers[6].

Poor in India spend a larger proportion of their household income on tobacco and alcohol[14,15]. The positive association of lower socio-economic status and prevalence of the indicators will create burden in the future since the poor could not access the cost involved in the life style related diseases.

The positive influence of education on the prevalence of the life style indicators expose the need for intervention programmes related to tobacco use and alcoholic consumption among the tribal population in India. It also indirectly reflects the lack of awareness regarding the related disease burden of the life style indicators under consideration. Such socio-economic differences have been reported in other countries also[18]. The findings of the present study are interpreted with some methodological limitations. The self-reporting bias is a main one as the under reporting of these type of behavioral characteristics were common in a large household survey in a cultural bounded society like tribal population. While interpreting the results of the study it must be considered that the information on the quantity or the frequency of use of tobacco as well as alcoholic consumption were not considered since it is not available from the data source.

The high prevalence of tobacco use among tribes is to be considered as a major public health problem in a poor

country like India. The urgent need of public policy related to tobacco and alcoholic use among the vulnerable population like tribes in India is to be considered from the governmental level. Under reporting of the behavioral characteristics must be considered while interpreting the results, along with other methodological limitation of the survey data used. Adequate attention on awareness for tribal people should be given to tobacco related diseases especially because most of them are illiterates. Even though traditional taboo associated with drinking, especially among females, which existed in the society, the comparatively high prevalence of alcoholic consumption among tribal women is to be considered seriously. The life style indicators considered here are the foremost preventable cause of morbidity as well as mortality in future related diseases. This enlightens the importance of control over these avoidable risk factors.

The lack of reliable data on life style indicators among tribal population is a serious problem for making comparisons as well as making conclusions. There is no organization working in the life style related risk factor control among the general population as well as the tribal population. Our results of overall high prevalence of tobacco use as well as alcoholic consumption, jointly with socio-demographic differentials in a deprived society like tribal population, call for the urgent need of modified prevention approach towards these harmful behavioral characteristics. This high prevalence also indicates the future risk of life style related diseases is likely to be higher among tribal population.

Policies and programmes should concentrate the socio-economically backward groups like tribes for their anti-tobacco programmes and concentration should also be given to smokeless tobacco use with gender perspective. The present study results also indicate the needed literature on the socio-economic and demographic determinants of studies on life style indicators like tobacco use and alcoholic consumption among tribes in India.

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NUTRITIONAL STATUS OF PRE-SCHOOL CHILDREN AMONG BHARIA TRIBE OF PATALKOT, M. P.

Rajiv Yadav and J.Roy***

Abstract: *A comprehensive study on health and nutritional status among pre-school children of Bharia primitive tribe of Patalkot area of Chhindwara distt. of Madhya Pradesh was undertaken. The observations indicated that their diet was mainly consisted of cereals (518.3 gm), they took very low quantity of green leafy vegetables and milk. They were not using pulses in their diet. Among the nutrient contents, consumption of protein (55 g) was found adequate but consumption of Iron (20.9 mg) and Retenol (186.4 ìg) were low. Their calorie intake was much lesser than the RDA. Overall growth retardation was seen in 70% pre-school children. About 9 % pre-school children were severely malnourished. Anaemia was widely prevalent. Among the deficiency diseases Goitre was endemic in the area. Patalkot is a non-ICDS area, where health facilities were not appropriate and availability of safe drinking water was a major problem. The results of the study will be useful in the implementation of the health programmes for the upliftment of the primitive tribes of Madhya Pradesh.*

INTRODUCTION

The prevalence of the malnutrition particularly among the pre-school children is an alarming global problem affecting about one third of world population and in the immediate future having no solution[1]. In long duration this may affect both physical growth and mental development [2].

Very little work has been done to study the nutritional status of backward primitive tribal communities[3-4]. Similarly there was no scientific information available about the nutritional status of Bharia primitive tribe of Patalkot area of Chhindwara district of Madhya Pradesh. Therefore a study was planned to assess their nutritional status particularly of the vulnerable preschool children and also to know their dietary pattern.

Bharia tribes are concentrated in the districts of Sarguja, Mandla, Seoni and Chhindwara. The Bharias of Chhindwara district are one of the primitive tribes of India, as they are still practicing pre-agricultural level of technology, having low level of literacy and stagnant population growth[5].

The Patalkot area is having a population of about 1600 living in 12 inhabited villages. They are widely spread in an area of 79 sq km. Patalkot area is a deep depression in the hilly region and the valley is about 1500 ft below the normal level. The hills around the valley rise to about 3000 feet. Villages are located inside the valley. The area is composed of undulating terrain; hillls are covered with dense forests, through which several revulets of river Dudhi and Gayni flows. Most of the area is unapproachable in the rainy season.[5]

*Research Officer (Medical), ** Research Assistant, Regional Medical Research Centre for Tribals, (I.C.M.R.) Jabalpur – 482 003. E-mail: rajivshailyadav@yahoo.com

MATERIALS AND METHODS

All the households of the 12 villages within the valley were selected for the survey. The survey covered a population 1380 Bharia tribal population living in

224 households. House to house survey was carried out. Clinical examination was done among all the available individuals to determine their morbidity profile by Medical officers. A total of 260 preschool children were taken for nutritional anthropometry. Weights and heights were taken by an anthropologist using standard calibrated equipment for the assessment of nutritional status applying Gomez's classification using NIN (ICMR) Hyderabad well to do children as standard [6-7]. Ages were assessed by using calendar of local events.

The data on raw food intake of the family was collected by 24-hour recall weighment method. From the record of the raw food consumption of the whole family per day, per capita intake of various foodstuffs were calculated with the help of consumption units (CU). The nutrient intake was calculated with the help of food value tables and compared with the ICMR, RDA 1981[8-9].

Information was collected on demographic veriables like age, sex and literacy status of the population. Environment conditions and health facilities provided by the Government in the area was also collected.

RESULTS AND DISCUSSION

An average household size of 5.65 and a sex ratio of 927 females per 1000 males were found in the population. The population consisted of 18.8% preschool children (0-6 yr.), 38% below 15 yr. of age, 59.5% in the age of 15-59 years and 3.5% above 60 years of age. It showed lower life expectancy among Bharias.

Literacy level among the Bharias was observed to be very low. About 10% of them were literate. All the houses were Kuccha. Only 8.2% of the households had access to safe drinking water[10]. (Table-1)

Table 1: Socio-Demographic characteristics

1. General information	Total no. Villages	12
	No of households surveyed	244
	Total individuals covered	1380
	Sex Ratio (females/1000 males)	927
2. Age-sex composition(Yr)	0-14	38.0%
	15-59	59.5%
	60+	3.5%
3. Household size		5.65
4. Literacy rate		10.0%
5.. Occupation	Agriculture / Forest products collection	62%
	Labour & allied	38.0%
6.. Type of House	Kachha	100%
7. Safe drinking water		8.2%

The diet of Bharias mainly consisted of cereals (maize and kutki) in the form of liquid gruel called, 'Pej'. They were not consuming any kinds of pulses at all. They consumed green leafy vegetables (Bathua) in a very low quantity (5.7 gm). French beans and tomatoes were the other vegetables consumed, with a mean per CU intake of 82.3 gms. The consumption of root and tubers (11.4 gm), sugar and jaggery (14.6 g per cu), fat and oil intake was low (2.4 gm per cu) and intake of milk in the form of tea was very low as compared to the recommended dietary allowances. (Table-2)

Table 2: Mean intake Food stuff among the Bharia Per capita per day consumption unit

S.No.	Food stuffs	Intake	RDA
1.	Cereals	518.3 gm	430
2.	Pulses	Nil	40
3.	Green leafy vegetables	5.7 gm	40
4.	Other vegetables	82.3 gm	60
5.	Fats & Oils	2.4 gm	40
6.	Milk	9 ml	150
7.	Roots & tubers	11.4 gm	50
8.	Sugar & Jaggery	14.6 gm	80

Although their diet was adequate of protein as per the recommended intake (55 gm) but there was a deficiency of calories to the extent of 15 to 20%. Iron content was also not upto the mark (20.9 mg). Intake of retinol was found low. This may be due to non-availability of the green leafy vegetables in the season of survey. The Bharias were consuming non-iodized salt as a whole, 15 gm per capita per day.(Table-3)

Table 3: Mean intake Nutrient Per consumption unit among the Bharias

S.No.	Nutrients	Intake	RDA
1.	Protein	55 gm	55 gm
2.	Calories	1877 K cal	2400 K cal
3.	Iron	20.9 mg	24 mg
4.	Retinol	186.4 µg	750 µg

Table 4: Percent distribution of Bharia pre-school age(0-6Yrs) children according to Gomez's classification (Weight for Age)

S.No.	Nutritional Grades	Percentage(%)	Number
1.	Normal 90%	30.0	78
2.	Mild (75-90%) Grade - I	33.0	88
3.	Moderate (60-75%) Grade - II	26.9	70
4.	Severe (up to 60%) Grade - III	9.2	24
	Total	100.0	260

The higher prevalence of PEM in the present study could be due to more backwardness of the area, extreme poverty, and prevalence of severe infectious diseases.

Among the deficiency diseases Goitre was endemic in the area (45%). The prevalence of the disease in the pre-school children was 11.6% indicating the severity of the disease. Prevalence of Goitre was higher among female (53%) than males (38.3%). Overt form of the PEM like marasmus and kwashiorker were not detected. Anaemia was prevalent among them and 7.6% individuals were having hemoglobin level less than 9 gm.

Among the Bharia children prevalence of upper respiratory infection (URI) was 89.4% in 0-4 years and 66.6% in 5-9 years age group. Cervical adenities was seen in 9% of individuals. Scabies (5.5%) was a major skin infection among the Bharias. Stool examination recalls feco-oral transmission in Patalkot area (68%).

The prevalence of PEM in Bharias primitive tribe is lower than the rural M.P. (88.0) Gond tribes of Bastar (90.7), and Sarguja (75.5) Bhil, Bhilala tribes of Jhabua (83.8)[11]. While comparing the severity of the malnutrition (Grade-III) it was found that Bharia primitive tribal children are better than that of rural M.P. (11.5), Gonds of Bastar (9.8) and Bhil, Bhilalas of Jhabua district (11.3%) of M.P. But they are more severally malnourished than the children of primitive tribes of Baigachak area of Mandla (7.3) [12] and Gonds of Sarguja district of M.P.(6.5) [11](Table-5).

