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Dietary practices and food consumption patterns of elderly tribal women in Attapady, Kerala: A cross-sectional study

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Abstract

A healthy existence depends on adequate nutrition, which is a basic human need. Indigenous peoples have different dietary habits due to their economic, social and cultural differences throughout the world. In this study, an attempt has been made to know the food consumption and dietary intake of elderly tribal women of the Attapady Region of Kerala, India. The sample consisted of 360 females in the age group of 60-80 years. The present study highlights the substantial intake of cereals, pulses, and green leafy vegetables within the community. However, the consumption of animal-based proteins was notably low, and fruit intake was minimal due to affordability issues. Dietary practices appeared to be influenced by factors such as family size, household income, social participation and the availability of local resources.

Keywords: Tribal, diet survey, food habits, consumption pattern, food frequency

Introduction

Food is a pre-requisite not only for maintaining good health but also for proper growth and development. The nutritional composition of a person's diet plays a significant role in their overall health (Bhoi, A., & Kumar, S., 2023) ^[1]. However, food habits are strongly influenced by society's thoughts, beliefs, notions, traditions, and taboos. In addition, sociocultural barriers, religion, education, and economic factors all influence food behaviors (Qamar *et al.*, 2006) ^[11]. Several research studies on various tribal populations living in different parts of India have found them to be socially and economically disadvantaged and their diets to be nutritionally deficient (Mittal and Srivastava, 2006) ^[7]. The dietary patterns of the tribes in India living in various regions and agro-climatic conditions may vary greatly due to their secluded lifestyles, food habits, dietary practices, and attitudes toward food. Tribal people differ from non-tribal people in lifestyle and food habits (Rupavath, 2023) ^[14]. Their food lacks adequate nutrition in the daily meals that they consume currently. Indian tribal people are deficient in micro-nutrients; most are under-nourished (Nandal and Bhardwaj, 2014; Laxmaiah *et al.*, 2007) ^[8, 5]. India is home to a large number of indigenous tribal people, who are still largely untouched by globalization and its impact on conventional lifestyles. Hence, in this study, an attempt has been made to know the nutritional status of the tribal women inhabiting the Attapady Hill of Kerala, India through a '24-h recall' diet survey.

Methodology

The survey was conducted from March 2023 to December 2023. For the present study, a sample of 360 tribal elderly women aged 60-80 years were randomly selected from three panchayaths. The respondents were chosen using a Stratified Multistage Random Sampling Technique. The selection process includes three panchayaths within the Attapadi Tribal Development Block in the first stage, four wards from each panchayath in the second stage, and thirty respondents from each ward in the third stage. Additionally, in the fourth stage, ten elderly tribal women who are beneficiaries of both ICDS projects and the Community Kitchen were selected from the vicinity, bringing the total sample size to 360 elderly tribal women. A 24-hour dietary recall method was conducted to assess the food habits, food consumption patterns, food use frequency, and dietary diversity of the diet using a specially designed interview schedule. Raeburn *et al.*, (1979) ^[4] suggested a scale for calculating the percentage of food use frequency. The formula is given below.

Percentage of total score = $(R1S1 + R2S2 + \dots + RnSn)/n$
Sn = scale of the rating given for the frequency of a food item

Rn = Percentage of respondents selecting a rating
n = maximum scale rating.

A scoring procedure was followed to quantify the frequency of use of food items. The daily used food items were given a score of 30, those food items used four times in a week were

given a score of 16, thrice a week were given a score of 12, twice a week was 8, once a week as 4, monthly twice as 2, monthly once as 1 and those that were used occasionally/never were given zero scores. The foods that scored above 90 percent were grouped as daily used foods while those foods that scored below 15 percent were classified as least frequently used foods.

Statistical analysis: The collected data were analysed using descriptive statistics. Percentage analysis was used to assess the responses. Data were analysed using Microsoft Excel 2019. The results were presented in tables and interpreted based on the distribution of responses.

Results

Table 1: Food habits of the respondents (N=360)

Food habits	Agali	Pudur	Sholayur	Total
Non vegetarian	81.66	87.50	75.0	81.30
Vegetarian	16.66	12.50	25.0	18.05
Ovo vegetarian	1.66	0	0	0.50
(Figures indicate the percentage)				

Non-vegetarian diets are the most prevalent, making up the majority in all three areas, with Agali and Pudur having the highest percentages at 81.66% and 87.50%, respectively. Vegetarian diets are the second most common, especially in Sholayur, where 25% of people follow a vegetarian diet, compared to lower percentages in Agali and Pudur. Ovo-vegetarian is the least followed food habit, with only 2 people (1.66%) in Agali following this diet, and none in Pudur or Sholayur.

Table 2: Frequency of use of energy-yielding foods (N=360)

Panchayath	Energy yielding foods				
	Cereals	Roots and tubers	Fats and oils	Sugar	Nuts and oil seeds
Agali	100	52.50	100	91.6	1.30
Pudur	100	58.03	100	90.0	1.36
Sholayur	100	48.03	100	87.5	1.36
Figures indicate the percentage.					

The consumption of energy-yielding foods among the respondents is shown in Table 2. Intake of cereals, fats and oils was found to be 100% across all three panchayats indicating daily consumption. The consumption of sugar was also high in all areas, with Agali (91.6%), Pudur (90%), and Sholayur (87.5%), suggesting frequent use in the diet. The intake of roots and tubers showed moderate frequency, with the highest consumption in Pudur (58.03%), followed by Agali (52.5%) and Sholayur (48.03%). However, the consumption of nuts and oilseeds was found to be very low in all three panchayats, indicating minimal inclusion of these foods.

