



Indigenous Food Culture and Food Security: A Study on Santal Tribe of West Bengal, India

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Abstract:

This study investigates the indigenous food practices and food security landscape among the Santal tribal community residing in the Sankrail Block of Jhargram district, West Bengal, India. Through a descriptive research design and field-based inquiry involving 30 randomly selected households along with in-depth interviews of three villagers from three villages—Haripal, Kendugari, and Rangamatia—the study explores daily dietary patterns, seasonal food traditions, and the impact of environmental and policy-level changes on food access.

Findings reveal a strong preference for traditional foods perceived as healthier compared to modern packaged alternatives, attributed largely to their organic cultivation methods and cultural familiarity. The majority of respondents consume three meals daily, predominantly based on rice, wheat, and tubers. Seasonal food traditions remain robust, with a significant number of respondents engaging in ritual-specific and foraged foods. Despite support from government ration schemes (PDS), food shortages are common during the monsoon months (Ashadh to Bhadra), primarily due to decreased farming outputs and limited forest produce.



Additionally, climate change and deforestation are identified as emerging threats to food sources, reducing both agricultural yields and the availability of wild edibles. The study highlights the resilience of indigenous food systems while also pointing to the vulnerabilities exacerbated by environmental degradation and insufficient public provisioning. These insights contribute to broader discussions on sustainable food systems, tribal welfare, and ecological preservation.

Keywords: Climate Change, Deforestation, Food Security, Indigenous Food Practices, Santal Tribe.

Introduction:

Food and nutrition insecurity is a serious issue among the low and lower-middle-income countries in the world, especially among the tribal people who live in a forest-based society. Jhargram District is a part of JangalMahal (forest based) of West Bengal, India, which has been a socially and economically backward region, and it is a home of indigenous people (Dandapat 2024). Santals are belonging from homogeneous tribal groups of India and the community having near about 10 million people. Now days, santal are living in Jharkhand, Orissa, West Bengal, Bihar, Chhattisgarh and outside of India such as Bangladesh, Nepal and Bhutan (Baskey 2018).The santal tribal communities in Jhargram are a good example of indigenous populations with a enormous diversity in their traditional food cultures, and habits. The numerous indigenous foods that exist in the santal tribal environment replicate the wealthy biodiversity of India that can be potentially used to promote food security, nutrition, and health. Some of these indigenous foods have been analyzed and documented from Jhargram district, West Bengal, India. Significant numbers (26.67%) of santal told that they consumed meals two times in day and (46.67%) of them took dinner at 7-8 p.m. The most of respondents (36.66%) consumed rice and wheat as staple foods regularly. The most of respondents said that they have farming all types of food which they consumed. They also forage from forest and dahi land (high landscape) vegetables Bon kundri, kendu fruits, sal leaf, mahua flowers and fruits and variety type of edible



chhatu (mushroom) and Tuber like khamalu. Specific food consumed during festivals or rituals are Handia (fermented boiled rice alcoholic water added with bakharbari), Mahua Daru, different types of Pitha (Cookies /Cakes), Meat Curry. Mainly three months in Bengali calendar likely Ashadh (July-August), Shraavan (August-September), and Bhadra (September-October), they faced food shortage which is under rainy season. Mainly rice shortage occur and vegetable also deficient at that time. The respondents received 8 kg rice and 3.5 kg wheat flour monthly per person through PDS (ration systems) that is not enough for them. Because they consume three times rice daily.

Objectives of the Study:

1. To examine daily dietary patterns among the Santal tribal community.
2. To know the seasonal and ritualistic food traditions, along with identify the periods and underlying causes of food scarcity.
3. To assess the adequacy of food received through government food schemes.
4. To understand the impact of climate change and deforestation on local food systems, including the perceived effects of environmental degradation on wild food sources, crop yields, and overall food security.

Methodology of the Study:

This study adopts a systematic methodological approach to investigate the indigenous food practices and food security conditions among the Santal tribal community residing in the Sankrail Block of Jhargram district, West Bengal, India. The methods selected were guided by the empirical and exploratory nature of the research and aimed at obtaining an in-depth understanding of household-level dietary patterns, food sourcing, and seasonal nutritional practices.