Table 5: Comparison of present study with other tribes, primitive tribes and rural M.P. according to Gomez's criteria

Sl. No	Community	No.	Normal $\geq$ 90%	Mild 75-90%	Moderate 60-75%	Severe $\leq$ 60%
1	Bharia (Present study)	260	30.0	33.9	26.9	9.2
2	Abujhmarias of Bastar	911	15.6	50.8	25.1	8.4
3	Baigas of Baigachak	749	30.3	38.8	23.6	7.3
4	Bhil,Bhilalas of Jhabua	363	16.2	34.2	38.3	11.3
5	Gonds of Bastar	725	9.3	40.5	40.4	9.8
6	Gonds of Sarguja	339	24.5	44.0	25.0	6.5
7	Rural M.P.	970	12.0	36.3	40.2	11.5

The prevalence of PEM is higher in Bharias of Patalkot area of Chhindwara district (70%) compared to a study among tribals of a tribal district of Himachal Pradesh (26.60) reported by Bhardwaj et al [13] and in a tribal hill district of Manipur (48.7) reported by Luwang et al [14]. Prevalence of low PEM was also reported in a tribal district of U.P. (58.94) [15-16] But the report of G.P. Katiyar et al [17] shows high prevalence of PEM (90.8%) in the rural children, compared to the present study

The prevalence of different grades of malnutrition was comparatively higher in NNMB study (NIN), where it was reported as 47.9%, 32.6% and 4.7% respectively for mild, moderate and severe grades of malnutrition[18].

CONCLUSIONS AND RECOMMENDATIONS

The finding shows that their diet was of unbalanced type mainly based on cereals. They were not consuming pulses at all and their intake of green leafy vegetables, other vegetables, roots & tubers. sugar and jaggery, fat and oil and milk were very low compared to recommended dietary allowances (RDA). Their diet was also deficient in nutrients like calories, iron and retinol. Only protein was adequate although it was not of good quality.

The overall prevalence of PEM was 70%. About 9% were severely affected, while 34% and 27% were mildly and moderately malnourished. Morbidity profile reveals that they were suffering from nutritional deficiency disorders like Goitre, Anaemia, B-complex deficiency disease and Reckets.

The Diet of the Bharia should be improved in all respective for which an intervention programme through Govt. policies may be initiated for improvement of the situation based on locally available resources. ICDS schemes should be implemented in the area, as it is known that this kind of schemes is very effective in the backward community.[19] Population should be educated for consuming iodized salt to avoid Goitre. Government efforts are required to ban the selling of non-iodized/ crystal salt, sold in the tribal weekly markets of the area.

There is also a need to study the nutritional status of the other vulnerable groups like pregnant and lactating mothers. The alarming position of Goitre should also be studied.

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MID DAY MEAL PROGRAMME-A PROCESS OF SOCIALISATION

Abhaya R. Joglekar*

Abstract:: *The Mid Day Meal (MDM) programme is principally based on, one meal provided to the children, who are attending elementary school (primary school). This programme was started with an object of universalizing of education by enrolment, attendance and nutritional status. Several states in our country are running this programme fully or partially. In Chhattisgarh this programme was implemented in July 2002.The present work was carried out on 400 children studying in Govt. primary schools of Raipur city. Out of 400 students 271 were girls and 129 were boys. All the subjects were analyzed for nutritional status (weight, height); haemoglobin estimation was done by cyanmethemoglobin method to find out the anaemic status. Clinical examination was carried out as an indicator of deficiency symptoms of diseases. Other parameters like enrolment, attendance, and cost analysis were also examined to analyze the impact of programme. The mean weight of experimental group was increased by 20 ± 5.17 kg to 22.87 ± 5.02 kg (14.34%increase), whereas mean height was increased by 117.76 ± 12.64 to 119.0 ± 12 cm (6.48%). The mean haemoglobin level was increased by 6.49 gm/dl to 11.11gm/ dl. The mean weight of experimental girls (56) was increased by 19.76 kg to 22.74 kg. In our study 42.5% students had dull and dry hair, 53.25% had teeth carries whereas 32.25% had dull and dry eyes. The enrolment of students was increased 2548 to2793 (9.62%). 55% (220) children had attendance more than 90%.*

The overall result of the work showed that improvement in nutritional status and haemoglobin level. Major advantage of the programme was improved enrolment, attendance and socialization, which are the most beneficial aspect of MDM. Apart from nutritional status, kitchen, fuel and cooks required further improvement for high acceptability of the meal. Parents and children should demand feeding in school, if this programme has to a shape of mass activity.

INTRODUCTION

The primary age group (6-11years) children are considered as the most vulnerable group from the nutritional standpoint. Several surveys carried out under this auspice, show that the children belonging to this group suffer from different types of malnutrition. The nutritional status of primary school children in developing country is poor as 90% adolescent girls and children suffer from iron deficiency anaemia (The HINDU July 01, 2005). Anaemia causes deficiency in IQ and hampers growth. Universal immunization programme, oral rehydration therapy, and integrated child development programme had considerable impact on child survival and malnutrition. The variety of nutritional programme has been used to alleviate malnutrition in specific groups. Its results were mixed; some have been successful in achieving the target and many have failed. So the Government started Mid Day Meal for school children in Tamil Nadu and Karnataka to overcome the problem of

*Government Navin Kanya College, Raipur-.492 001 (C.G.)

malnutrition with effect from 15th August 1995. The Govt. pays 40% of the expenditure and 60% are borne by the states. Later on by the order of the Supreme court (dated28th November 2001); this programme was introduced on large scale by all the State Governments. All the government and government aided primary school children of the country were supplied MDM, to acquire positive health.

OBJECTIVES OF THE MDM

1. To provide food for undernourished children and to improve the nutritional status and monitor it.
2. To increase the enrolment and attendance of the children specially girls.
3. To orient good food habits.
4. To incorporate nutrition education into the curriculum.

The nutritional status and educational status of children in Chhattisgarh especially that of tribes and children belonging to low socio-economic class is not satisfactory. So the govt. took this programme seriously and implemented properly according to the directives of central government.

In the newly formed tribal State of Chhattisgarh, this programme is being followed since 2001 and got implemented in schools from 1st July 2002.

This programme is running in all the 16 districts of Chhattisgarh with a coverage of 28.29 lakhs primary school children and 56,572 MTs of grains are used every year (data resource; National Programme of Nutrition Supplementation to Primary Education)[1]. Preparation and serving of food consisting of a diet of rice, dal (pulses) and/or vegetables, is being done daily in the school premises. The grain is being supplied by FCI (Food Corporation of India) and other required materials are bought from local market by the school (funded by the state governments, Rs. 1.50 per child per day), the meal is being served during the lunch break to the affect that the children seems to attend the school regularly and enjoy their lunch breaks.

OBJECTIVES OF THE STUDY

Wellness and Health objects

1. To assess and understand whether the present programme is sufficient for the mental and physical development of the children.
2. If found insufficient in terms of supplements; assessment and preparation of list of required additional supplements that would help overcome deficiencies.
3. To study the additional diet required for the children, which satisfies both physical and nutritional needs and continue to attract the children towards school and lessen the drop out rate.

Social objects

Other than the above objects, assessment of the effectiveness of this programme was on

1. Increase enrolment rate of children in school.
2. Reduce the dropout rate.
3. Increase retention rate in the schools and other related factors.

MATERIALS AND METHODS

The paper is an outcome of the project entitled "Utility of Midday Meal Programme and Scope for improvement", conducted between July 2003 to January 2004.

Selection of Schools

The present study was carried out in Raipur City, the capital of the State of Chhattisgarh. There are about 96 Government schools in the city; the city is divided in 5 zones by Primary education department. i. e. East, West, North, South and Central zone. A total of 78637 children are studying[2] in all the Government schools of Raipur city.

Out of 96 Government Primary Schools in Raipur, 6 Government and Government aided schools were selected randomly for the project. Four schools were selected from the outskirts of the city according to zone (NSEW) whereas; two schools were selected within the city (central zone). Out of six schools, two schools belonged to girls, 1 school belonged to boys and rest of the 3 were co-education schools where boys and girls both were studying. (Table 1)

Table 1: Selection of Schools

Name & addresses of the school	Status	No. of samples drawn
1 Shasakiya Prathamik Kanya Shala, Purani Basti, Raipur	Girls School	75
2 Shasakiya Prathamik Kanya Shala, Kota, Raipur	Girls School	65
3 Shasakiya Prathamik R. D Tiwari School, Amapara, Raipur	Boys only.	65
4 Shasakiya Prathamik Shala, Dumar Talab, Raipur	Co-Education	65
5 Shasakiya Prathamik Shala, Santoshi Nagar, Raipur	Co-Education	65
6 Shasakiya Prathamik Shala, Amlidih, Raipur	Co-Education	65

Selection of Samples

Selection of total subjects (400)

From 6 schools, 400 students were selected as sample by using random sampling method. Out of 400, 271 were girls and 129 were boys. It was ensured that samples were evenly distributed according to their class from 1 to 5, Table 2 showed the number of subjects selected from each class. The total number of subjects for the different class was 80, 80, 80, 78 and 82 for classes I, II, III, IV and V.

Table 2: Distribution of the subjects according to their class

Class	Number	Age (years)
I	80	6 - 7
II	80	7 - 8
III	80	8 - 9
IV	78	9 -10
V	82	10 -11
Total	400	6 - 11

The distribution of the subject facilitates to study the growth in different age groups between 6 -11 years.

Selection of Experimental Group

Out of 400 subjects, 100 were selected as experimental group by using random sampling method (Table 3). The experimental group consisted of 54 girls and 46 boys. This group was fed with Iron Syrup for consecutive 3 months daily along with mid-day meal. All these subjects were first de-wormed. The process of de-worming was followed twice in a gap of 15 days. After the additional supplementation of Iron Syrup, physical and haemoglobin examination was carried out. The details of the subjects are as follows

Table 3: Distribution of experimental group according to their class

Class	Number of students	Boys	Girls
I	17	10	7
II	22	09	13
III	21	10	11
IV	23	10	13
V	17	07	10
Total	100	46	54

The rest of 300 subjects were considered as the general group or control group. They were fed only MDM. The physical growth of both the groups was examined during the survey. All the examinations were taken thrice (at the starting of work-in July, in October and in January).

