

Health and Nutritional Status of Vulnerable Tribal Groups in Tripura: A Field-Based Study

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Abstract: *The Particularly Vulnerable Tribal Groups (PVTGs) in Tripura face disproportionate health and nutritional challenges due to geographical isolation, food insecurity, and limited access to healthcare services, and socio-economic marginalization. This study assesses the health and nutritional status of PVTGs in selected tribal villages of Tripura using anthropometric measurements, dietary assessments, and morbidity profiles. In Tripura, the Bru (Reang) community is recognized as a Particularly Vulnerable Tribal Group and is primarily located in remote, forested, and hilly regions. For this study, 200 individuals were randomly selected, comprising 100 participants aged 1-14 years and 100 participants aged 15 years and above, from Ambassa, Ganganagar, Gandacherra, Atharamura, and Manu in the Dhalai district of Tripura. Multi-stage cluster sampling was employed to select the subjects. A mixed-method approach combining field surveys, anthropometric measurements, structured interviews, and review of clinical records was adopted. Descriptive statistical analysis (mean and percentage) revealed a high prevalence of under nutrition, anemia, and chronic health conditions among the PVTG population. The study underscores the urgent need for targeted health interventions, strengthened nutrition programs, and comprehensive policy support to improve the overall well-being of tribal communities in Tripura*

Keywords: PVTGs, Bru (Reang), health status, undernutrition, anemia, Tripura, tribal health

1. Introduction

India is home to diverse tribal communities, many of whom reside in ecologically fragile and geographically isolated regions. Among them, Particularly Vulnerable Tribal Groups (PVTGs) represent the most marginalized section, characterized by low literacy, declining or stagnant population, subsistence-level economy, and poor health indicators. In the northeastern state of Tripura, the Bru (Reang) community is officially recognized as a PVTG.

The tribal populations in Tripura primarily inhabit forested and hilly terrains, especially in the Dhalai district, where accessibility to healthcare services, education, sanitation, and food security remains limited. Chronic poverty, inadequate dietary diversity, high dependence on forest resources, and insufficient maternal and child healthcare contribute significantly to malnutrition and morbidity.

Malnutrition, particularly under nutrition and anemia, continues to be a major public health issue among tribal populations in India. Children and women are especially vulnerable due to nutritional deprivation, early marriage, high fertility rates, and limited awareness regarding balanced diets. Despite various government schemes such as Integrated Child Development Services (ICDS) and National Health Mission (NHM), the health status of PVTGs remains a matter of concern. This field-based study aims to systematically examine the health and nutritional conditions of the Bru (Reang) community in selected areas of Tripura through empirical investigation.

Objectives of the Study

- 1) To assess the anthropometric status of children and adults among the Bru (Reang) PVTG community.
- 2) To evaluate dietary patterns and nutritional intake.
- 3) To examine the prevalence of anemia and common morbidities.

- 4) To analyze socio-economic determinants influencing health outcomes.

2. Review of literature

Studies on tribal health in India consistently highlight poor nutritional outcomes among PVTGs. Research conducted in various tribal regions reveals high rates of stunting, wasting, underweight, and anemia. In northeastern India, geographical isolation and political displacement have exacerbated health vulnerabilities among tribal groups. Studies on Bru (Reang) populations indicate food insecurity, poor sanitation, and inadequate maternal healthcare services. However, comprehensive district-level field-based assessments remain limited, particularly in Dhalai district of Tripura. This study contributes to existing literature by providing localized empirical data and combining anthropometric, dietary, and morbidity assessments.

3. Methodology

3.1 Study Area

The present study was carried out in selected villages of **Ambassa, Ganganagar, Gandacherra, Atharamura, and Manu subdivisions** of Dhalai district in the state of Tripura, India. These areas are largely inhabited by the **Bru (Reang) tribal community**, one of the major indigenous groups of Tripura. These villages are selected on the bases of limited access to health services, low socioeconomic conditions, and dependence on agriculture and forest-based livelihoods. These factors often influence the nutritional and health status of the local population

3.2 Study Design

The study adopted a **cross-sectional descriptive research design** to assess the nutritional and health status of the selected population at a specific point in time. A **mixed-method approach** was used in order to collect both quantitative and qualitative data. Quantitative data were obtained through anthropometric measurements, dietary assessment, and health records, while qualitative information was collected through interviews and discussions with the respondents.

3.3 Sample Size and Sampling Technique

A total of **200 participants** were selected for the study. The sample consisted of **100 children aged between 1–14 years** and **100 adults aged 15 years and above**. The selection of participants was carried out using a **multi-stage cluster sampling technique** to ensure representativeness of the study population.

