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Research Article

A study on nutritional status of tribal women in Visakhapatnam district, Andhra Pradesh, India

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ABSTRACT

Background: India is a diversified country with a blend of people living in urban, rural& tribal areas. According to NFHS-3, 46.6% of tribal women had Body Mass Index (BMI) below 18.5, indicating chronic energy deficiency. Based on this background this study was conducted in the tribal population of ITDA paderu division in Visakhapatnam district to assess the nutritional status of tribal women.
Methods: It is a cross-sectional study conducted in ITDA Paderu division of Visakhapatnam district among 225 randomly selected reproductive age group tribal women. Multistage simple random sampling technique was applied to select villages. A prior consent was taken from selected women& a pre-tested semi structured schedule was used to collect the information. Anthropometric measurements such as height& weight were measured& Body mass index was calculated. Pallor was observed by examining the conjunctiva. MS-Excel 2007, SPSS trail version-21 softwares were used for statistical analysis.
Results: In the study population mean height of study population was 147.95±6.33 cm and mean weight was 45.01± 6.372 kgs. Prevalence of thinness among the study women was 18.2%. Among them 15.1% had moderate thinness and 3.1% had mild thinness. Pallor was observed among 61% of study women. Women from families with continuous earnings& debt free condition had BMI above 18.5.
Conclusions: One fifth of the study population were at risk of further nutritional deficiency. Continuous earnings of families throughout year and debt free condition influence the nutritional status of women.

Keywords: Body mass index, Chronic energy deficiency, Nutritional status, Prime tribe group, Tribal women

INTRODUCTION

The world is now bearing dual burden of both over nutrition and under nutrition. This can be called as Nutrition transition phase, which means that overweight and obesity predominate as diet related health problems in industrialized countries and under nutrition among large segments of world's population especially vulnerable sections such as tribal communities.[1] India is a diversified country with a blend of people living in urban, rural and tribal areas. National Family Health Survey -3 (2005-06) brought out data on health & nutritional indicators and provides a clear picture of the status of tribal women. According to NFHS-3, 46.6% of tribal women had Body Mass Index (BMI) below 18.5, indicating chronic energy deficiency.[2]

Several research studies on tribal population of India revealed that prevalence of chronic energy deficiency was high among tribal population. Women being vulnerable section, the impact on their health is much higher. Health and Nutritional status of tribal population clearly

indicates that, the goal of Health for all cannot be fully achieved unless due attention is paid to the vulnerable sections of the society i.e., tribals and especially tribal women. Based on this background this study was conducted in the tribal population of ITDA paderu division in Visakhapatnam district to assess the nutritional status of tribal women.

METHODS

It is a cross-sectional study conducted in ITDA Paderu division of Visakhapatnam district among the reproductive age group tribal women. The study was conducted during the period from April 2014 to October 2014. Sample size was calculated as 225 based on the prevalence of malnutrition as 64% as reported by previous studies.[3] Multistage simple random sampling technique was applied to select villages. In the first stage, 3 Community Health& Nutritional Centres were selected randomly among the six CHNCs in ITDA paderu division. In the second stage, 3 PHCs were selected from each selected CHNC. In the third stage, one village was selected from each PHC. A house to house survey was conducted to interview 25 women in reproductive age group in each village. In case of less populated villages/ small hamlets where 25 women could not be covered, the subsequent hamlet / village was included for the study. Written Permission was obtained from ITDA Additional District Medical and Health Officer (DM and HO) for conducting the study and taking help from the PHC staff. Help of Local Multi-purpose Health worker Female (MPHW-F) and Accredited Social Health Activist (ASHA) was taken for identification, initial contact and for translation of conversation where ever required. Tribal women in reproductive age group (15-49 years) available at home at the time of study and those who were willing to participate were included in the study. Pregnant and lactating women, and those women with chronic infectious diseases were excluded from study. A prior consent was taken from selected women and a pre-tested semi structured schedule was used to collect the information. Economic classification was done based on guidelines of Planning Commission of India. Planning commission defined poverty line as expenditure class-wise distribution of persons less than Rs.560/- per person per month in urban area and below Rs.368/- in rural area at 2004-2005 prices.[4] As there is no separate definition for tribal area, definition of rural area had been applied to tribal area. Continuous earning capacity of the family throughout the year was enquired. If the family had opportunities for 5 days work per week throughout the year, without any break in any season, summer, rainy or winter seasons, then the family considered as it had continuous earning capacity throughout year.

Anthropometric measurements such as height and weight were measured and body mass index was calculated. According to the WHO classification of BMI, study subjects were categorized as Underweight (<18.50), Normal (18.50- 24.99) and Over weight (≥25.00). Based on the additional cut-off points, women in the normal range were again classified in to two categories such as class 1 (18.50-22.99) and class 2 (23.00 -24.99) and women in pre-obese category were also classified as pre-obese class 1 (25.00-27.49) and pre-obese class 2 (27.50-29.99). Pallor was observed by examining the conjunctiva of study women in day light. MS Excel 2007, SPSS trail version-21 software's were used for statistical analysis. Chi-square test was used to test the significance of results.

