

Nutritional Assessment of Tribal Women in Kainatty, Wayanad: A Cross-Sectional Study

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Abstract

Introduction: Women from a society reflect the culture that they are a part of and tribal women are the most disadvantaged considering the levels of illiteracy and ignorance. As per the National Family Health Survey 4 reports, in Kerala, undernutrition is particularly common among women from scheduled tribes, 20%. This study was done to assess the nutritional status and its associated factors among tribal women in the reproductive age group at Wayanad. **Materials and Methods:** A hospital-based cross-sectional study was carried out during January 2017 at Amrita Kripa Charitable Hospital in Kainatty, Wayanad. The minimum calculated sample size was 186. Using systematic random sampling, every third tribal woman in the age group of 15–49 years attending the general outpatient department as patient or bystander was interviewed using a pretested semi-structured questionnaire and examined for height, weight, body mass index, and pallor. Data were analyzed using SPSS version 21. **Results:** Data were collected from a total of 223 study participants; 53.8% of them were undernourished (<18.5 kg/m²) with 25% severe underweight and 3.1% and 2.7% preobese and obese women. Participants who were <30 years of age (0.001), those who used smokeless tobacco (0.008), and women from the Paniya tribe 0.001 had significantly higher odds of undernutrition. **Conclusion:** Almost one-fourth of the study participants were severely undernourished and 5.8% belonged to obese and preobese categories, thereby indicating the gravity of the nutritional difficulties among tribal women. A well-planned and coordinated effort is needed to address the scenario of malnutrition among tribal women.

Keywords: Body mass index, nutrition, tribal women

INTRODUCTION

As per the Global burden of disease study, between 1990 and 2017, in India, the leading cause of mortality and morbidity moved from communicable, maternal, neonatal, and nutritional disorders to noncommunicable diseases.^[1] The document on sustainable development goals states that, only an improved nutritional status along with other sustained investments can aid for progress in health, education, employment, women empowerment, and thereby lead to a reduction in poverty and inequality.^[2] Malnutrition indicates not just undernutrition but also over weight and obesity; the other ends of the spectrum.^[3] In 2016, the WHO and UN stated that nearly one in every third person suffers from one or the other form of malnutrition.^[4] Nearly, 462 million adults were underweight and 2 billion overweight or obese globally, in 2014.^[3,5]

Women from a society reflect the culture that they are a part of and their cultural norms and socioeconomic situations mainly reflect on their nutritional status.^[6] Women in the reproductive age group are the most vulnerable to malnutrition, owing to several cultural, social, and biological reasons.^[7] In India, 21.6% and 5.3% of all women were overweight and obese, respectively, as per the Global Nutrition Report of 2018.^[8] Undernutrition often affects people from the lower socioeconomic cadre. The tribal groups in Kerala represent a category of people who are caught midway in

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How to cite this article: Mohandas S, Amrithesh K, Lais H, Vasudevan S, Ajithakumari S. Nutritional assessment of tribal women in Kainatty, Wayanad: A cross-sectional study. Indian J Community Med 2019;44:S50-3.

Received: 18-01-19, **Accepted:** 28-08-19

Access this article online

Quick Response Code:



Website:
www.ijcm.org.in

DOI:
10.4103/ijcm.IJCM_39_19

the transformation to urbanization. They do not have the knowledge and access at par with an urban area but have all the negative impacts of the modern urban society.^[6,9]

The population of scheduled tribes in India constitutes 8.6% of the total population, with 11.3% of them living in rural areas.^[10] In Kerala, they represent 1.4% of the states total population and Wayanad district ranks first in schedule tribe population.^[11,12] As per the National Family Health Survey 4 reports, in Kerala, 20% of tribal women in the reproductive age group are undernourished.^[13] Although there are many studies looking at the nutritional status of women from different tribes across the state, there is an insufficiency of literature for tribes from Wayanad, where the overall prevalence of undernutrition among women is 12.2%, which is more than the state average of 10%.^[13,14] Hence, the objectives of this study were to assess the nutritional status and factors associated with it among tribal women in the reproductive age group using body mass index (BMI).

