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## DO GENDER DIFFERENCES EXIST IN MALNUTRITION STATUS OF TRIBAL POPULATION OF CENTRAL INDIA?

**Epidemiology**

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## ABSTRACT

The present study evaluates the gender differences existing in malnutrition status of tribal population. A Community based cross sectional study was conducted among 100 tribal adults aged 30 years and above residing at tribal areas (Bhaurad, Beldur and Kalakamtha) of Taluka Malegaon, District Washim of Maharashtra. A house to house survey was carried out and detailed history regarding socio-demographic and nutritional status was inquired. Anthropometry was also performed. It was observed that majority of male tribal population was addicted to smoking, ghutka chewing and alcohol. The prevalence of undernutrition (52.5%) as well as obesity (11.7%) was predominant among female tribes as compared to male tribes in whom the prevalence of undernutrition was found to be 43.9% and obesity to be 2.4%. Hence appropriate intervention strategies are needed for prevention and control of malnutrition such as increasing awareness and promoting healthy dietary habits.

## KEYWORDS

Gender, tribes, malnutrition.

## INTRODUCTION

Primitive tribal groups are the most marginalized and vulnerable communities in India. In India, 427 groups have been recognised as scheduled tribes.[1] They form approximately 8 per cent of the total Indian population. These tribal groups inhabit widely varying ecological and geo- climatic conditions (hilly, forest, desert, etc.) in different concentration throughout the country with different cultural and socioeconomic backgrounds. Due to their remote and isolated living, tribal groups are difficult to reach.[2-5] The tribal population groups of India are known to be the autochthonous people of the land. Tribal are often referred as ADIVASI, VANYAJATI, VANVASI, PAHARI, ADIMJATI and ANUSUCHIT JAN JATI, the latter being the constitutional name. In India, 427 groups have been recognised as scheduled tribes. They form approximately 8 per cent of the total Indian population. These tribal groups inhabit widely varying ecological and geo-climatic conditions (hilly, forest, desert, etc.) in different concentration throughout the country with different cultural and socioeconomic backgrounds. Due to their remote and isolated living, tribal groups are difficult to reach.[4]

The health problems need special attention in context of tribal communities of India. Available research studies point out that the tribal population has distinctive health and nutritional problems governed by their habitat, socioeconomic, cultural and ecological settings.[6] Moreover there is a burden of communicable and non-communicable diseases prevalent in tribal communities of Maharashtra. Poverty, illiteracy, ignorance, unawareness, resulting in malnutrition, lack of access to health care facilities, poor sanitation, scarcity of safe drinking water, poor Maternal and Child health (MCH) services has been traced out in several studies as possible contributing factors to dismal health condition prevailing among the tribal population in India.[7-8] With this background, the present study was conducted to assess the gender differences existing in malnutrition status of tribal population of Central India.

## MATERIAL AND METHODS:
**Study design:** Community based cross sectional study
**Study settings** : Tribal areas (Bhaurad, Beldur and Kalakamtha) of Taluka Malegaon, District Washim of Maharashtra State.

**Sample size:** 200 tribal adults residing at aforesaid areas
Study Period : 6 months (April- September 2015)

## Selection criteria:
### Inclusion criteria:
Tribal people aged 30 years and above and willing to participate in the study were surveyed

### Exclusion criteria:
Tribal people aged less than 30 years and not willing to participate in the study as well as Pregnant and lactating mothers were excluded from the study.

### Data collection procedures
The present study was performed as a part of ICMR STS 2015 (Indian Council of Medical Research, Short term studentship) after receiving approval from Institutional Ethics Committee. A house to house survey was conducted and eligible adults were interviewed after obtaining written informed consent using a pretested, predesigned questionnaire. Detailed history regarding socio-economic and demographic particulars was collected from the selected adults. Moreover, nutritional status of the study subjects was inquired in detail. Anthropometric measurements like weight and height were measured using standard procedure. On similar lines Body Mass Index (BMI) was determined for all subjects by weight in kilograms divided by the square of the height in metres (kg/m2).[9] Blood pressure was measured using mercury Sphygmomanometer blood pressure apparatus. Thorough General and Systemic examination was carried out.

### Statistical analysis plan
Appropriate statistical tests like percentages, mean, standard deviation, Chi square test and t test were analysed using Statistical software Epi Info version 2.3; year 2009. P values less than 0.05 were considered as statistically significant.