RESULTS

Table 1: Socio demographic profile of tribal women.

Age groups	**Number (%) n=225**
15-30	169 (75.1)
31-49	56 (24.9)
Education	**Number (%) n=225**
Illiterate	135 (60)
Literates	90 (40)
Occupation	**Number (%) n=225**
Unemployed / Housewives	63 (28)
Working women	162 (72)
Type of Family	**Number (%) n=225**
Nuclear family	144 (64)
Joint family	81 (36)
Marital status	**Number (%) n=225**
Married	217 (96.4)
Unmarried	8 (3.6)
Number of children	**Number (%) n=225**
<2 children	169 (75.2)
>2 children	56 (24.8)
Religion	**Number (%) n=225**
Hinduism	177 (78.7)
Christianity	48 (21.3)
Economic status	**Number (%) n=225**
Above Poverty Line	132 (58.7)
Below Poverty Line	93 (41.3)
Continuous earnings throughout year	**Number (%) n=225**
Present	64 (28.4)
Not Present	161 (71.6)
Debts	**Number (%) n=225**
Yes	80 (35.6)
No	145 (64.4)

Table 1 shows that 75.17% of the women were in the age of 15-30 years and 24.9 % in 31 to 49 years age group. About 60% were illiterates. 28 % were unemployed/ remained at home where as 72 % were working women. Majority of the women (64%) belong to nuclear family. Most of the women (96.4%) were married. Around three fourth of women (75.2%) had <2 living children and 24.8% had >2 children. Only two religions were predominantly followed among the study population. 78.7% belong to Hindu religion. Remaining 21.3% belong to Christianity. Women in the study belong to three PTG tribes (Khonds, Gadabas and Porijas) and six non-PTG tribes. PTGs constituted around 40% and Non-PTGs were 60%. Out of the 225 women, 41.3 % of women were below poverty line. Majority of them (71.6 %) did not have continuous earnings throughout the year. Around one third of women (35.6%) had debts.

In the study population height ranged from 130 - 167 cm, majority of women (182 out of 225) had height between 140 cm to 156 cm. Mean height of study population was 147.95±6.33 cm. Weight of the study women ranged from 35.7-66.9 kgs. Half (50.2%) of the women weighed between 40 kgs to 50 kgs weight. Mean weight was 45.01 kgs with a standard deviation of 6.372 kgs.

BMI was calculated for all the study subjects. Figure no.1 shows that, prevalence of thinness among the study women was 18.2%.

Among them 15.1% had moderate thinness, and 3.1% had mild thinness. 65.3% women were in normal class 1, 13.3% were in normal class 2. Very less number (0.9%, 2.3%) were categorized as pre obese class 1 and class 2 categories. Among the study women about 61% of study women had pallor and 39% had no pallor as depicted in figure 2.

Table 2 shows younger women in the age group of 15-30 years were having BMI less than 18.5 as compared to those in 31-40 years age group. These differences were statistically significant.

A significant association was also observed between continuous earnings and debt free condition of the family and the BMI of the women.

Women from such families had BMI above 18.5. Similarly women from prime tribe group had significantly better BMI as compared to the non-prime tribe groups.

Table 2: Socio-demographic variables Vs BMI.

Socio- demographic variable		BMI		X^2 (p value)
		<18.5 Number (%)	>18.5 Number (%)	
Age groups	15-30 years	39 (23)	130 (77)	10.73 (0.001)
	31-49 years	2 (3.5)	54 (96.5)	
Occupation	Unemployed and Housewives	10 (15.8)	53 (84.2)	0.32 (0.56)
	Working women	31 (19.1)	131 (80.9)	
Religion	Hinduism	12 (25)	36 (75)	1.88 (0.17)
	Christianity	29 (16.3)	148 (83.7)	
Caste	Prime Tribe Groups	8 (8.6)	84 (91.4)	9.47 (0.002)
	Non-Prime Tribe Groups	33 (24.8)	100 (75.2)	
Type of family	Nuclear family	31 (21.5)	113 (78.5)	2.99 (0.08)
	Joint family	10 (12.3)	71 (87.7)	
Number of children	<2 children	33 (19.5)	136 (80.5)	0.77(0.37)
	>2 children	8 (14.2)	48 (85.8)	
Continuous earnings for families throughout year	Continuous earnings Present	18 (28.1)	46 (71.9)	5.88 (0.01)
	Continuous earnings Not present	68 (42.2)	93 (57.8)	
Debts condition	Debts present	21 (26.25)	59 (73.75)	5.36 (0.02)
	Debts not present	58 (13.8)	87 (86.2)	
Economic status of Families	Above poverty line	23 (17.4)	109 (82.6)	0.13 (0.71)
	Below poverty line	18 (19.3)	75 (80.7)	