Assessment of Nutritional Status

The assessment of nutritional status was carried out by studying physical measurements and other examinations by using the following techniques.

Anthropometry

Anthropometric measurements are the best parameters to assess the physical growth of a human being. Weights (kg.) and heights (cm) were taken as an indicator of health status. Weight was measured by using beam balance bare footed nearest to 100 gms. Weight was measured thrice and then mean was taken. Height was measured using non stretchable tape bare footed nearest to 1 cm. Body Mass Index[3] was calculated by weight and height measurement using the following formula.

$$BMI = \frac{\text{Weight (Kg)}}{\text{Height (m)}^2}$$

All the above results of the subjects were further classified weight by age[4], height by age[5] and BMI categories.

Haemoglobin Estimation

Haemoglobin estimation of all the subjects was carried out using Cyanmethemoglobin method by finger prick[4]. 20µl /0.02ml blood was collected by pipette, and then by using drabkin's solution, haemoglobin was estimated by digital photo-colorimeter. All the haemoglobin levels were compared with standards.

100 subjects (experimental group) were supplemented with Fesovite (iron and multivitamin syrup) then the final haemoglobin level was checked. All these results were compared with the rest of the group (300).

Other Analysis

As it is already known that the work was based on mid day meal (MDM) programmes, the amount of food served to the students was measured in terms of cup.

- Approximately 100 gm uncooked rice and 30 gm vegetables were served to these children. The mid day meals were served during the lunch break.
- Enrolment of the student; attendance of the students, dropout rate from the school and scholastic performance was also observed during this survey project.
- The hygiene condition around the cooking area and wash/utility area, hand wash facility and toilet practices were also observed during this exercise. The monthly expenditure on fuel was also recorded by oral questionnaire.

Statistical Analysis

Standard methods were used for statistical analysis. Mean, Standard Deviation, and 't' tests were applied to get the significance of data collected.

OBSERVATIONS AND RESULTS

Experimental Group

The anthropometric measurements are the best indicators for measuring physical growth. Impact of the MDM was noted in this regard. The physical development of the experimental group as well as control group was assessed during the survey. The measurements were first taken in the month of July - August, when MDM was started, then after the supplementation of Fesovit in the months of (December-January). It showed the positive impact of MDM and iron supplementation.

The overall physical development of the children who had MDM and Iron supplementation (experimental group) was better than those who had only MDM (rest of the subjects). Tables-4&5 showed the increase in anthropometric measurements and thus resulting improved nutritional status.

Table 4: Comparisons of mean Anthropometric measurements of experimental group (100)

Pre-MDM Period					Post MDM + iron Period			
Boys N=46		Girls N=54			Boys N=46		Girls N=54	
Height Cm.	Weight Kg.	Height Cm.	Weight Kg.		Height Cm.	Weight Kg.	Height Cm.	Weight Kg.
101.42 ±6.32	15.00 ±3.46	93.75 ±11.56	15.40 ±2.31	6+	108.92 ±12.48	17.28 ±3.14	105.25 ±11.02	18.06 ±2.79
106.50 ±6.68	16.80 ±3.08	104.58 ±7.82	17.66 ±3.05	7+	112.85 ±7.07	19.10 ±3.92	110.83 ±9.84	20.50 ±2.39
118.44 ±6.64	21.00 ±3.35	110.62 ±7.24	20.25 ±4.15	8+	123.61 ±7.81	24.00 ±2.95	115.83 ±7.01	22.91 ±4.12
121.73 ±7.31	22.30 ±2.78	112.75 ±8.11	19.80 ±2.61	9+	126.69 ±6.59	25.46 ±1.89	123.00 ±8.06	22.20 ±1.81
129.14 ±6.09	25.85 ±5.24	120.15 ±10.74	26.00 ±7.49	10+	132.85 ±3.93	28.57 ±2.82	131.75 ±7.45	30.30 ±6.05

Table 5: Comparison between pre and post MDM reading of experimental group

	Pre-MDM		Post-MDM+iron supp.		t value	Level of Significance
Variables	Mean	SD	Mean	SD		
Weight (Kg.)	20.00	5.17	22.87	5.02	3.98	0.01*
Height (Cm.)	117.76	12.64	119.00	12.00	4.15	0.01*
BMI	15.92	2.70	16.10	2.39	0.52	NS

* $P < 0.01$

Comparison between reading I and reading II of experimental group

Variables	Reading I N=100	Reading II N=100	Increase in value	% Increase
Weight (Kg.)	20.00	22.87	2.87	14.35
Height (Cm)	111.77	119.01	7.24	6.48
Haemoglobin gm/dl	6.49	11.11	4.62	71.19

Control Group

This group was fed MDM only. Control group had shown substantial physical growth (Table-6&7), but not as experimental group in the study. The increase in weight and height of this group is as follows

Comparison between pre and post MDM reading of control group.

	Pre MDM		Post MDM		%
Variables	Mean	SD	Mean	SD	Increase
Weight (Kg.)	20.59	1.45	22.49	5.45	9.03
Height (Cm.)	112.45	9.52	118.04	14.32	4.96

Table 6: Comparison of mean Anthropometric measurements of control group (300)

Pre-MDM Period					Post-MDM Period			
Boys N=125		Girls N=175			Boys N=125		Girls N=175	
Height Cm.	Weight Kg.	Height Cm.	Weight Kg.		Height Cm.	Weight Kg.	Height Cm.	Weight Kg.
97.96 ±6.58	15.44 ±1.89	95.90 ±08.66	16.03 ±2.73	6+	103.87 ±8.66	16.88 ±1.76	102.00 ±07.98	18.25 ±2.79
108.48 ±9.13	17.87 ±3.58	103.86 ±8.77	17.71 ±3.22	7+	110.19 ±9.75	18.60 ±3.92	111.50 ±7.15	19.68 ±3.38
115.00 ±11.13	20.04 ±4.49	113.79 ±8.73	20.83 ±2.53	8+	117.29 ±13.08	21.58 ±3.98	116.92 ±9.49	22.34 ±2.10
125.00 ±9.08	23.24 ±3.83	118.01 ±10.94	24.00 ±5.38	9+	127.14 ±7.67	24.57 ±3.95	123.80 ±9.51	25.35 ±4.83
126.13 ±8.95	23.90 ±4.52	124.17 ±11.21	26.31 ±5.06	10+	135.16 ±8.36	27.30 ±4.72	133.00 ±9.33	28.82 ±5.32

The increase in weight and height of experimental group (MDM+Iron supplementation) had better result than the control group. The rate of growth of experimental group was better than the control group as shown below.

Comparison between control group and experimental group

	Experimental Group		% increase	Control Group		% increase
	Pre MDM	Post MDM		Pre MDM	Post MDM	
	Mean	Mean		Mean	Mean	
Weight (Kg)	20.00	22.87	14.34	20.59	22.49	9.03
Height (Cm)	111.76	119.01	6.48	112.45	118.04	4.96

Table 7: Comparison between boys and girls of both the groups

	Experimental Group				Control Group			
	Girls N=56		Boys N=46		Girls N=175		Boys N=125	
	1St	2nd	1St	2nd	1St	2nd	1St	2nd
Weight (Kg)	19.76	22.74	20.28	23.02	20.93	22.85	20.11	21.90
Increase in weight %	15.08		13.51		9.17		8.90	
Height (Cm)	108.3	117.04	115.8	121.3	111.0	117.3	114.5	119.0
Increase in height %	8.06		4.74		5.60		3.98	

Attendance and Enrolment

A major positive impact of MDM was observed on the total number of enrolments. In the year 2002, there was a decrease in enrolment in all the six schools, but it was increased in 2003-2004 and 2004-2005 session; this fact was observed during the survey/study. Though enrolments in the year 2004 were still comparatively lesser but no specific cause was observed or noticed while interacting with parents (Table-8). The sharp increase in girls enrolment show the positive impact of MDM. The cause of this could be the parents' confidence in MDM Programme.

Table 8: An analysis of data of total enrolled students before and after MDM

Year	School (g)No.1	School (g)No.2	School (b)No.3	School (b,g)No.4	School (b,g)No.5	School (b,g)No.6	Total
2000	262	272	457	334	683	683	2691
2001	294	231	381	371	698	728	2703
2002	272	221	298	273	684	594	2342
2003	275	230	325	367	659	692	2548
2004	280	255	370	503	665	720	2793

The MDM programme has played a pivotal role in the increase of the student's enrolments/attendance. The eradication of the root cause of "Food" or "Hunger" was taken seriously by the government by making it available in schools; attractive enough offer for the children to attend the school and for the parents to send their children to schools for fulfilling the basic need of food.

While interacting with parents it was noticed that some parents enrolled their kids only because of MDM. Some parents reported that, it was much easier for them to encourage their children to go to school as the food was one of the motivating factors.

Another observation was that some parents sent their children only during the lunch break for the want of food. In the opinion of most of the teachers MDM programme increased the enrolments. The greatest impact of MDM was noticed for girls in the present study.

Absenteeism

The survey required consistent interaction with the teachers and the parents. Teachers from all the schools reported that MDM programme made it much easier for the children to stay back in the school after the Lunch break, where as there have been records of children not returning to school after the lunch break.

MDM seems to have been on the way to solving the problem of hunger. The assurance of at least one free meal a day for their children has been a great boon to the poor/labour class and family headed by single women (widows/separated) in terms of vulnerability for food availability. MDM has definitely contributed in offering food security to the deprived classes.

While interacting with teachers it was observed that the meal was served to those children, whose attendance was more than 80%. Total attendance of the subjects was collected. The attendance data of our samples appears to be satisfactory. (Tables-9)

On weekends the attendance rate has been much higher as the MDM programme offers deserts on these days (The Indian deserts Halwa and Kheer).It was observed that children had their specific demands for food of their choices; right from soyabadi (dried soyabean balls) to chana (gram seeds), poha (flattened rice), dalia (porridge) and Kadhi (cooked and flavoured butter milk).The availability of food has definitely lessened the absenteeism.