Jhargram district, located in the southwestern part of West Bengal, is predominantly inhabited by tribal communities, including the Santals. The study was conducted specifically in Sankrail Block, located approximately 40 kilometers from the district headquarters. Three villages namely Haripal, Kendugari, and Rangamatia were purposively selected based on their demographic composition, accessibility, and tribal population density. Each village was represented by a sample of 10 households, leading to a total sample size of 30 households.

The research followed a descriptive design, appropriate for studying the existing dietary practices and food security concerns of the community without manipulation of variables. The design facilitated a structured exploration of current food consumption patterns, cultural food traditions, and access to food resources. A random sampling technique was employed to select a total of 30 households from the three study villages. This probabilistic method ensured a representative cross-section of the target population. The fieldwork was conducted over a nine-day period, from May 2 to May 10, 2025.

Primary data were collected using a semi-structured interview schedule developed specifically for the study. The schedule included sections on:

- Demographic and family characteristics
- Socio-economic status
- Dietary and consumption patterns
- Seasonal food traditions
- Food availability during illness and lean seasons

Data collection was carried out using both interview and observation methods. The dual approach ensured not only the accuracy of reported data but also the contextual understanding of indigenous food behaviors. Quantitative data were compiled and processed using Microsoft Excel, where they were tabulated and graphically represented. Descriptive statistics, particularly percentages, were applied to summarize responses and identify patterns in food habits and food security issues across the sampled households.



Analysis of the demographic data indicated a gender distribution where 53% of respondents were female and 47% were male. This suggests an active role of women in food-related decision-making and offers a critical lens through which to view indigenous food systems, particularly in tribal communities where women play a central role in agriculture and nutrition.

This study was conducted in adherence to ethical standards for social science research involving human participants, particularly those belonging to indigenous and vulnerable populations. Prior to data collection, informed verbal consent was obtained from all participants after clearly explaining the purpose, objectives, and potential implications of the research. Participants were assured that their participation was entirely voluntary, and they had the right to withdraw at any stage without any adverse consequences. The privacy of respondents was strictly maintained. All personal identifiers were excluded from the final dataset, and data were anonymized during the analysis phase. Information gathered from interviews and observations was stored securely and used solely for academic purposes.

Findings and Discussion

Number of Meal Consume Daily: In this present study, the most of respondents (73.33%) expressed that they took meals three times in a day. Significant numbers (26.67%) of Santal told that they consumed meals two times in day. One time meal consume family did not find.

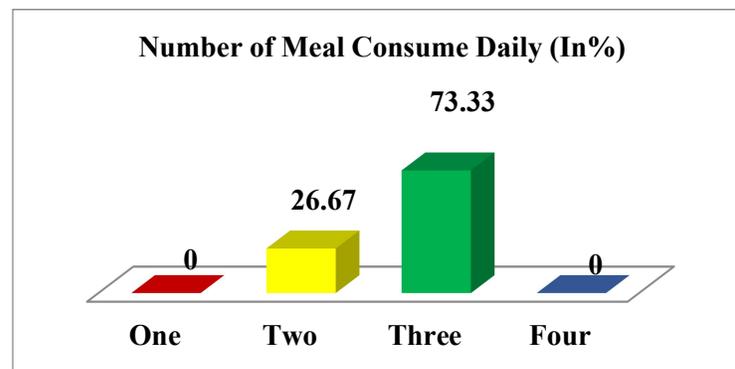


Figure 01: Numbers of Meal consume daily Source: Primary Data



Breakfast, Lunch, and Dinner Time: It has been revealed from the present study that the most of the respondents (46.66%) took breakfast at 6 to 7 a.m. 36.67% respondents consumed food as a breakfast at 7 to 8 a.m. Others people ate breakfast at 8-9 a.m. (6.67%) and after 9 a.m. (10%). In this present study, it has been shown that the majority of santal tribe people (72.72%) ate mid-day meal between 1 to 2 p.m. Some of them (22.73%) took launch at 2-3 p.m. Small number of respondent's (4.55%) launch time is after 3 p.m. In this present study, the most of respondents (50%) expressed that they took dinner at 8-9 p.m. Significant number of respondents (46.67%) take part in dinner at 7-8 p.m. Small number of respondent's (3.33%) dinner time is after 9 p.m.