MATERIALS AND METHODS

A hospital-based cross-sectional study was planned and carried out from December 2016 to January 2017 at Amrita Kripa Charitable Hospital in Kainatty area of Wayanad. All women in the reproductive age group of 15–49 years were included in the study while excluding pregnant and lactating women. The minimum calculated sample size was 186 ($4pq/d^2 = [4 \times 51.9 \times 48.1]/20\% P = 9985.56/107.74 = 93$ and with a design effect of 2) using the prevalence of underweight among tribal women in the reproductive age group in Palakkad district ($P = 51.9\%$).^[15]

Using systematic random sampling, every third tribal woman attending the general outpatient department as patient or bystander in the hospital was interviewed after obtaining written informed consent using a pretested semi-structured questionnaire and examined for height (nonstretchable tape; average of three readings), weight (a standardized electronic weighing scale), BMI (weight in kg/height in m²), and Pallor (by clinical examination of bulbar conjunctiva in daylight).

Although there are several known methods to assess nutritional status, BMI calculations are the most widely used, as they are noninvasive and most suitable for large scale surveys.^[6] BMI was classified based on the WHO cutoff points for Asians.^[16]

Data were analyzed using IBM SPSS Statistics 20.0 version (Amonk ; NY:IBM Corp). Ninety-five percent confidence intervals (CIs) were calculated. To test the statistical significance of nutritional status with various factors, Chi-square test, odds ratio (OR) and backward logistic regression analysis were done.

RESULTS

A total of 223 women were interviewed for the study. The mean age of the study participants were 29 ± 9.6 years and the

mean height and weight were 152 ± 8.2 cm and 43.6 ± 9.1 kg, respectively. Almost, 40% of them belonged to the age group of 15–25 years. Fifty-four percent of them belonged to nuclear families, 25% were illiterate, 28% had secondary school education, 50% were involved in unskilled work, and 56% of them were married. The various tribes were Paniyar, Kurichyar, Kattunaikkar, Mullakkuruvar, and Uralikurumar. Of the study participants, 74% belonged to the Paniya tribe.

The tobacco use habits of the study participants were found to be high, with 49% and 4% of them using tobacco in smokeless and smoked forms, respectively. Around 51% of them were exposed to the second-hand smoke.

The BMI profile of the study participants as per the WHO classification is discussed in Table 1. The prevalence of underweight in the study population was 53.8%. Pallor was observed among 33% of them. Chi-square analysis and multivariate logistic regression were done to identify the factors associated with and to find the independent predictors for nutritional status; the same are described in Tables 2 and 3.

DISCUSSION

As part of the study, we interviewed 223 tribal women in the age group of 15–49 years. The prevalence of undernutrition in the participants was significantly high at 53.8%, and overweight and obesity were observed to be 5.8%. Approximately 50% participants reported to be using smokeless tobacco. The statistically significant factors associated with undernutrition were age <30 years (OR, 95% CI = 2.49; 1.45–4.29), use of smokeless tobacco (OR, 95% CI = 2.05, 1.19–3.49), and belonging to the Paniya tribe (Chi-square, $P = 20.96, 0.001$).

In a study done by Ghosh among tribal women in West Bengal, the prevalence of undernutrition was 19.49%. The significant factors were literacy and number of children in the family.^[6] However, our study did not show similar findings and the prevalence of underweight is much higher than the state and district averages.^[13,14] The prevalence of overweight and obesity.

The higher prevalence of undernutrition in this study is similar to the findings of Mallikharjuna Rao in Andhra Pradesh and a study done by Sreelakshmi *et al.* in Palakkad where the prevalence of undernutrition was 56% and 51.9%, respectively.^[9,15] Similar studies in different parts

Table 1: Distribution of the study participants based on body mass index profile (n=223)

BMI classification (kg/m ²)	Frequency (%)
Severe underweight (12-16)	56 (25.1)
Moderate underweight (16.1-16.9)	23 (10.3)
Mild underweight (17-18.49)	41 (18.4)
Normal (18.5-24.9)	90 (40.4)
Preobese (25-29.9)	7 (3.1)
Obese (>30)	6 (2.7)