Table 9: An analysis of the annual attendance of the children

Attendance	Class I	Class II	Class III	Class IV	Class V
>90%	41	37	47	43	52
80-90	35	42	27	34	24
<80%	04	01	06	01	06

The Process of Socialization

The MDM programme has been successful in inculcating the habits of socialization and discipline in children. Children learnt to form a queue, sharing, caring, sitting and eating together and

enjoyed the feeling of togetherness. Children also picked up good habits of hygiene such as washing hands before having food and the importance of cleanliness of surrounding areas. Teaching about more dining manners also improved the eating habits of children. It was noticed that some of the senior students also helped the teacher and 'ayabai' (maid) in management of the exercise of food distribution and, required and related works after it. Apart from its contribution in physical and mental development of children, MDM has also immensely contributed towards children coming

DISCUSSION AND CONCLUSION

This was done in order to record the observations of pre and post lunch programme impact. On the basis of our findings as discussed earlier, main observations are as under:

The overall result of the work showed that improvement in nutritional status, haemoglobin level, improved enrolment, attendance and socialization, which are the most beneficial aspect of MDM are found in the study.

Out of six schools, five schools were undertaking the programme properly and regularly. All the six schools had a cook to prepare the meals. The cook was supposed to undertake cooking, serving and cleaning job. Only two schools had proper kitchen or covered room for cooking. Cooking was done in sheds or in open. Four out of six schools were using fire wood and kerosene as fuel. All the schools had proper utensils for cooking. The utensils were clean and adequate in number and size. On many occasions teaching staff were found engaged in MDM programme. The rice supplied by FCI is generally not of good quality. The rice bags contain sumptuous amount of broken rice (Kanki), small stones and other foreign particles. Dal along with rice was not served regularly. On an average dal was served 6 to 7 times in a month, in this way the proper nutrition was not provided. The surroundings in which the food is cooked and consumed is not hygienic. The student eats in open ground. The attendance and enrolment both have increased. The girl child enrolment was higher than boys. This may be due to the fact that girl child had a last priority of going to school and thus they were first to get attracted with MDM.

There was no remarkable improvement in scholastic performance of control group and experimental group's results .Scholastic performance is affected by several factors such as balanced diet, home environment, parent's education, parent's motivation etc. In our study all the students were belonging to low socio-economic class so the other influencing factors were more dominant for school performance. It is beyond all shades of doubts that the MDM has benefited the children but not to the desired level. Nobel Prize winner Dr Amartya Sen, economist has rightly said that MDM shall help in reducing the illiteracy. Today's child having primary education (may be due to the attraction of meal) shall definitely be a better parent than his own parents and thus the results can be seen in the third generation to come. The society is not obliging the children by giving them a meal but is paying for an annuity which will secure a better and prosperous future of the country. Central cooking has already been followed and implemented in Raipur City. Recently 6 day meal plan has been

incorporated in MDM programme in Raipur City. Civil society participation and participation of NGOs has increased and observed in Raipur City. The funds have been revised from Rs. 1.50 to Rs 2 per child per day.

It is not a programme where concept of cost benefit applies. The benefits are intangible but beyond the preview of any measurement scale. The programme should not go down to the mechanism as a routine but should be undertaken with zeal of "Revolution".

SUGGESTIONS

The experience of the present study shows that MDM has to contribute much to the future of Indian children .

1. The primary school children should be checked regularly for anaemia and multivitamin deficiency diseases at least twice a year. They should be de-wormed twice a year because worms are the main cause of illness and anaemia. They should be supplemented with iron and multivitamin tablets.
2. As it is reported earlier that dal is served 7-8 times in a month. If dal is cost wise not fit in our budget, it can be replaced by Soya badi. 100gm soyabean gives 43gms of protein and it is comparatively cheaper than dal, so the protein requirement can be fulfilled by this. Soya bean badi can added to every vegetable.
3. Instead of 5 days meal(rice based),it can be divided under twoheads I.3meal days,based on rice ,vegetable or dal along with soya badi,chana II.Out of 5 days snacks should be served for 2 days. The can be provided with dalia,(sweet or salty),poha,kheer(soya milk),upma(with vegetables),even soya-biscuits and butter milk. In this way rice can be replaced by nutritious snacks.
4. The MDM programme is successful in Andhra Pradesh, Karnataka, and Tamil nadu where parents are involved in school management. This can also be implemented in this strategy.
5. The number of direct labour and their wages should be revised. Thought can also be given to improvement of infrastructure, use of LPG, centralised cooking etc.
6. Govt. must examine the cost aspect of the programme. Infrastructure facilities need to be improved.
7. Government must increase the parental and NGO's participation in this programme. This will not only reduce the burden of teaching staff but also improve the effectiveness of the programme.

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A PRELIMINARY NOTE ON THE BLOOD PRESSURE PROFILE OF RURAL SANTALS OF BIRBHUM DISTRICT OF WEST BENGAL

Krishna Roy*

Abstract: *Hypertension, the major cause of cardiovascular diseases (CVD) and the most chronic factor for disability adjusted life years, is prevalent nowadays, both in developing and developed countries of the world. This major health disaster is indeed a characteristic feature of the affluent societies, but the present cross sectional study is able to show that the risk of CVD is present among the tribes also. The prevalence of hypertension in a tribal (Santal) population of Birbhum district in West Bengal was studied. On the basis of a one-year study (2005-2006), a total of 220 subjects aged 18 years and above (104 males, 116 females) were studied from seven villages of the district. It appeared that Santals, specially the younger males, though affected with chronic energy deficiency of various grades, were also found to suffer from Stage I to Stage II of hypertension, indicating their relatively earlier onset of adverse cardiovascular risk. The present study has shown that prevalence rate of Systolic Hypertension (SHP) is 38.1% in young males (= 25 years of age) and that of Diastolic Hypertension (DHP) is 32.5% in the same population. Compared to the males, prevalence rate of hypertension in young and middle aged females is much less (approximately 20% and 12% respectively). With increase in age, the mean systolic and diastolic pressures showed a rise in both the sexes. Besides age factor, their life style has indicated that excess of salt intake, changed food habit (i.e.lack of green leafy vegetables and fruits in the diet); alcohol and tobacco intake may be the major risk factors for hypertension.*

INTRODUCTION

Cardiovascular diseases (CVD) have been estimated to be the most chronic factor for the disability adjusted life years lost by 2020[1]. In the developed countries, at least one third of all CVD are due to five major risk factors and the most important of which is hypertension[2]. The prevalence pattern of hypertension in developing country like India has increased by about 30 times among urban- dwellers and by about 10 times among the rural inhabitants in the last three to six decades[3,4]. In fact, information on hypertension and its risk factors are available in India maximally from the urban populations[3] compared to their rural counterparts[4] and very little data are available for the community with poor socioeconomic and educational background, such as population dominated by tribal people of India[5, 6]. Prevalence of hypertension, as a major health disaster, is indeed a characteristic feature of the affluent societies[7]. But, as India is undergoing an epidemiological transition and is on the threshold of an

*Reader, Department Of Physiology, Suri Vidyasagar College, Suri, Birbhum - 731 101 (W.B.)
E-mail: krishna.roy@rediffmail.com

epidemic of CVD, hypertension prevalence has increased from 4% to 33% in the last three decades[1,3]. This problem has already affected the helpless major tribal community of India, is not yet clear. There is hardly any research on the variations of hypertension and cardiovascular status of the Santals, one of the numerically dominant tribes of West Bengal, especially in the context of Birbhum district of the state. In view of the above, the present work has been undertaken among the adult Santal population inhabiting a few villages of Birbhum district of West Bengal to evaluate epidemiological profile of their blood pressure in relation to their nutritional status and life style.

MATERIALS AND METHODS

Selection of subjects:

The present study was conducted on 220 adults (116 females and 104 males aged 18-60 years), chosen randomly from seven villages of the Birbhum district. For this selection, multistage, random sampling technique was adopted, i.e. at first, three blocks out of the nineteen blocks of the district, were chosen randomly and next at least two villages from each of the blocks were selected; thereafter from each of the villages, at least 15 to 20 subjects of each sex were arbitrarily chosen. All the study participants agreed to act as subjects for the entire study period. Although some of the villages were multi-ethnic, Santals, the target group for this study, were numerically dominant in all the seven villages. The precision level for sampling was aimed at involving at least 25% of the total population of Santals from each of the villages, but this could not be achieved always as many of the Santals of these villages, did not wish to act as subjects. The villagers were mostly cultivators or agricultural workers, and were also found to be engaged in different types of manual work in nearby industrial sectors. The selected villages were *Bhaluka, Beldanga, Sangrampur, Salbuni, Gobra* and *Vellurbandh and Bankati*. All these villages were located within 5 km radius of the Sadar subdivision of Birbhum district. Along with the adult Santal subjects, 45 male and 45 female adult non- tribal subjects (Bagdi: a scheduled caste) of similar socio- economic back ground were also chosen in the similar fashion as control subjects from three of the seven villages for experiments. The entire survey was carried out during the period of March 2005 to May 2006.

Evaluation of Blood pressure and assessment of risk factors for hypertension in Santals :

Initially, Santal families were randomly selected from each of the villages. After selection of the families, all available members of the selected family who were at 18 years of age or above at the time of the study were then included for the door-to-door survey. Blood pressure was measured by sphygmomanometer in sitting posture and under resting, non-working condition. Information on age, sex, ethnicity, literacy, alcohol intake, smoking

pattern, physical activity, occupation, dietary pattern (as obtained through 24 hours recall method), and amount of salt consumption was collected using a standard and pre-tested questionnaire. Based on JNC-VII criteria[8], hypertension was recorded among the subjects in the following way:-

1. Normal: Systolic and diastolic blood pressure(SBP/DBP) = 120mmHg. and = 80mm Hg. respectively.
2. Prehypertensions: SBP= 120-139mm Hg. and DBP = 80-89 mm of Hg,
3. Stage-1 hypertensions: SBP = 140-159mm Hg. and DBP=90-99 mm of Hg.
4. Stage-2 hypertensions: SBP: = 160mmHg. and DBP: = 100 mm Hg

Evaluation of nutritional status of Santals:

Nutritional anthropometry including measurements of height and weight were made by standard techniques[9]. Overall nutritional status of adults was determined by the conventional[10] simple method i.e. the Body Mass Index (BMI) [defined as Weight in kg/ Height in square meter]. Persons with BMI values less than18.5 were considered to suffer from chronic energy deficiency (CED). BMI value 18.5 - 24.99 was considered as Normal[10]. Food habit of the subjects was obtained not by the conventional quantification method in terms of ACU, but by self reported qualitative information only

Statistical Analysis:

Mean values and standard deviations of all the variables were obtained. Pearson's product moment bivariate correlation coefficients were obtained to derive associations between two selected variables (BMI and Blood Pressure records in Adult Santals). Two tail student's t- tests were also performed for testing of significance.