Table 01: Breakfast, Launch, and Dinner Time

Meal	Time	Percentage
Breakfast	6-7 a.m.	46.66
	7-8 a.m.	36.67
	8-9 a.m.	6.67
	After 9 a.m.	10
Launch	1-2 p.m.	72.72
	2-3 p.m.	22.73
	After 3 p.m.	4.55
Dinner	7-8 p.m.	46.67
	8-9 p.m.	50
	After 9 p.m.	3.33

Source: Primary Data

Staple Food Consumed Regularly: In this present study, it has been found that the most of respondents (36.66%) consumed rice and wheat as staple foods regularly. Rice, wheat, and tubers are eaten as staple foods by 26.66% Santals peoples regularly. The others respondents also took only rice (23.34%) and rice and tubers (13.34%) regularly.

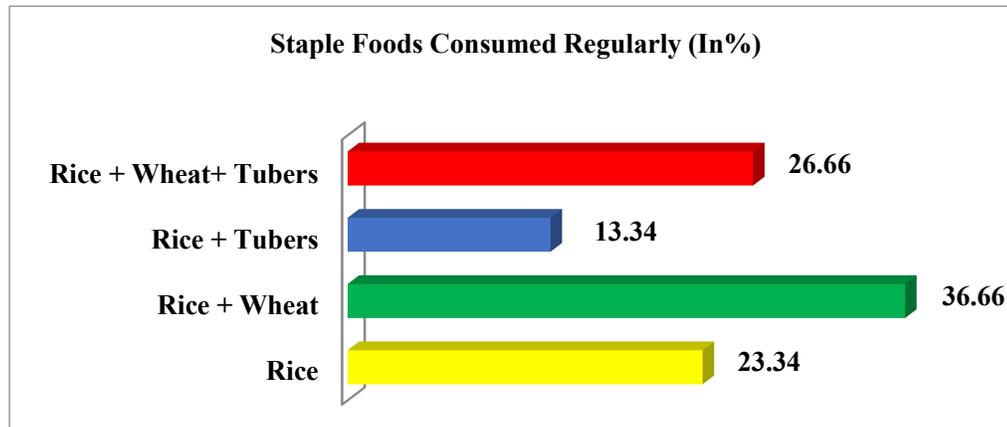


Figure 02: Staple Food Consumed Regularly Source: Primary Data

Seasonal Food Tradition: In this present study, it has been found that the majority of respondents (93%) follow seasonal food tradition. Only 7% peoples do not have seasonal food tradition.

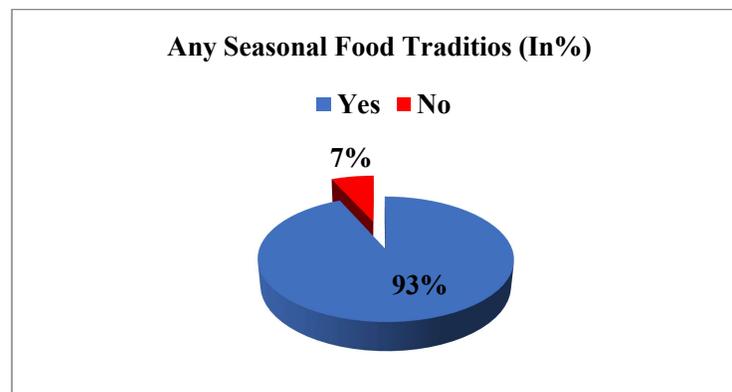


Figure 03: Seasonal Food Tradition Source: Primary Data

Table 02: Seasonal Food Traditions

Season	Traditional Food Items
Summer	Water Rice, Leafy Vegetables fry, Fish Stew / Paste, Boiled Vegetable Fry, Fried Mahua
Rainy	Water Rice, Vegetable curry, Fish curry, Snail Curry
Winter	Boiled Rice, Chapatti, Dry Fish Paste/ Fry, Burn Fish, Pitha (Cookies /Cakes), Meat



	Curry, Seasonal vegetables
Spring	Water Rice, Vegetable curry, Dry Fish Paste/ Fry, Burn Fish, Pitha (Cookies /Cakes), Meat Curry,

Source: Primary Data

Specific Foods Consumed during Festivals or Rituals: Analysing figure 07, it has been seen that 77% respondents opined that they consumed specific foods during festivals or rituals. The rest of respondents (23%) express that they do not take part special foods during festivals or rituals. During the festivals of their, they mainly intake Handia (fermented boiled rice alcoholic water added with Bakhar Bari), MahuaDaru, and different types of Pitha (Cookies /Cakes), Meat Curry etc.