BMI: Body mass index

Table 2: Univariate analysis for factors associated with underweight

Variables	BMI (kg/m ²)		χ^2 (P)	OR (95% CI)
	Underweight (%)	Normal (%)		
Age (years)				
<30	77 (64.2)	43 (35.8)	11.21 (0.001)	2.49 (1.45-4.29)
>31	43 (41.7)	60 (58.3)		
Education				
Illiterate	33 (60)	22 (40)	1.12 (0.28)	1.37 (0.75-2.59)
Educated	87 (51.8)	81 (48.2)		
Occupation				
Unemployed	37 (52.1)	34 (47.9)	2.28 (0.32)	-
Employed	66 (52)	61 (48)		
Student	17 (68)	8 (32)		
Marital status				
Married	64 (51.2)	61 (48.8)	0.78 (0.37)	0.78 (0.46-1.34)
U/S/W	56 (57.1)	42 (42.9)		
Number of living children				
<2	43 (51.2)	41 (48.8)	0.37 (0.54)	0.84 (0.49-1.45)
>3	77 (55.4)	62 (44.6)		
Type of family				
Nuclear	58 (48.3)	62 (51.7)	3.13 (0.077)	0.62 (0.36-1.05)
Joint	62 (60.2)	41 (39.8)		
Tribe**				
MK and UK	5 (16.7)	25 (83.3)	20.96 (0.000)	-
Kurichiya	7 (50)	7 (50)		
KN	7 (77.8)	2 (22.2)		
Paniya	101 (59.4)	69 (40.6)		
Smoking				
Yes	6 (66.7)	3 (33.3)	0.64 (0.42)	1.75 (0.43-7.19)
No	114 (53.3)	100 (46.7)		
Smokeless tobacco				
Yes	69 (62.7)	41 (37.3)	6.94 (0.008)	2.05 (1.19-3.49)
No	51 (45.1)	62 (54.9)		
Exposure to second-hand smoke				
Yes	64 (55.7)	51 (44.3)	0.32 (0.57)	1.17 (0.69-1.97)
No	56 (51.9)	52 (48.1)		

**MK and UK. U/S/W: Unmarried/separated/widowed, BMI: Body mass index, CI: Confidence interval, OR: Odd ratio, MK and UK: Mullakkuruva and Uralikurumar, KN: Kattunaikkar

of Andhra Pradesh and Rajasthan showed a significant association of undernutrition with education, age <30 years, and a significantly higher prevalence among particular tribal groups.^[9,17,18] However, a positive association was not elicited with educational levels of tribal women in Kainatty and their nutritional status.

In our study, 5.8% of the study participants were overweight and obese. This is comparable to the National Nutrition Monitoring Bureau report of 1994 for India,^[19] which has then shown an ever-increasing trend. This finding is also similar to the findings in Palakkad,^[15] while a study among Adivasi women in West Bengal showed a zero prevalence of overweight.^[20]

One of the probable reasons for the higher prevalence of undernutrition noted in our study could be due to the higher use of smokeless tobacco products among these women. A similar finding was depicted by Pednekar in a cohort from Mumbai.^[21]

CONCLUSION

The nutritional status among tribal women from reproductive age group was found to be unacceptably low with differential burden between subtribes. There was also a burden of overweight among them. Addressing this dual burden of malnutrition among tribal women is possible with target-oriented efforts which will be culturally suitable and acceptable to them. Frequent nutrition-related educational sessions for tribal women coming to hospitals or clinics could be considered as reaching out to tribal hamlets are often difficult considering the terrain. The strategies for better nutrition must also consider improved and sustained access to food.

Acknowledgment

The staff of Amrita Kripa Charitable Hospital at Wayanad and the Department of Community Medicine, AIMS, for giving

Table 3: Multivariate analysis for independent predictors of underweight

Variables	P	aOR	95% CI
Age (years)			
>31	0.00	1	
<30	0.26	0.13-0.48	
Type of family			
Nuclear	0.76	1	
Joint	1.09	0.60-1.96	
Tribe**			
MK and UK	0.032	3.83	1.27-11.46
Kurichiya	0.84	0.25-2.73	
KN	0.37	0.72-1.85	
Paniya	0.39	0.19-0.80	
Smokeless tobacco			
Yes	0.00	1	
No	0.29	0.16-0.56	

**MK and UK. MK and UK: Mullakkuruvar and Uralikurumar, KN: Kattunaikkar, CI: Confidence interval, aOR: Adjusted odd ratio

this opportunity.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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