## RESULTS:
### Table I: Mean parameters among study subjects

| Parameter | Mean ± SD | | t test p value |
|---|---|---|---|
| | Male (n=41) | Female (n=59) | |
| Age | 51.2 ± 13.9 | 50.6 ± 14.6 | 0.75 |
| Body mass index (BMI) | 19.1± 4.0 | 18.8 ± 4.0 | 0.98 |
| Systolic BP | 119.2 ±14.2 | 119.3 ± 13.8 | 0.83 |
| Diastolic BP | 79.0 ± 11.1 | 79.5 ± 10.7 | 0.78 |

Table I shows the mean parameters among study subjects. It was observed that mean age and mean BMI were slightly more in males as compared to females. Whereas Mean systolic and mean diastolic blood pressure were slightly more in females as comparison to males. Although the difference between males and female was not found to be statistically significant (p>0.05) on applying unpaired t test.

### Table II: Distribution of study subjects according to addictions

| SN | Addiction | Male (n=41) | Female (n=59) | χ2 test df 1 p value |
|---|---|---|---|---|
| 1 | Tobacco | 5 (12.1%) | 35 (59.3%) | 22.39 < 0.001 |
| 2 | Smoking | 2 (4.8%) | 0 | 2.9 <0.05 |
| 3 | Alcohol | 2 (4.8%) | 0 | 2.9 <0.05 |
| 4 | Ghutka | 1 (2.4%) | 1 (1.6%) | 0.06 >0.05 |
| 5 | Multiple habits | 28 (68.2%) | 9 (15.2%) | 29.19 <0.01 |
| 6 | No habits | 3 (7.3%) | 14 (23.7%) | 4.6 <0.05 |

Table II shows the distribution of study subjects according to addictions. It was found that majority of females (59.3%) had habit of chewing tobacco as compared to males (12.1%). On applying chi square test, the difference between males and females was found to be statistically significant (p<0.001). None of the females were addicted to smoking and alcohol, whereas 5.8% of males were found to be addicted. The difference between males and female was found to be statistically significant (p<0.001). It was also observed that majority of males (68.2%) had multiple habits as compared to females (15.2%). The difference between males and female was found to be statistically significant (p<0.001). Most of females had no habits (23.7%) as compared to males (7.3%). In ghutka chewing most of the males (2.4%) were involved as compared to females (1.6%) although the difference between males and female was not found to be statistically significant (p>0.05).

**Table III: Distribution of study subjects according to body mass index (BMI)**

| SN | Classification | | BMI | Male (N=41) | Female (N=59) | Total | Risk of co-morbidities | χ2 test df 1 p value | |
|----|----------------|--|-----|-------------|----------------|-------|------------------------|---------------------|--|
| 1. | Underweight | | <18.5 | 18 (43.9%) | 31 (52.5%) | 49 | Low | 0.72 | >0.05 |
| 2. | Normal | | 18.5-24.99 | 22 (53.6%) | 21 (35.5%) | 43 | Average | 3.21 | <0.05 |
| 3. | Overweight | | ≥25 | | | | | | |
| | a. | Pre-obese | 25-29.99 | 1 (2.4%) | 5 (8.4%) | 6 | Increased | 1.56 | >0.05 |
| | b. | Obese class I | 30-34.99 | 0 | 02 (3.3%) | 02 | Moderate | 1.41 | >0.05 |
| | c. | Obese class II | 35-39.99 | 0 | 0 | 0 | Severe | | |
| | d. | Obese class III | ≥40 | 0 | 0 | 0 | Very severe | | |

Figures in parentheses indicate percentage.

Table III shows the distribution of study subjects according to BMI. It was observed that most of the females (52.5%) were found to be more underweight as compared to males (43.9%) although the difference between males and female was found to be statistically not significant (p>0.05) with low risk of co morbidities in this group. Males (53.6%) were found to be more of normal range of weight as compared to females (35.5%).The difference between males and female was found to be statistically significant (p<0.001) with average risk of morbidities. It was found that females (8.4%) were more in preobese category with increasing risk of co morbidities as compared to males (2.4%) and the difference between males and female was found to be statistically not significant (p>0.05). 3.3% of females were found to be obese class 1 group with moderate increase in risk of co morbidities and none of males were present in this group although the difference between males and female was found to be statistically not significant (p>0.05).

**DISCUSSION:**

We performed a cross sectional study to study the malnutrition status of adult tribal population in Central India. The present study showed that the prevalence of under nutrition (52.5%) as well as obesity (11.7%) was predominant among female tribes as compared to male tribes in whom the prevalence of under nutrition was found to be 43.9% and obesity to be 2.4%. Moreover, it was also observed that majority of male tribal population was addicted to smoking, ghutka chewing and alcohol.

The above findings are consistent with the studies performed by other authors. Study done by Adak et al (2006)[12] reported high prevalence of malnutrition in tribals to be 30 % whereas Balgir RS et al[2] reported quite high prevalence in female tribals to be 46%. The study suggests that it is important for any nutritional intervention programs to incorporate social components into medical practices. It should be kept in mind that people suffering from malnutrition be given top priority to minimize their problems by making provision of adequate food for them through ration depots of the government. It should be checked from time to time whether the provision made for them has been functioning properly or not.