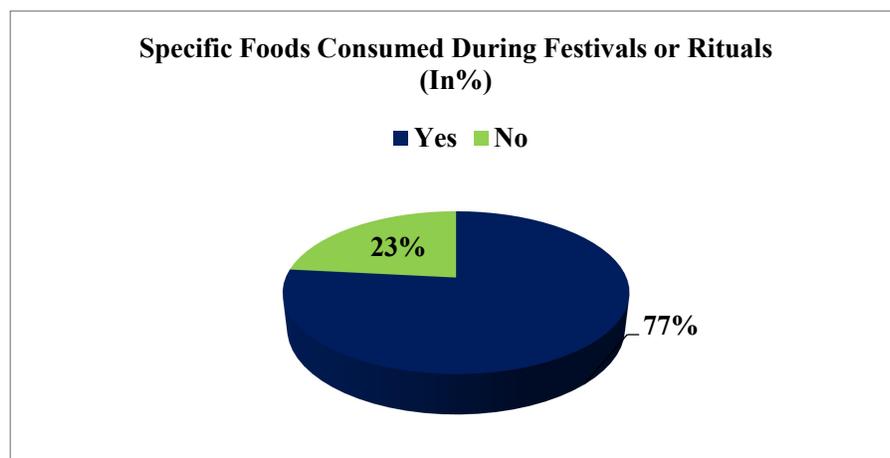


Figure 04: Specific Foods Consumed During Festivals or Rituals

Source: Primary Data

Community Members with Varying Food Habits for Elderly and Pregnant Women: Figure 05 presents field data collected as part of a study on tribal food culture. The data reveals that 83% of respondents indicated no significant variation in food habits for elderly and pregnant women within the community. In contrast, 17% of respondents acknowledged the presence of distinct dietary differences for these groups. This suggests that while the majority of community members follow uniform dietary practices, a significant minority adheres to differentiated food



habits—potentially influenced by cultural beliefs, traditional knowledge, or environmental considerations specific to vulnerable groups such as the elderly and pregnant women.

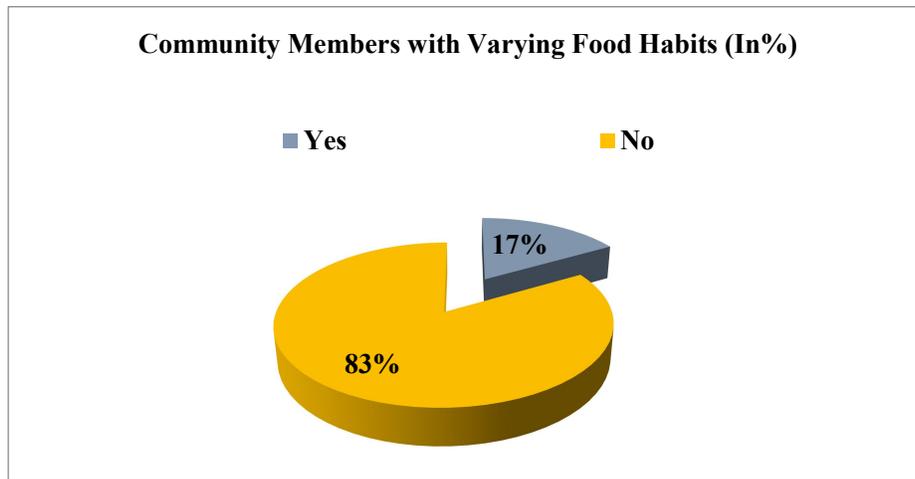


Figure 05: Certain Community Members have Different Food Habits Source: Primary Data

Source of Food: In this present study, it has been found that the most of respondents (46.67%) obtain food from farming, buying and govt. schemes. Some respondents (23.34%) are getting food from foraging, buying and govt. schemes. Some other types of source also available which are buying and govt. schemes (13.33%), farming, foraging, buying, and govt. schemes (10%), farming, foraging, and govt. schemes (3.33%), and only buying (3.33%).