RESULTS AND DISCUSSIONS

The study participants of both sexes were further categorized according to their age in three groups, such as young adults (age = 25 years), middle-aged (age >25 years but = 40 years) and old (>40 years). The result showed that 38.1% of young adult males (= 25 years), 30.5% of middle-aged males and 28% of aged males were suffering from Systolic hypertension (SHP). Young adult females and middle-aged females on the contrary, were found to be less affected (19% and 20.4% respectively) by SHP. However, age dependent SHP was found to be more prevalent in older females (56%). Analysis of Diastolic hypertension (DHP) showed that aged females (= 40 years) were suffering more from this condition than their male counterparts (36% vs. 24%) (Table-1). Though the older females showed higher mean values of SBP and DBP (Table-2) compared to their male

Table 1: Prevalence of Hypertension in Adult Santals

Hypertension status	Sex	N	Age Criterion*		
			A(n=40)	B(n=46)	C(n=26)
SHP	F	116	19%	20.4%	56%
DHP	F	116	12%	12.2%	36%
Both SHP & DHP	F	116	24.3%	16.3%	36%
			A(n=39)	B(n=40)	C(n=25)
	M	104	38.1.%	30.5%	28%
	M	104	32.5%	23.7%	24%
Both SHP & DHP	M	104	30.5%	23.7%	24%

SHP= Systolic hypertension, DHP = Diastolic hypertension,

*A=25 yrs, B=25-40yrs, C=40 yrs

N= Total Sample size, n= sample size for each age group.M=Male, F=Female

counterparts, young adult Santal males exhibited significantly higher mean value of SBP(133.3 mm Hg.) in comparison to the females (127.2mm Hg).of the same age group ($p<0.01$).Interestingly, control non-Santal populations(Bagdi: a scheduled caste), residing in the same socio- economic milieu, did not show similar results for younger adult male population. (Table-2), although age dependent hypertension was also observed in both the sexes of this community. Pre-hypertensive status of the Santal population in all the three age groups was also noteworthy (Table-3). Many of the hypertensive Santals were habitual drinker, smoker and were found to use smokeless tobacco also. (Table-4). Prevalence of hypertension in case of Santal- tobacco users (smoke- less and smoking) of this study was not always uniform. However, alcohol consumption showed higher prevalence for hypertension. Regarding nutritional status of the Santals as measured by BMI, approximately 45% of the female populations of all age groups were found to suffer from CED, while progressive under-nutrition was found in the male population along with the increment of their age (Table-5). Correlations between BMI and blood pressure values (Table-6) were found to be significant in case of females ($p<0.05$), but not in males ($p>0.05$).

Research studies by WHO had indicated that non-communicable diseases (NCD) account for almost 60% of global deaths and 46% of global burden of disease in 2000[1] and among all the NCD, Cardiovascular diseases (CVD) occupy a central role. As the diseases had touched both the developed and developing countries[3,4,11], it seemed interesting to search whether the said diseases had already knocked at the poor and hapless Santals , the main tribal community in Birbhum district[12].

Table 2: Mean and S.D values of SBP and DBP of Santals and Non- Santals.

			Age Criterion*		
B.P record	**Sex**	**N****	**A**	**B**	**C**
			[Mean±S.D] (mm Hg.)	**[Mean±S.D] (mm Hg.)**	**[Mean±S.D] (mm Hg.)**
SBP[A]	F	116	127.2±10.4?	124.7±14.4	138.4±13.4
	M	104	133.3±6.4 ?	127.4±15.4	134.7±14.3
DBP[A]	F	116	79.6±9.4	77.9±10.4	89.3±11.5
	M	104	83.2±11.8	82.3±10.9	82.9±-5.81
SBP[B]	F	45	118.5±5.4 (nb=15)	125.7±4.2 (nb=15)	135.4±1.4 (nb=15)
	M	45	124.1±2.8	128.4±5.3	136.1±4.7
DBP[B]	F	45	72.8±3.7	75.9±6.2	84.4±1.8
	M	45	76.2±3.4	80.3±1.9	78.9±-2.7

A : Blood pressure record of adult Santals .

B : Blood pressure record of adult Bagdi population (Non- tribe) ;
*A= 25 yrs, B=25-40yrs, C= 40 yrs

nb= sample size of non-tribe ,
N**= Sample size for tribe.
Degrees of freedom:
218 [(116-1)+(104-1)=218].
M=Male, F=Female

Table 3: Prevalence of pre-hypertensive status in Adult Santals

Pre-Hypertension Status	**Sex**	**N****	**Age Criterion***		
			A	**B**	**C**
SBP=120-139 mm Hg	F	116	41.1%	44.9%	16%
	M	104	51.2%	38.8%	36%
DBP=80-89 mm Hg	F	116	35.7%	20.4%	28%
	M	104	17%	36%	32%

*A=25 yrs, B=25-40yrs, C=40 yrs
N**= Sample size

Elevated blood pressure had long been found to be correlated with the onset of CVD, and considered to be the primary risk factor for CVD for a particular community. The present cross-sectional study had reflected an alarming rate of hypertension in these poorer sections of Birbhum district. Both age and sex dependent variations of systolic and diastolic hypertension among the Santals were found to be noteworthy. This study had also revealed some important findings e.g. considerably higher prevalence of both systolic and diastolic hypertension in aged females than in aged males (36% vs.24%). Similar reports had also been made in rural, un-industrialized population of India by Malhotra et al[4]. Moreover, in the young adult section of the Santal community, male subjects were found to exhibit higher prevalence of hypertension. Variations in current cardiovascular health status, including prevalence of hypertension in the tribals of India, though available in some special cases like an agricultural tribe of Andhra Pradesh[5], or tribes of hilly area , such as Sherpas of Himalayas[13], regarding Santals, the major tribal community of West Bengal, relevant data could not have been obtained till date. Reports about recent studies by Gan et al[14] had disclosed that hypertension in young Asians could be an alarming problem in the coming future. Moreover, pre-hypertensive status (mainly systolic) of young male Santals of this study appeared to be maximum (51.2%) compared to the rest of the population (Table-3).

In search for the cause(s) of hypertension especially among the younger section of Santal community, a number of parameters, such as their traditional habits, like tobacco usage, alcohol - drinking, were measured along with their nutritional status and food habit. As assessment of nutritional status provides an indirect measurement of quality of life of a particular community[10] and nutritional anthropometry (BMI), being a widely used non-invasive, rapid and inexpensive method, for the assessment of overall nutritional status of adults of different communities[10,15], relevant data (BMI) were obtained from Santals from all age groups. Although, several studies had been carried out on the general health and nutritional status of many of the tribal populations in India[16,17], especially for the Santals, very few studies had been conducted even on their nutritional aspects[15,18,19].The present study had indicated that although greater percentage of women were suffering from chronic energy deficiency (CED), older males were more undernourished than their female counterparts (Table-5). Insufficient food intake in one hand, and factors such as breast- feeding, pregnancy might also act as precipitating factors for the female Santals. The causes for under nutrition in older males might be due to their lack of unemployment, poor economic condition etc. But, unlike the findings by other investigators[4.13,14], significant correlation (Pearson's product moment correlation coefficient) was found to exist (Table-6) between the BMI values and blood pressure records, of adult Santal females only ($p>0.05$) but not in case of males. Indeed, 30.5% of young adult male Santal population exhibited both SHP and DHP,

though 31.9% of them were found to suffer from CED. Thus the young adult male Santals exhibited hypertension independent of BMI. When food habit of this community was recorded in a qualitative manner, in terms of self-reported consumption of food items (24 hours recall method), it was found that their diet contained generally rice, with a very small amount of locally available green-leafy vegetables and fruits, occasional intake of egg and fish.

Table 4: Prevalence of Hypertension in Adult Santals according to Tobacco use and Alcohol consumption

		Subject No		% of SHP		% of DHP	
Subject of Addiction	**Category**	**M**	**F**	**M**	**F**	**M**	**F**
Tobacco	Smoker	85	48	25	22	35	28
	Non-Smoker	19	68	35	15	28	32
Smoke-less Tobacco	User	70	34	40	07	28	16
	Non-User	34	82	18	10	12	35
Alcohol	Habitual-drinker	95	30	45	30	60	40
	Occasional drinker	9	45	20	10	12	05

Table 5: Chronic Energy deficiency (CED) Status in Adult Santals.

Nutritional Status	**N** M=104 F=116**	**Age Criterion***		
		A	**B**	**C**
Normal	F	53.7%	53.1%	56%
CED	F	47.6%	46.9%	44%
Normal	M	69.1%	52.3%	41%
CED	M	31.9%	47.7%	59%

*A=25 yrs, B=25-40yrs, C=40 yrs
N**= Sample size, M=Male, F=Female

They also showed the habit of consumption of meat from conventional and non- conventional sources (like, fowl and duck or snake, baby-crow, pig, rat etc.) as and when available and plenty of table salt (15-20 grams/day) regularly. Although dose response relationship was not measured between daily intake of table salts and hypertension status of the Santals, majority of the hypertensive Santals were reported to consume large amount of table salts (>25 grams/day). Salt consumption, had been found to be a risk factor (though not always[13]) of hypertension[20] as had been seen in Oraon tribes[6] and also in other populations[21]. Deficient intake of fruits and vegetables by present day Santals of Birbhum might be another risk factor for hypertension. These fruits and vegetables in general, had reported to provide magnesium, potassium and other micro-nutrients which might lower blood pressure[22,23]. Probable causes of hypertension among these Santals could be thus due to one or more causes lying in their food habit. e.g. excess salt and intake, lack of vegetables in the diet.

Apart from food habit, excessive alcohol consumption in Santal male and female had been found to be a significant predictor of hypertension (Table-4), specially the DHP. Alcohol drinker showed higher mean DBP values (92.8 mm Hg.± 7.8). Higher prevalence of SBP was also found in the drinker group than the non-drinker, especially in the young adult males. Similar observations had been made by Dyer et al [24] and also by other investigators[4,13]. Prevalence of hypertension in case of tobacco usage (smoke- less and smoking) was not always found to be uniform in this study, although epidemiological study had shown role of smoking in raising blood pressure[11].