The health problems need special attention in the context of tribal communities of India. Available research studies point out that the tribal population has distinctive health problems which are mainly governed by their habitat, difficult terrains and ecologically variable niches. The health, nutrition and medico-genetic problems of diverse tribal groups have been found to be unique and present a formidable challenge for which appropriate solutions have to be found out by planning and evolving relevant research studies.[4] The wide spread poverty, illiteracy, malnutrition, absence of safe drinking water and sanitary conditions, poor maternal and child health services, ineffective coverage of national health and nutritional services, etc. are the major contributing factors for dismal health in tribal communities of Maharashtra. Good health and good society go together. This is possible only when supportive services such as nutrition and improvements in the environment and in education reach a higher level.

In spite of the tremendous advancement in the field of preventive and curative medicine, the health care delivery services in tribal communities especially in developing countries like India are still poor and need amelioration and strengthening with sustenance on the guidelines suggested to achieve the targeted goals of health for all in India. Unless locality specific, tribe specific and need-based health care delivery system is evolved which is appropriate, acceptable, accessible, and affordable, the goal of health for all would remain a Utopian dream! Hence we recommend future scientific authentic research studies focused on the tribal population, longitudinal (prospective), multi-center, co-morbid studies, assessment of disability, functioning, family burden and quality of life are required to throw more light on tribal health problems in underdeveloped and developing countries.

**CONCLUSIONS:**

The present study reported the prevalence of under nutrition (52.5%) as well as obesity (11.7%) to be predominant among female tribes as compared to male tribes in whom the prevalence of under nutrition was found to be 43.9% and obesity to be 2.4%. Hence appropriate intervention strategies are needed for prevention and control of malnutrition such as increasing awareness and promoting healthy dietary habits. Regular screening of tribal population should be done for early diagnosis and treatment of malnutrition. Knowledge and awareness may be imparted through appropriate information, Education and communication (IEC) activities to reduce burden of malnutrition and other health problems in the population.

**Conflict of interest:** There is no conflict of interest associated with this work.

**REFERENCES:**
1. Kerketta AS, Bulliyya G, Babu BV, Mohapatra SS, Nayak RN. Health status of the elderly population among 4 primitive tribes of Orissa, India: a Clinical-epidemiological study. Z Gerontol Geriatr 2009;42(1):53-59.
2. Kate SL. Health problems of tribal population groups from the state of Maharashtra. Indian J Med Sci. 2001;55(2):99-108.
3. Nerkar SS, Tamhankar AJ, Johansson E, Lundborg CS. Improvement in health and empowerment of families as a result of watershed management in a tribal area in India - a qualitative study. BMC Int Health Hum Rights. 2013;12;13:42.
4. Balgir RS. Do tribal communities show an inverse relationship between sickle cell disorders and glucose-6-phosphate dehydrogenase deficiency in malaria endemic areas of Central-Eastern India? Homo. 2006;57(2):163-76.
5. B. Sachdev. Perspectives on health, health needs and health care services among select Nomad tribal populations of Rajasthan, India. Antrocon Online journal of Anthropology 2012;8(1):73-81.
6. Salil Basu. Health and Population –Perspectives and issues 2000;23(2):61-70.
7. Palash Jyoti Mishra, G.K. Mini, K.R. Thankappan. Risk factor profile for non-communicable diseases among Mishing tribes in Assam, India: Results from a WHO STEPs survey. Indian J Med Res 2014;140(3):370-380.
8. Gudadhe PV, Gudadhe PS. Sources of information for rural development in tribal area of Melghat, Maharashtra. Research Directions 2013;1(4):1-9.
9. K Park. Park's Textbook of Preventive and Social Medicine. 24nd Edition. Publisher M/s Banarsidas Bhanot. Chapter: Nutrition and health. 2017.
10. B. Premalatha.Semecarpus anacardium Linn. Nuts-A boon in alternative medicine. Indian Journal of Experimental Biology 2000;38:1177-1182.
11. Meshram I. I, Laxmaiah A, Mallikharjun Rao K, Arlappa N, Balkrishna N, Ch. Gal Reddy,et al. Prevalence of Hypertension and Its Correlates among Adult Tribal Population (≥20 Years) of Maharashtra State, India. International Journal of Health Sciences & Research 2014;4(1):130-139.
12. Adak DK, Gautam RK, Gharami AK. Assessment of Nutritional Status through Body Mass Index among Adult Males of 7 Tribal Populations of Maharashtra,India. Ma1 J Nutr 2006;12(1): 23-31.