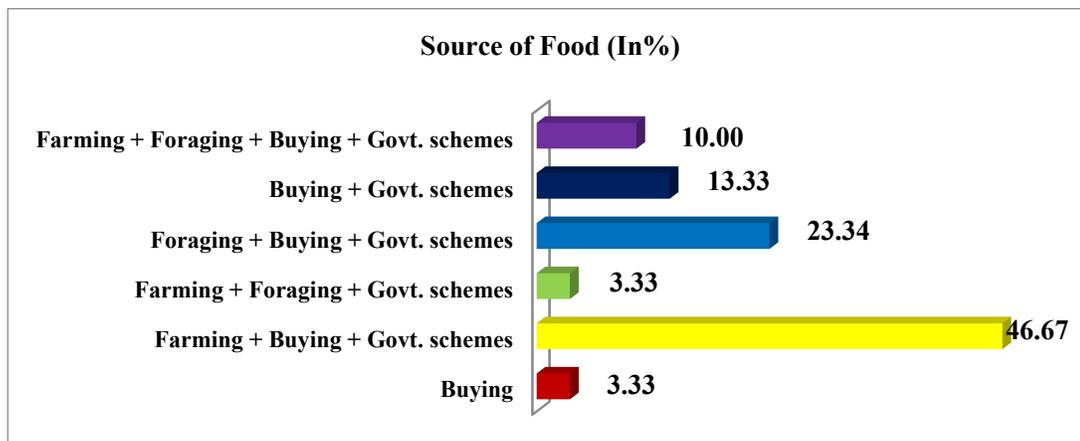


Figure 06: Source of Food Source: Primary Data



Common Food Categories and Items Consumed: The diet of the Santals in the Sankrail block of Jhargram is largely plant-based and seasonal. Their staple foods include rice and wheat (categorized as cereals), complemented by a variety of pulses such as moong, masoor, and urad, which serve as their primary protein source. They also rely on oil seeds like mustard, sesame, and flaxseed for cooking and dietary fats. A wide range of seasonal vegetables—including root vegetables (potato, onion, garlic, ginger), gourds (pumpkin, pointed gourd, bitter gourd), and leafy or flowering vegetables (cabbage, cauliflower, lady’s finger)—are consumed regularly, reflecting a diversified and regionally adapted food system.

Table 03: Common Food Categories and Items Consumed

Food Types	Categories of Food
Cereals	Rice, Wheat
Pulse(Dal)	Moong, Masoor, Beuli (Bengal gram),khesari dal (Grass pea or Chickling vetch),Kunthi (Kulthi)dal (horse gram), Urad, Chana Dal
Oil Seed	Mustard, sesame, flaxseed, sunflower
Seasonal Vegetables	Potatoes, Onion, Ginger, Garlic, Pumpkin, kundri (Cocciniagrandis), Bitter gourd (karala), Pointed gourd (Potal), Lady’s finger, Cabbage, Cauliflower.

Source: Primary Data

They all received rice and wheat flour through Public Distribution System (PDS) which is not sufficient for them. They also forage from forest and dahi land (high landscape) vegetables Bon kundri, kendu fruits, sal leaf, mahua flowers and fruits and variety type of edible chhatu (mushroom) and Tuber like khamalu. Now day’s small-scale applications of the barter system can be observed.

Food Shortage in any Particular Months/ Seasons: In this present study, it has been found that the majority of respondents (93%) faced food shortage in rainy seasons. Some of respondents (7%) reported that they do not face any kind of food shortage. Mainly three months in Bengali calendar likely Ashadh (July-August), Shraavan (August-September), and Bhadra (September-



October), they faced food shortage which is under rainy season. Mainly rice shortage occur and vegetable also deficient at that time.

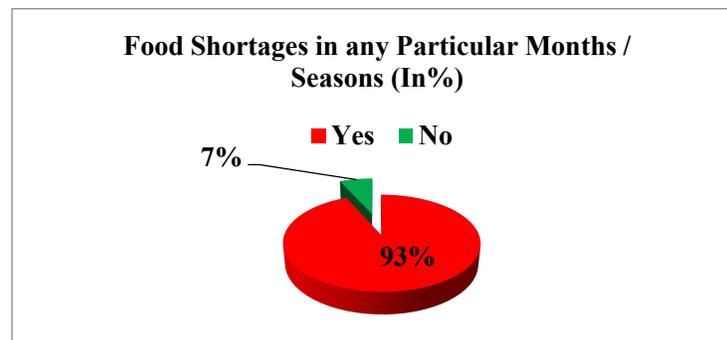


Figure 07: Face Food Shortage in any Particular Months/ Seasons Source: Primary Data

Received Food through PDS (Ration System): It has been revealed from the present study that all the respondents (100%) got rice and wheat flour through Public Distribution System (PDS).