Table 6: Pearson's product moment bivariate correlation obtained between BMI and Blood Pressure records in Adult Santals.

Blood pressure	BMI(kg/m^2)		Level of significance*	
	Male	Female	Male	Female
	(n=104)	(n=116)	df:102	df:114
SBP	0.14^{ns}	0.19**	ns	**
DBP	0.16^{ns}	0.17^{ns}	ns	ns

*Two tail t-test was performed; $p<0.05$

**Significant at 95% confidence level., ns:not significant, df:Degrees of freedom

CONCLUSION

In conclusion, the present study has shown that there is growing trend of hypertension in the Santal community. The profiles of pre-hypertensive individuals according to the JNC-VII criteria, is also quite large especially among the younger generation. Thus, the result of this study demands further investigations in this field at the biochemical and genetic level. The report of this study is also suggestive of the necessity to make effective steps for the prevention of hypertension among these disadvantaged people through health education, lifestyle changes, dietary modification, and avoidance of urban stress which was hitherto unknown to them.

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SOME SOCIO-ECONOMIC CORRELATES OF FERTILITY EXPLORING RCH DATA FROM NAGALAND

Kh.Narendra Singh*

Abstract: *The present study attempts to ascertain the impact of socio-economic conditions like educational level, standard of living and age at marriage on fertility level among the Naga women. The data revealed a correlation between educational level and number of children ever born in some district. However, it does not hold true for the entire tribal community. In certain districts, the level of education did not influence the mean children ever born to them. For any tribal community, traditional belief system plays an important role in decision-making process of an individual. Since cultural values plays a significant role in child bearing process of an indigenous community, educational level alone cannot necessarily lower the fertility level, the cultural belief and practices might have restricted using modern family planning methods. For example, many Naga women consider that a child is gift of god and a new baby is always welcome in the family. There is a need to understand the local culture in order to make the ongoing family planning programme successful. Knowledge and awareness on the modern contraceptive usage should imparted especially to the tribal mothers*

INTRODUCTION

A number of studies have examined the independent influence of socio-economic factors on female age at marriage. Many studies have found education to be one of the most crucial factors and have independent influence on age at marriage of a male or a female as compared to other factors. However, the education level of female is noted to be more consistently and positively related to her age at marriage. Cleland and Jejeebhoy showed that in almost every country in South Asia, women with education get married "roughly two to five years later than uneducated women"[1]. A study of twenty six developing countries sponsored by the United Nations finds that age at marriage invariably increases with the level of education in all of the countries examined [2], despite the fact that "the age at marriage varies widely across countries". Further, age at first birth of the woman, socio-economic condition, geo-climatic condition and health facilities also lead to lower fertility level. Among the various socioeconomic determinants of fertility, education, especially female education, has received considerable attention from scholars and researchers. Sharma and Ratherford [as described in Jeffery and Basu[have argued that in India, "a 10 per cent increase in the female literacy rate seems to be associated with a 0.5 decline in total fertility rate" [3].

The main objectives of the present study are: a) to study fertility level of the women in Nagaland; b) to examine the relationship between age at consummation of marriage and fertility level and outcome of pregnancy and c) to study the relationship between education level, standard of living and fertility.

*Assistant Professor, Himgiri Nabh Vishwavidyalaya, Dehradun-248 006 (H.P.)
E mail:khangembam@yahoo.com

MATERIAL AND METHODS

Little attention has been given by the demographers to understand the population dynamics of the tribal populations in India which comprise around nine percent of the country's population. North east India has the unique distinction of having more than one hundred tribal communities which dominate the total population of the region.

The study was conducted in the state of Nagaland, which is one of the tribal states in north east India. In Nagaland, tribal population constitutes about 88 percent of the total state population and most of them belong to Naga tribe. Nagas are also one of the major tribal groups in north east India. There are about fourteen sub tribes of Naga and each tribe has its own dialect and cultural features. The are the Angami, Ao, Chakhesang, Chang, Khemungan, Konyak, Lotha, Phom, Pochury, Rengma, Sangtam, Sema, Yimchunger and Zeliang. Nagaland is a hilly state bounded by Myanmar on the east, Arunachal Pradesh on the north, Assam on its west and Manipur on the south. According to 2001 census [4], the population of the state was 1.9 million constituting about percent of the population of India. Sex ratio of the state population is 901 females per 1000 males. The literacy rate of the population (seven years and above) is 67 percent with 72 per cent males and 62 percent females. The state has registered highest growth rate of population during 1991-2001 when its population grew by 64.41 percent.

Data were obtained from the district level household survey on Reproductive and Child Health (RCH), carried out in Nagaland state during 1998-1999, sponsored by Ministry of Health and Family Welfare, Government of India. The study was conducted in all the seven districts of the state viz. Kohima, Mokokchung, Mon, Phek, Tuensang, Zunheboto and Wokha. Using the Probability Proportion to Size (PPS) technique, 50 primary sampling units (PSUs-village/ward) were taken as per 1991 census. In order to take account of no response of the participants, due to various reasons, an over sampling of 10 per cent was done to cover1100 households per district. In other words, 22 households from each PSU were selected following circular systematic random sampling. A total of 6,830 samples were collected from the entire state. The data were collected from currently married women between 15-44 years age group who are the usual residents of the household and are considered as eligible women. Data used for analysis is on education level, standard of living, age at marriage, children ever born and children surviving. Standard of living index has been calculated using scaling techniques and the values as used are type of house, source of drinking water, source of lighting, fuel use for cooking, toilet facility and ownership of items. Three categories viz. low, middle and high standard of living based on the total scores.

RESULTS AND DISCUSSION

Socio-economic characteristics of the currently married women

Classification of the respondents by age shows that 35 per cent of the women were between 15-29 years age and the remaining 65 percent were above 30 years of age. About 15 per cent of the currently

married women consummated their marriages before attaining the legal age at marriage i.e, 18 years for girls. Almost all the respondents were Christians (97 percent) belong to Scheduled tribe. (Table-1) The overall literacy levels among the currently married women were 68 percent, with 35 per cent having completed at least 10 years of education. About 60 per cent of the respondents fall under low, 36 per cent in medium and only four per cent in high standard of living in the state. It has been observed that Kohima district recorded highest percentage of households with high (10.2 per cent) and medium (61 percent) standard of living, followed by Mokokchung with high (5 per cent) and medium (55 percent). The low standard of living was found highest in Tuensang and Zunheboto districts (90 percent each).

Table 1: Background characteristics of the currently married women age 15-44 years

District/State	No. of women	Residence		Religion		Level of education			Standard of Living		
		Rural	Urban	Christian	Others*	Illiterate	0-9	10+	Low	Medium	High
Kohima	1090	72.1	27.9	87.8	12.2	32.4	24.3	43.2	28.8	60.8	10.2
Mokokchung	909	67.7	32.3	98.5	1.5	8.1	43.3	48.4	40.0	55.0	4.9
Mon	736	85.5	14.5	95.1	4.9	50.8	30.5	18.6	49.1	44.1	6.6
Phek	1004	82.5	17.5	99.4	0.6	46.4	24.5	28.9	72.6	25.1	1.9
Tuensang	1082	91.9	8.1	98.0	2.0	41.6	45.1	13.2	89.8	9.6	0.5
Wokha	909	79.8	19.2	98.1	1.9	2.2	19.1	78.6	48.5	46.8	4.2
Zunheboto	1100	74.0	26.0	99.3	0.7	44.0	45.0	10.8	89.7	10.1	0.0
Nagaland	6830	79.1	20.9	96.6	3.4	32.2	33.1	34.5	59.8	35.9	4.0

*Others include Hindu, Muslim, Buddhist and Sikh

Children Ever Born and Children Surviving

The mean number of children ever born and surviving were 4.1 and 3.6 respectively. The completed fertility level are measured by the mean number of children ever born to women aged 40-44 years in the state was 5.8 (Table-2). Completed fertility at the national level as measured by the mean children ever born to currently married women aged 40 – 44 years is 4.5. Therefore, the state is showing alarmingly high completed fertility level as compared to the national data.

The mean number of surviving children increases with age, reaching at 5.4 children to women aged 40-44 years.

District level variation is evident, as the mean number of children ever born and children surviving to women aged 40-44 years were highest in Phek district with 6.6 and 6.1 and it is lowest in Mokokchung district with 5.0 and 4.7 respectively.

Table 2: Age at marriage to currently married women age 15-44 years by level of fertility

Sr.	District/ State	Age at consummation of marriage		Mean children ever born			Mean children surviving		
		Less than 18 years	18 and above	Male	Female	Total	Male	Female	Total
1	Kohima	21.3	78.6	3.1	2.8	6.0	2.9	2.7	5.6
2	Mokokchung	18.4	81.5	2.4	2.6	5.0	2.4	2.4	4.7
3	Mon	13.9	86.0	3.0	2.6	5.7	2.9	2.4	5.3
4	Phek	11.0	88.9	3.5	3.1	6.6	3.2	2.8	6.1
5	Tuensang	16.4	83.5	3.2	3.0	6.3	3.0	2.7	5.7
6	Wokha	19.8	80.2	3.0	2.8	5.9	2.8	2.6	5.4
7	Zunheboto	6.6	93.3	2.7	2.7	5.4	2.5	2.4	4.9
8	Nagaland	15.3	84.6	3.0	2.8	5.8	2.8	2.6	5.4

Usually, there is an inverse relationship between the level of women's education, standard of living and the children ever born to them. Similar trend has been observed in this study, as an increase in the level of education there is a decrease in the number of children ever born to them. An illiterate woman in the reproductive age (15-44 years) on an average had four children as compared to a woman with 10 years of education who had three children.

As expected, there is a negative association between educational attainment of a woman and mean number of children ever born. Hence, it can be said that higher the education attainment of a woman, lower is the fertility level. The better-educated woman (high school and above education) could have lower order births than the less educated women and illiterate. The cultural factors especially among the tribal communities, plays an important role in decision-making process of an individual. This can be observed here, in spite of higher level of education and as well as high economic status, the fertility level still shows high in some districts of the state.