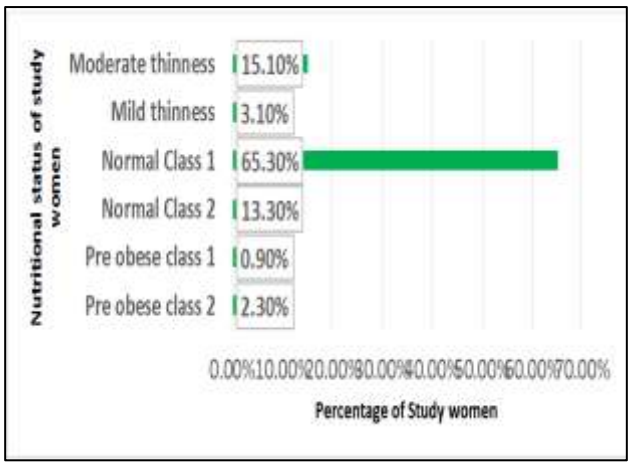

Figure 1: Distribution of study population according to body mass index.

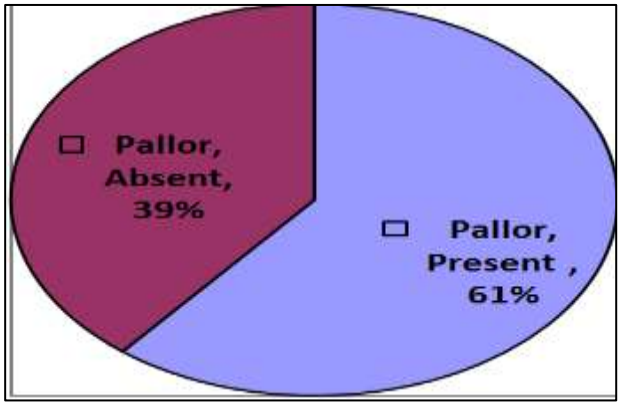

Figure 2: Distribution of study population according to pallor.

DISCUSSION

The anthropometric measurements of the tribal women in this study reveals that there is deficit in both weight and height as compared to the standards. The Indian Council of Medical Research (ICMR) has set a standard of 151 cms as average height for Indian women and 55 kg as average body weight for Indian reference women. However the mean height among the study population was found to be 147.95 cm and the mean weight was 45.01 Kg which shows the tribal women were shorter by 2% and have a deficit of 18.16% in their weight as compared to the average Indian women.

This finding is consistent with that of other studies such as Ghosh et al., and Kupputhai, U et al.[5,6] In contrast to these findings various studies conducted in Andhra Pradesh as well as in different settings have reported the mean height to be higher ranging from 152 cm to 160 cm.[3,7-12] This difference may be due to the ethnic variation asthere was a representation of tribals from different regions in some studies.

As per the anthropometric measurements, it was found that majority were in normal category, very less percentage was found to be in pre-obese category, showing low risk towards lifestyle disorders. Around 18.2% of tribal women were having BMI less than 18.5 reflecting underweight status of these women. Various studies also have reported underweight among women ranging from 10-27%.[3,7-9]

Around one fifth of the women were in moderate to mild categories which suggests that any further nutritional deficiency may lead to severe deficiency. Contrasting findings have been reported by various studies conducted in different parts of the world. Very high prevalence of thinness was reported in some Indian studies.[3,6,10-15] Where as in countries like Brazil and Australia it was as low as 2% to 7%.[16,17] Even though tribals worldwide have similarities in several aspects, there may be difference in the dietary intake, (the quantity and quality of diet) and genetic variation of the indigenous groups may influence their BMI status. It is also observed that studies in the past have shown a higher the prevalence of underweight compared to the recent findings including the present study, suggesting an improvement in the nutritional status in the past decade.[5,18,19]

A significant difference in the BMI status is found between women of different age groups. In present study, it is observed younger women were having better nutritional status as compared to older women in the age group of 31-49 yrs. In contrast Bose et al has reported a lower nutritional status in terms of BMI among young tribal women. Studies have shown that among tribal families around 70% of the monthly income is spent on food.[20] Continuous earnings throughout the year and debt free condition of the family provides the women as well as the family the opportunity of having nutritious food thus having better BMI. The same is reflected in our study as continuous earnings throughout the year and debt free condition of the family have been found to be having significant influence on BMI.

The prevalence of anaemia in the current study population was 60.9%. This finding was higher than the national average prevalence of anaemia in reproductive age group women according to NFHS-3 i.e 55%.[21] Sree Lakshmi PR et al., and Srinivas BM et al., reported a high prevalence of anaemia in tribal women in their studies than the current study result, whereas Ramachandra Kamath et al., reported a low prevalence of anaemia in tribal women when compared to the present study result.[22-24]

CONCLUSION

The anthropometric parameters of tribal women were lower than the ICMR standards. One fifth of the study population were at risk of further nutritional deficiency. Majority of the women were showing low risk for lifestyle diseases. Continuous earnings of families throughout year and debt free condition influence the nutritional status of women.

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