Satisfaction Level regarding Food Received through PDS: In this present study, the most of respondents (83.33%) expressed that they do not get enough food through PDS (ration system). Some of them (13.33) also reported that received food sometimes sufficient for them. Only 3.34% respondents said that they always received sufficient food from govt. schemes. The respondents received 8 kg rice and 3.5 kg wheat flour monthly per person through PDS (ration systems) that is not enough for them. Because they consume three times rice daily.

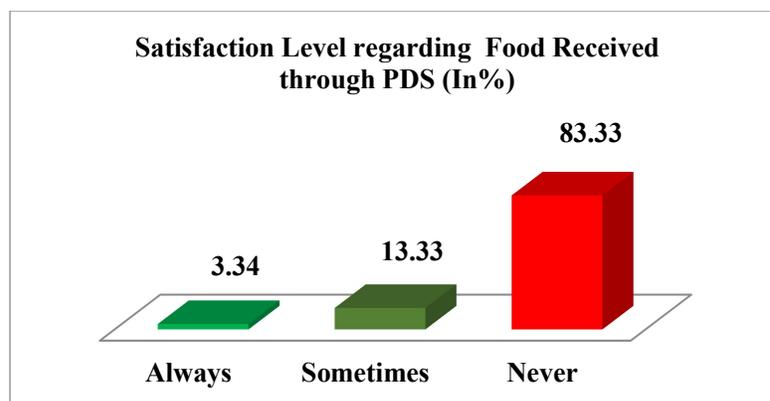


Figure 08: Satisfaction Level regarding Food Received through PDS Source: Primary Data



Climate Change or Deforestation Affected Food Source: In this present study, it has been shown that a huge amount of respondents (56.66%) acknowledge that their food source affected by climate change or deforestation which is some time man-made. Some of the respondents (43.34%) do not sure in above issues. As the forest area is decreases daily for farming, road making, industrialisation, and globalization purpose, the food resource of forest reduced continuously. The climate change also affected farming through flood, drought, and cyclone which is reduces food grain yields.

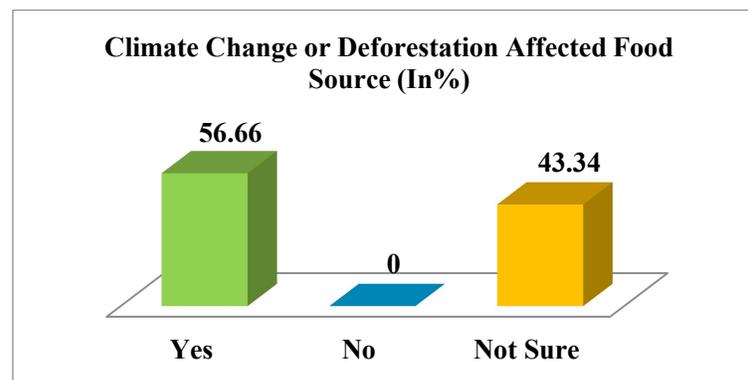


Figure 09: Sufficient Food Received through PDS Source: Primary Data

Major Findings:

The study reveals several key insights into the dietary practices and food security conditions of the Santal community in the Sanrail block of Jhargram district:

Meal Frequency: A majority of respondents (73.33%) reported consuming three meals per day, while 26.67% indicated a two-meal routine.

Meal Timing:

- Breakfast was most commonly taken between 6:00 and 7:00 a.m. (46.66%).
- Lunch was predominantly consumed between 1:00 and 2:00 p.m. (72.72%).
- Dinner was mainly taken between 8:00 and 9:00 p.m. (50%).



Staple Food Consumption:

- Rice and wheat were identified as the regular staple foods by 36.66% of respondents.
- A further 26.66% reported regular consumption of rice, wheat, and tubers as dietary staples.

Seasonality in Food Habits: A significant majority (93%) of participants reported adhering to seasonal food consumption patterns.

Food and Cultural Practices:

- 77% of respondents indicated that specific foods were consumed during festivals or rituals.
- However, 23% did not participate in ritual-specific dietary practices.