- 1) **Stage-I:** The several villages from the selected subdivisions were identified and randomly selected.
- 2) **Stage-II:** The households within the selected villages were chosen using a systematic random sampling method.
- 3) **Stage-III:** Individuals from the selected households were randomly selected based on the required age groups (children and adults).

3.4 Tools and Techniques

To collect accurate and reliable data, several standardized tools and techniques were used in the study.

3.4.1. Anthropometric Measurements

Anthropometric assessments were conducted to evaluate the nutritional status of the participants. The following measurements were taken:

- **Height:** Measured using a standard stadiometer while the participant stood barefoot in an upright position.
- **Weight:** Measured using a calibrated digital weighing scale. Participants were weighed with minimal clothing and without footwear.
- **Body Mass Index (BMI):** For adults, BMI was calculated using the formula weight (kg) divided by height squared (m^2) to classify individuals as underweight, normal, or overweight.
- **Weight-for-age and Height-for-age:** For children, these indices were used to assess underweight and stunting conditions based on standard growth references.

3.4.2. Dietary Assessment

Dietary intake of the participants was evaluated using the following methods:

- **24-hour Dietary Recall Method:** Participants were asked to recall all food and beverages consumed during the previous 24 hours. This helped in estimating daily dietary intake and nutritional patterns.
- **Food Frequency Questionnaire (FFQ):** This questionnaire was used to collect information about the frequency of consumption of various food items such as cereals, vegetables, fruits, pulses, meat, and dairy products over a specified period.

3.4.3. Health Assessment

Health-related data were collected through different sources to understand the morbidity and anemia status of the participants.

- **Hemoglobin Estimation Records:** Available hemoglobin test records from health centers were reviewed to assess the prevalence of anemia among participants.
- **Clinical Records:** Health records from nearby primary health centers and sub-centers were examined to identify common health problems and diseases.
- **Structured Interview Schedule:** A pre-designed and structured interview schedule was used to collect information regarding demographic details, health conditions, and lifestyle patterns of the respondents.

3.4.4 Data Analysis

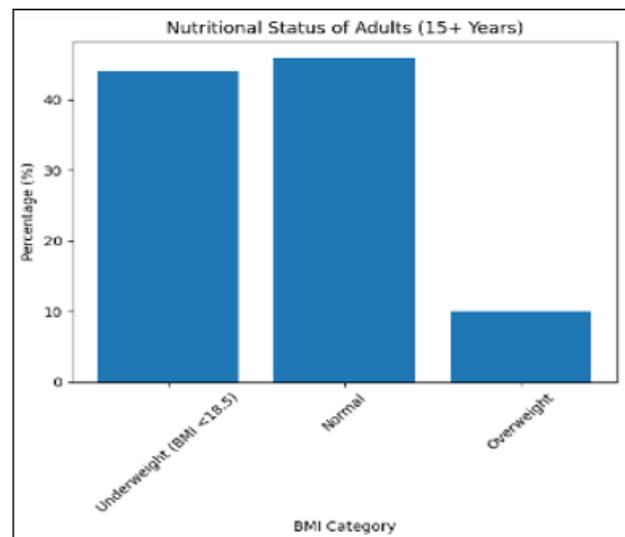
The collected data were carefully compiled, coded, and analyzed using **descriptive statistical methods**. Statistical tools such as **mean and percentage** were used to summarize and interpret the data. Tables and charts were also prepared to present the findings in a clear and systematic manner.

4. Results

After analyzing the collected data the following findings are shown below:

Table 1: Nutritional Status of Children (1–14 Years)

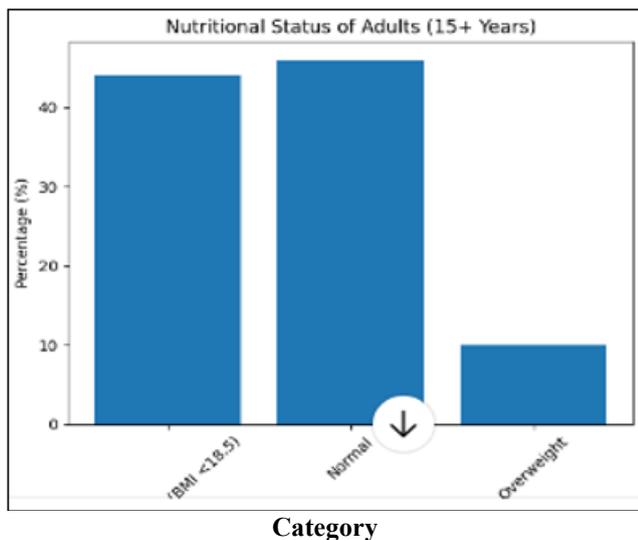
Indicator	Percentage (%)
Underweight	48%
Stunted	42%
Wasted	36%
Normal	28%