Table 3: Frequency of use of body-building foods (N=360)

Panchayath	Body building foods				
	Pulses	Milk	Egg	Fish	Chicken & Paneer
Agali	100	1.55	5.36	7.23	6.00
Pudur	100	1.52	5.47	7.70	6.00
Sholayur	100	1.38	5.12	7.13	5.72
(Figures indicate percentage)					

Table 3. shows, that the intake of pulses was found to be 100% across all three panchayats indicating that pulses were consumed regularly. The consumption of milk was only 1.55% in Agali, 1.52% in Pudur, and 1.38% in Sholayur, indicating minimal milk intake among the respondents. The use of eggs showed a slightly higher frequency compared to milk but remained low overall. The frequency of fish consumption was slightly better but still low, with values of 7.23% in Agali, 7.7% in Pudur, and 7.13% in Sholayur. Similarly, the consumption of chicken and paneer remained low across the panchayats. While pulses were a staple source of body-building foods, the intake of animal-based protein sources like milk, eggs, fish, and chicken was low among the population surveyed.

Table 4: Frequency of use of body protective foods (N=360)

Panchayath	Protective foods		
	Green leafy vegetables	Other vegetables	Fruits
Agali	75.3	77.3	5.90
Pudur	76.0	75.6	7.06
Sholayur	76.3	75.0	6.30
(Figures indicate percentage)			

Table 4. shows intake of green leafy vegetables (GLV) was high across the three panchayats, with frequencies of 75.3% in Agali, 76% in Pudur, and 76.3% in Sholayur. This indicates that green leafy vegetables were a regular part of the diet for the majority of respondents. However, the intake of fruits was considerably low across all panchayats. Only 5.9% of respondents in Agali, 7.06% in Pudur, and 6.3% in Sholayur reported regular fruit consumption, indicating a poor intake of fruits. These households consider fruits very expensive compared to their earnings, which hampers their ability to buy. While the consumption of vegetables both green leafy and other varieties was satisfactory, the low intake of fruits highlights a nutritional gap in the diet of the respondents.

Discussion

The present study aimed to know the dietary habits and frequency of different food consumption by the Attapady tribe of Kerala, India. We found that 81.30% (159 participants) were non-vegetarian. This finding closely aligns with the study conducted by Agrahar-Murugkar and Pal (2004)^[2], which examined the nutrient intake and food sources among Khasi tribal women in India, revealing that all participants were non-vegetarian. From the food consumption patterns of the respondents, they also observed that their dietary pattern was based basically on rice which is similar in our study as well. However, pulses such as pigeon pea and bengal gram were consumed rarely. Moreover, the consumption of fat (g/d) was significantly less than the RDA.

Similarly, a study conducted by Rao *et al.*, (2006)^[12] on the dietary patterns and nutritional status of tribal populations across nine Indian states revealed that the consumption of nutrient-rich foods such as pulses, milk and milk products, oils and fats, was consistently low across all age groups. However, the study also revealed a relatively higher intake of green leafy vegetables (GLV) among tribal communities, which aligns with the findings of our current study.

In a study done by Ghosh-Jerath *et al.*, (2016)^[3] on the

nutritional status of women in the Santhal tribal community of Jharkhand, India and found most of the respondents (90%) were non-vegetarians. The majority (57.6%) consumed rice as a staple and GLV were the most common group of food items besides rice in the habitual diet. About half of the community (46.3%) did not consume any milk or milk products while only a third (33.1%) consumed pulses/legumes one or two times weekly. Oil consumption was more than twice daily reported by the majority (75.0%). Yadu and Rao (2000) ^[13], studied dietary habits, food consumption and nutrient intake among the Surali tribe of Andhra Pradesh, through a 24-hour recall diet survey and the study revealed that the mean consumption of different foodstuffs by different age groups compared to the RDA was grossly inadequate.

Premagowri and Osborn (2024) ^[10], studied food consumption patterns in the Toda Tribal and found Rice was a staple cereal, pulses were consumed several times a week. Green leafy vegetables were frequently consumed and other vegetables were twice or thrice a week, depending on availability. Palm oil was widely used oil in daily cooking.

Maheshwari *et al.*, (2024) ^[6] conducted a statistical analysis of the food consumption pattern among tribes of Uttar Pradesh and Madhya Pradesh and found that 89% of tribal were non-vegetarian, and only a tiny percentage of tribal people are vegetarian. Rice is widely preferred and they consume it twice daily. Fruits are also not consumed in large quantities. The same consumption pattern follows with pulses not more than twice weekly. Tribal people do not drink milk regularly, which shows milk is not preferred by most of the tribal people.

Gond tribe of Uttar Pradesh and Madhya Pradesh consume sugar daily through different food items (30-45 grams daily). Most of the tribal people consume pulses every day. However undernourishment, micronutrient deficiencies, and obesity are a result of an ongoing nutrition transition and pose a significant threat to public health (Pinstrup-Andersen, 2007; Von Grebmer *et al.*, 2014) ^[9, 5].

Conclusion

Based on the results of the 24-hour dietary recall and food frequency analysis, all participants reported a 100% intake of cereals and pulses. The consumption of green leafy vegetables was found to be adequate. However, the intake of animal-based proteins was notably low. The consumption of fruits was minimal, considering it was expensive. There are many ways to enhance the intake of fruits such as seasonal fruits. Moreover, dietary interventions must be feasible and consistent with existing food preferences. Nutrition education also could play a vital role in the consumption of these foods. Small, sustainable changes in dietary habits, supported by targeted nutrition education and community development programs could be key to addressing micronutrient deficiencies, particularly among elderly women.

Conflict of Interest: The author declares there are no conflicts of interest.

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