Food Practices by Demographics:

- The majority (83%) reported no distinct dietary practices for special groups such as pregnant women or the elderly.
- Conversely, 17% acknowledged such differentiated food habits.

Sources of Food:

- Nearly half of the respondents (46.67%) relied on a combination of subsistence farming, market purchases, and government food schemes for their food supply.

Food Insecurity and Public Distribution System (PDS):

- A substantial proportion (93%) experienced food shortages, particularly during the rainy season.
- All respondents reported receiving rice and wheat flour through PDS.



- However, 83.33% stated that the food provided through PDS was insufficient, with only 3.34% claiming to consistently receive adequate supplies.

Perceptions of Environmental Impact:

- More than half (56.66%) believed that climate change and deforestation negatively impacted their food sources.
- About 43.34% were uncertain regarding the impact of environmental changes on their food security.

Recommendations:

Based on the findings of the study, the following recommendations are proposed to enhance food security, nutritional well-being, and sustainable dietary practices among the Santal community in the Sankrail block of Jhargram:

1. **Strengthening Public Distribution System (PDS):** There is an urgent need to improve the efficiency and coverage of PDS to ensure adequate and timely distribution of essential food items, particularly during the rainy season when food shortages are most acute.
2. **Nutrition-Sensitive Awareness Programme:** Culturally tailored nutrition education campaigns should be introduced to promote balanced diets, particularly targeting special demographic groups such as pregnant women, lactating mothers, children, and the elderly.
3. **Promotion of Climate-Resilient Agriculture:** Given the reported effects of climate change and deforestation on food sources, initiatives promoting climate-resilient and indigenous cropping systems should be adopted. This includes promoting drought-resistant varieties and sustainable agro forestry practices.



4. Seasonal Food Preservation Techniques: Training and capacity-building programs on traditional and modern food preservation methods should be implemented to reduce seasonal food insecurity and enhance year-round food availability.
5. Community-Based Food Security Monitoring: Establishing local committees to monitor food access, distribution efficiency, and nutritional status could help identify gaps and mobilize timely interventions.
6. Enhancing Livelihood Opportunities: Promoting income-generating activities such as kitchen gardening, small-scale poultry, or goat farming may diversify food sources and improve household food resilience.
7. Cultural Food Integration in Government Schemes: Inclusion of locally preferred and culturally relevant food items in government schemes could enhance acceptance and improve nutritional outcomes.
8. Data-Driven Policy Formulation: Continuous community-level data collection on food consumption, preferences, and access is necessary to formulate more targeted and evidence-based food security policies for indigenous populations.
9. Education and School-Based Nutrition Initiatives: Strengthening school mid-day meal programs with nutrient-rich and locally available foods can improve children's nutritional status and foster healthy eating habits.
10. Environment and Land Conservation Efforts: Given the link between deforestation and food insecurity, reforestation and sustainable land management initiatives should be encouraged to preserve the natural food base and ecological balance.

Conclusion:

This study sheds light on the intricate relationship between indigenous food practices, cultural resilience, and the challenges of food security among the Santal tribal community in the Sankrail Block of Jhargram, West Bengal. The findings underscore a sustained reliance on traditional dietary patterns, shaped by seasonal availability, cultural rituals, and organic, locally sourced



ingredients. The preference for native food systems reflects not only dietary habits but also deep-rooted ecological knowledge and identity.

However, the research also reveals a dual burden: while traditional food systems continue to offer nutritional and cultural value, they are increasingly threatened by structural vulnerabilities. Seasonal food insecurity—particularly during the monsoon months—is widespread, exacerbated by climate variability, deforestation, and the inadequacies of public distribution schemes. Although all respondents reported receiving food grains through government channels, a large proportion expressed dissatisfaction with the quantity and reliability of these provisions.

Furthermore, the absence of differentiated food practices for vulnerable groups, such as pregnant women and the elderly, indicates critical gaps in nutritional awareness and public health outreach. Environmental degradation and policy insufficiencies compound these issues, undermining the sustainability of indigenous food systems.

In sum, while the Santal community demonstrates commendable resilience through its adherence to traditional food ways, there is an urgent need for integrated interventions that address environmental threats, enhance the efficiency of food support systems, and promote context-sensitive nutritional education. Such measures are essential not only for improving food security outcomes but also for preserving the ecological and cultural fabric of tribal life.

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