Completed fertility that is mean children ever born to women in the age group 40-44 years is 5.8 and it comprises an average of 3.0 male children and 2.8 female children. Out of 5.8 mean children ever born to women in the 40-44 year age group, an average of 5.4 children survived. By sex of children, 2.8 mean numbers of children and 2.6 mean numbers of female children survived.

Level of education, standard of living and outcome of pregnancy

About 95 per cent of the currently married women had live birth and three percent had abortions in the state (Table-3). It has been observed that the prevalence of

abortion was found highest in Mokokchung district (8.5 per cent) followed by Wokha (3.1 per cent). The literacy rate in these two districts was also found higher as compared to other districts.

It is also observed that there is higher fertility among those women who falls under low standard of living. Table 2 shows that the level of fertility is highest in the districts Viz. Phek (6.6) and Tuensang (6.3). The standard of living index data shows that about 73 per cent in Phek and 90 per cent in Tuensang district falls in low standard of living (Table-4). Similarly, lowest fertility was observed in Mokokchung district (5.0) and 60 per cent of the household falls under medium and high standard of living.

The status of women is known to have important implications for fertility performance. Studies of Hari (1991), Mahadevan, et.al., (1987) have shown that fertility declines with the raising status of women [5,6]. According to Mahadevan et.al., (1987), "an increase in the level of emancipation of women significantly depresses fertility behaviour, irrespective of all other factors [6]. Since more Kerala women have a high level of emancipation and low fertility, the emancipation of women per se has significantly contributed to the decline of fertility in the Kerala village". Meghalaya, a state of matrilineal society having high social status for the women also has much higher fertility (4.45) than that of Kerala women (1.7), West Bengal (2.6) and Delhi (2.6) (Census 2001). It is apparent from the above discussion that the higher social status of women alone cannot reduce the fertility of a population

Table 3: Level of education, outcome of pregnancy and age at consummation of marriage of the eligible women

Sr.	District	Level of education			Age at consummation of marriage		Outcome of pregnancy		
		Illiterate	0-9	10+	Less than 18 years	18 and above	Live birth	Still birth	Abortion
1	Kohima	32.4	24.3	43.2	21.3	78.6	98.5	0.9	0.4
2	Mokokchung	8.1	43.3	48.4	18.4	81.5	91.0	0.3	8.5
3	Mon	50.8	30.5	18.6	13.9	86.0	99.0	0.5	0.3
4	Phek	46.4	24.5	28.9	11.0	88.9	96.4	1.2	2.2
5	Tuensang	41.6	45.1	13.2	16.4	83.5	94.6	2.0	3.2
6	Wokha	2.2	19.1	78.6	19.8	80.2	94.1	2.7	3.1
7	Zunheboto	44.0	45.0	10.8	6.6	93.3	93.9	2.3	3.6
8	Nagaland	32.2	33.1	34.5	15.3	84.6	95.4	1.4	3.0

Table 4: Children ever born to currently married women age by level of education and standard of living

District/State	Mean Children Ever Born			Mean Children Surviving			Standard of Living		
	Age 40-44 years			Age 40-44 years					
	Male	Female	Total	Male	Female	Total	Low	Medium	High
Kohima	3.1	2.8	6.0	2.9	2.7	5.6	28.8	60.8	10.2
Mokokchung	2.4	2.6	5.0	2.4	2.4	4.7	40.0	55.0	4.9
Mon	3.0	2.6	5.7	2.9	2.4	5.3	49.1	44.1	6.6
Phek	3.5	3.1	6.6	3.2	2.8	6.1	72.6	25.1	1.9
Tuensang	3.2	3.0	6.3	3.0	2.7	5.7	89.8	9.6	0.5
Wokha	3.0	2.8	5.9	2.8	2.6	5.4	48.5	46.8	4.2
Zunheboto	2.7	2.7	5.4	2.5	2.4	4.9	89.7	10.1	0.0
Nagaland	3.0	2.8	5.8	2.8	2.6	5.4	59.8	35.9	4.0

CONCLUSION AND SUGGESTION

There is an inverse relationship between the level of women's education, standard of living and the children ever born to them. As there is an increase in the level of education there is a decrease in the number of children ever born to them. An illiterate woman in the reproductive age (15-44 years) on an average had four children as compared to a woman with 10 years of education who had three children. Hence, it can be said that higher the education attainment of a woman, lower is the fertility level. The better-educated woman (high school and above education) could have lower order births than the less educated women and illiterate. It is also observed that there is higher fertility among those women who falls under low standard of living.

No single factor can be held responsible for higher fertility. Cultural values are considered as the important determinants of fertility. Under the changing social situation, cultural values are also changing. Some studies in India and other Asian countries have cited the importance of cultural values as a major determinant of fertility behaviour [7].

Several reasons were reported by the women for their preference of more children, among which, common reasons are: to continue the lineage, to increase family/clan members, to increase the ethnic population size, and to support in cultivation or other household works and for old age security etc.

The major suggestions therefore are:

- Measures needs to be taken to increase female literacy/educational levels as they have a very high impact on both the age at marriage and birth timing
- Nagaland being a tribal state, the fertility control programmes should be carried out with proper understanding of the local culture

and social indicators such as occupation, type of family, education, land holding and housing etc.

- Culturally appropriate Information Education and Communication strategies are needed for preventing early marriage and child bearing emphasizing the health rationale.

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AWARENESS, PERCEPTIONS AND PRACTICES OF HEALTH AFFECTING BEHAVIOR AMONG THE MALES AND FEMALES IN ALWAR DISTRICT OF RAJASTHAN.

Neelam Makol* and A.M.Elizabeth**

Abstract: *The level of awareness, perception and practices of health affecting behaviour among population is very important to develop strategy for the control of the expanding life style diseases. The objective of the paper is to highlight the above-mentioned level of knowledge related to health affecting behaviour among the males and females in the Alwar district of Rajasthan. The study finding shows that the community people are well aware of the harmful effect of alcohol and tobacco chewing and smoking on health, and reports the observance of high incidence of such behaviour among the community people. However on enquiring about the self-consuming of such addicted items high percentage among males above 19 years of age (48%) followed by menopausal women (25%) and adolescent males (11.7%) agreed to have these addicted behavior.*

INTRODUCTION

Life style diseases have greater implication on effective and efficient functioning of human being. In the modern world there is an increase in life style related diseases, which is generated by the individual him selves to a large extent by oneself so called and presumed health boosting behaviour (i.e. alcohol consumption, smoking and tobacco chewing) and it is increasing day by day especially among the adolescents, demanding a need for appropriate policy, strategy and plan of action to control its growth. A number of studies have reported the bad effect of tobacco and alcohol consumption on health by developing oral premalignant lesions, erythroplakia, development of diabetes and vascular complications among the Indians [1-4]. Cigarette smoking leads to increase in male and female infertility [5] and increase the risk of epithelial ovarian cancer [6]. Tobacco chewing, alcohol consumption, dietary practices and other reproductive factors (e.g. parity and maternal age at first birth) did not influence the risk of ovarian cancer[7]. In this paper, an attempt has been made to know the awareness, perceptions and practices of Health Affecting Behavior i.e. the life style indicators such as tobacco and alcohol intake among males and females in Alwar district of Rajasthan. These life style indicators are of considerable interest because the uses of tobacco and alcohol have detrimental effect on health. But the present study does not touch or bring about a correlation between personal habits of consumption suffered. This paper is partly outcome of the whole study related to Reproductive Health Issues among the males and females of the district, where information related to the personal habit of consumption suffered was not collected during the survey as it was not the part of the objectives of the study.

* Research Officer, ** Assistant Research Officer, Department of Population Genetics & Human Development, National Institute of Health and Family Welfare, New Mehrauli Road, Munirka, New Delhi-110067. E-mail: amsheeba@yahoo.com

MATERIAL AND METHODS

Study Area

The study was conducted in Alwar district of Rajasthan.(India). This district was selected based on the criteria of nearness and approachability to National Institute of Health and Family Welfare, New Delhi. Alwar district is situated 132 kilometer away from state capital Jaipur. The district ranks second in population size in the state. The total area of the district is 8380 square kilometer and entire district is divided into fourteen community development blocks. According to recent census figure (2001), population of the district is 2.9 million people belonging to different castes, creeds and religion. However no differentiation with respect to caste, creed or religion has been made to understand their reproductive health problems and life style indicators. Four Community Development Blocks i.e. Rajgarh, Tijara, Behrore and Malakheda were selected for the present study. From these four Community Development Blocks, four Community Health Centers and eight (8) Primary Health Centers (PHC) i.e. two (2) PHCs from each Community Health Center were selected for detail study. These health units were also selected on the basis of the criteria of availability of functioning CHC/ PHC with adequate facilities for clinical and gynecological examination and essential laboratory investigation facilities for selected individuals. From the 575 villages within the total eight (8) PHCs selected, 32 (5.5%) villages were selected based on the distance from the CHC / blocks headquarters i.e. 60% nearby and 40% farther ones. The convenience and approachability for selected sub samples to come for clinical and gynecological examination in the selected PHC and CHC was considered while choosing the near by villages.

Sampling and Data collection Technique

From selected 32 villages, a total of 1007 households were included in the study. Males and females aged above 15 years from selected households were considered as samples to seek information related to reproductive health problems and life style indicators. The Study population included total of 1884 individuals of which 1212 were females and 672 were males. The study population was classified as married females (949) aged 15-45years i.e. (36 married adolescent females of 15-19 years and 913 married reproductive age group females of 20-45yrs), 92 unmarried adolescent females of 15-19 years and 171 premenopausal and menopausal women. Among the male respondents were 77 adolescent males (15-19yrs) and 595 males above 19 years. Detailed information regarding socio-demographic profile, reproductive health problems and the life style indicators were collected on the pre-tested, semi-structured questionnaires through extensive interview. Specific questions pertaining to reproductive health problems as perceived by the respondents and services utilized for the same were collected from the selected samples of males and females.

The respondents reported on these life style indicators themselves so there is less chances of missing out of accurate information. Even though, in addition, to the extent that social stigma may be attached to the use of some of the substance underreporting is likely.

RESULTS

The results of the study are presented in

the following three tables. The assessment of the table-1 shows higher percentage of awareness among males and females on the harmful effect of tobacco intake (Smoking and chewing) on health. Besides this, majority of the respondents were also aware of tobacco intake in various forms i.e. Smoking and chewing among different age groups of males and females in their community. In regard to alcohol consumption, majority of males and females are reported to have awareness of its harmful effect on health. (Table –1)

Table 1: Awareness among the males and females.

Aware about	**Reproductive Females 15-45 Years (N-949)**		**Adolescent females 15-19 yrs (N-92)**		**Menopausal females >45 yrs (N171)**		**Males>19 Yrs (N-595)**		**Adolescent males 15-19 yrs (N-77)**	
	No	%	No	%	No	%	No	%	No	%
Tobacco smoking is injurious to Health										
Yes	782	82.4	73	79.3	141	82.5	544	91.4	76	98.7
No	30	3.2	2	2.2	19	11.1	20	3.4	0	0
Don't know	137	14.4	17	18.5	11	6.4	31	5.2	1	1.3
Tobacco smoking common in your community										
Among Males										
Yes	869	91.6	77	83.7	157	91.8	558	93.8	74	96.1
No	51	5.4	5	5.4	12	7.0	16	2.7	03	3.9
Don't know	29	3.0	10	10.8	2	1.2	21	3.5	0	0
Among females										
Yes	528	55.6	60	65.2	96	56.1	332	55.8	49	63.6
No	387	40.8	26	28.3	72	42.1	243	40.8	28	36.4
Don't know	34	3.6	6	6.5	03	1.8	20	3.4	0	0
Among adolescent										
Yes	393	41.4	41	44.6	73	42.7	346	58.2	45	58.4
No	499	52.6	44	47.8	95	55.6	218	36.6	32	41.6
Don't know	57	6.0	7	7.6	3	1.8	31	5.2	0	0
Tobacco chewing is harmful to health										
Yes	748	78.8	72	78.3	122	71.3	523	87.9	73	94.8
No	29	3.1	3	3.3	23	13.5	24	4.0	01	1.3
Don't know	172	18.1	17	18.4	26	15.2	48	8.1	03	3.9
Alcohol consumption is harmful to Health										
Yes	747	78.7	75	81.5	123	71.9	509	85.5	70	90.9
No	90	9.5	4	4.3	15	8.8	28	4.7	04	5.2
Don't know	112	11.8	13	14.1	33	19.3	58	9.8	03	3.9

On enquiring about the complications that may arise due to intake of alcohol and tobacco in any form, it seems that almost all are aware of at least one symptom or complication that may arise or happen. Very few respondents reported to have no knowledge about any complication. These may be either due to the non-understanding of the question asked to them or may be due to the shyness to discuss on the subject as societal turning down attitude is attached to such kind of consumption behaviour. (Table –2)

Table 2: The complications due to tobacco and alcohol intake

Complication	Reproductive Females 15-45 Years		Adolescent females 15-19 yrs		Menopausal females >45 yrs		Males >19 Yrs		Adolescent males 15-19 yrs	
	No	%	No	%	No	%	No	%	No	%
What are the complication due to tobacco smoking										
Lungs problem/asthma cold/difficulty to breath	519	66.4	50	54.3	76	53.9	408	75.0	39	50.6
Cancer/stone/tumour	191	24.4	24	26.0	18	12.8	137	25.2	12	15.5
T.B chest problem	240	30.7	22	23.9	34	24.1	194	35.7	38	49.3
Teeth problem	26	3.3	2	2.17	2	1.4	17	3.1	01	1.29
Gastric problem/ stomach pain/loss of appetite	25	3.2	5	5.45	15	10.6	6	1.1	01	1.29
Liver damage/ Jaundice	44	5.6	3	3.26	18	12.8	10	1.8	07	9.0
Heart problem/ Damage	15	1.9	1	1.08	2	1.4	6	1.1	01	1.29
Mental weakness/ General weakness	74	9.5	12	13.0	21	14.9	67	12.3	12	15.5
Don't know	25	3.2	0	0	0	0	16	2.9	2	2.59
What are the complication due to tobacco chewing										
Lungs problem/asthma Cold/difficulty to breath	309	41.31	17	23.6	53	43.4	161	30.8	09	11.68
Cancer (oral) /tumour	173	23.1	25	34.7	26	21.3	238	45.6	32	41.5
T.B/Chest problem	143	19.1	13	18.0	22	18.0	52	9.9	15	19.48
Teeth problem/gum bleeding	161	21.5	25	34.7	31	25.4	38	7.3	07	9.09
Gastric Problem/stomach pain loss of appetite	23	3.0	1	1.4	2	1.6	49	9.4	03	3.89
Liver damage Jaundice	22	2.9	2	2.8	7	5.7	18	3.4	03	3.89
Heart problem/damage	12	1.6	0	0	1	0.8	7	1.3	0	0
Mental weakness/ Gen. Weakness	58	7.8	8	11.1	13	10.7	57	10.9	11	14.28
Don't know	52	7.0	8	11.1	0	0	126	24.1	08	10.38

What are the complication due to alcohol consumption										
Lungs problem/asthma cold/difficulty	103	13.8	19	25.3	21	17.0	71	13.9	03	3.89
Cancer/stone/tumor	82	11.0	20	26.7	15	12.2	54	10.7	13	16.8
TB/chest problem	237	31.7	24	32.0	39	31.7	117	23.0	21	27.27
Teeth problem	6	0.8	0	0	0	0	16	3.1	0	0
Gastric problem/stomach loss of appetite	11	15	12	16.0	1	0.8	7	1.4	3	3.89
Liver damage/Jaundice	197	26.4	19	25.3	25	20.3	56	11.0	17	22.0
Heart problem damage	44	5.9	0	0	4	3.3	10	2.0	01	1.29
Mental weakens/ General weakness	202	27.0	11	14.7	39	31.7	282	55.4	18	23.3
Other physical and socioeconomic problem	59	7.8	0	0	6	4.9	10	2.0	02	2.59
No response	73	9.8	7	9.3	0	0	55	10.8	20	25.9

On enquiring about the self-intake or habit of tobacco or alcohol consumption among the males and females (Table-3) majority reported to have no such habits among themselves. This may contradict the finding that is reported in the Table –1 where majority admits that in their society males and females practice these habits. Hence, it seems that people are reluctant to disclose their own habit of consuming these addicted things due to the societal stigma attached with this kind of consumption behaviour. Among those who smoke, the bidi is the most preferred one followed by hukka among both males and females, both of which have high carcinogenic effect [1,4]. Further the study shows that the habit of smoking is high among males above 19 years (48.6%) followed by menopausal females (25.1%) and adolescent males (11.7%). The NFHS (1998-99) report of Rajasthan shows that the rural males who shows the habit of chewing pan masala/ tobacco constitutes 17.8%, drinking alcohol 11.8%, currently smoke 43.4% and among adolescent males those chewing pan masala/ tobacco is 8.7%, drinking alcohol 1.7% and currently smoke is 7.3%[8]. Among adolescent females those chewing pan masala or tobacco represents 1.5% among menopausal women those who are chewing pan masala or tobacco represents 11.5% and currently smoke constitutes 16.2%. Thus the study shows that males above 19 years of age and menopausal females are considered as role model for other age groups particularly among adolescents in encouraging consumption of these addictive items.

Table: 3 Habit of tobacco and alcohol intake among the males and females

Habit	Reproductive Females 15-45 Years		Adolescent females 15-19 yrs		Menopausal females >45 yrs		Males >19 Yrs		Adolescent males 15-19 yrs	
	No	%	No	%	No	%	No	%	No	%
Are you in the Habit of Smoking										
Yes	97	10.1	1	1.1	43	25.1	289	48.6	9	11.7
No	842	88.8	87	94.6	128	74.9	301	50.6	67	87.0
No response	10	1.0	4	4.4	-	-	5	0.9	01	1.3
If yes since how long (Years)										
<14	41	42.7	0	0	20	46.5	12	4.1	03	3.9
>15	34	35.2	1	1.1	20	46.5	273	92.0	06	7.8
No response	22	22.9	0	0	3	7.0	4	1.4	0	0
What do you smoke										
Bidi	73	75.0	1	0	28	65.1	270	0	6	7.8
Cigeratte	3	2.0	0	0	0	0	37	0	1	1.3
Huka	17	17.8	0	0	11	25.6	0	0	0	0
Other/ Ganja/Chares	4	4.2	0	0	4	9.3	11	3.8	2	2.6
How many per day										
0-5	72	75.0	1	0	40	93.3	0	0	0	0
6 and More	20	20.8	0	0	01	2.3	0	0	2	2.6
No response	5	5.20	0	0	2	4.7	0	0	65	0
Are you in the Habit of tobacco chewing										
Yes	20	2.1	0	0	05	2.9	146	24.5	18	23.4
No	917	96.6	90	0	166	97.1	435	73.1	56	72.7
No response	12	1.2	2	0	0	0	14	2.4	03	3.9
If yes how long (Years)										
<14	9	45.0	0	0	2	40.0	5	3.4	05	6.5
>15	11	55.0	-	-	3	60.0	102	69.8	13	16.9
No response	0	0	0	0	0	0	0	0	59	76.6
How many packet per day										
One	10	50	0	0	5	100.0	42	28.8	16	20.8
Two & More	10	50.0	0	0	0	0	95	68.2	05	6.5
No response	0	0	0	0	0	0	19	13.0	56	72.7
Are you in the habit of alcohol consumption										
Yes	3	0.3	0	0	0	0	92	15.5	0	0
No	924	97.4	84	0	171	1000	482	81.0	74	96.1
If yes how long (Years)										
<14	0	0	0	0	0	0	12	13.1	0	0
>15	3	0.3	0	0	0	0	80	86.9	0	0

Discussion

With regard to awareness, perception and practices related to tobacco and alcohol consumption, seems to have general awareness ranging from 79.3% - 98.7% for tobacco smoking, 71.3% - 94.8% for tobacco chewing and 71.9% - 90.9% for alcohol consumption between different age groups of males and females on this health affecting habits. However there is a lack of adequate knowledge or detailed awareness with respect to complications that may arise due to addiction of these life style behaviour among these communities. Though IEC activities are carried out to control the life style habits at national level, but there is a need to develop proper IEC activities for providing adequate and correct information relevant to these communities on various aspects of this sensitive but important subject, particularly focusing for the adolescent males and females to control health-affecting behaviour, which is now emerging and spreading in our society, requiring huge investment in health care system.

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