The findings indicate a high level of malnutrition among children. Nearly **48% of children were underweight**, while **42% were stunted**, suggesting long-term chronic under nutrition. Additionally, **36% of children were found to be wasted**, reflecting acute malnutrition. Only **28% of children had a normal nutritional status**, which highlights the seriousness of the nutritional challenges among the younger population.

Table 2: Nutritional Status of Adults (15+ Years)

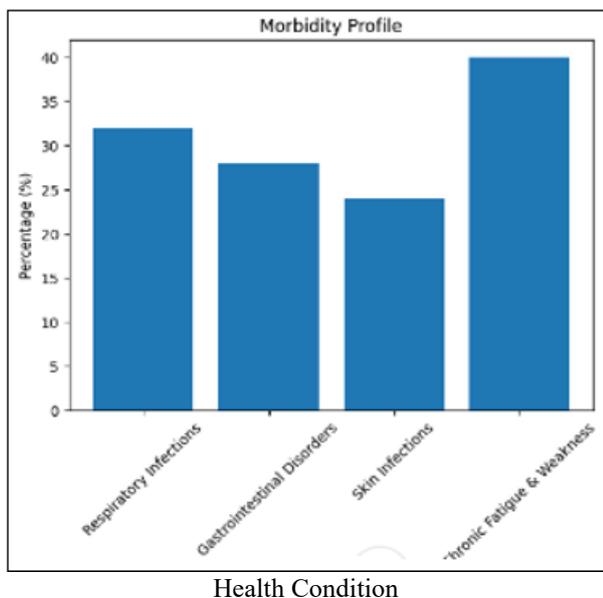
BMI Category	Percentage (%)
Underweight (BMI <18.5)	44%
Normal	46%
Overweight	10%



In Nutritional Status of Adults, the study revealed that **44% of adults were underweight**, indicating widespread nutritional deficiency among the adult population. About **46% of adults had a normal Body Mass Index (BMI)**, while only **10% were categorized as overweight**. These results show that under nutrition is more common than over nutrition in the studied community.

Table 3: Prevalence of Anemia

Category	Percentage (%)
Children	52%
Adult Women	58%
Adult Men	34%



From the above findings, Anemia was found to be a major health concern in the population. The highest prevalence was observed among **adult women (58%)**, followed by **children (52%)**, while **34% of adult men** were also affected. This indicates that women and children are

particularly vulnerable to iron deficiency and related nutritional problems.

4.1 Morbidity Profile

Common health conditions observed:

Category	Percentage (%)
Respiratory infections	32%
Gastrointestinal disorders	28%
Skin infections	24%
Chronic fatigue and weakness	40%

The study also identified several common health problems within the population. **Chronic fatigue and weakness (40%)** were the most frequently reported conditions, followed by **respiratory infections (32%)**, **gastrointestinal disorders (28%)**, and **skin infections (24%)**. These health issues may be associated with poor nutrition, inadequate sanitation, and limited access to healthcare services.

Overall, the findings highlight a high prevalence of under nutrition, anemia, and common illnesses among both children and adults, indicating the need for improved nutritional programs, better healthcare access, and increased awareness regarding health and hygiene practices in the community.

5. Discussion

The findings reveal alarming levels of under nutrition and anemia among the Bru (Reang) PVTG community in Tripura. Nearly half of the children were underweight and stunted, reflecting chronic dietary inadequacy and poor maternal health.

The high prevalence of anemia among women suggests inadequate iron intake, frequent pregnancies, and limited access to antenatal care services. Poor sanitation, unsafe drinking water, and limited healthcare infrastructure further aggravate health risks.

Geographical isolation and low socio-economic status remain major determinants of poor health outcomes. Although government schemes exist, their implementation in remote tribal areas appears insufficient.

6. Conclusion

The study concludes that the health and nutritional status of the Bru (Reang) PVTG community in Tripura remains critically poor. High levels of under nutrition, anemia, and infectious diseases indicate systemic health inequities. There is an urgent need for:

- Strengthened community-based nutrition programs
- Regular health screening camps
- Iron and micronutrient supplementation
- Improved maternal and child healthcare services
- Nutrition education and awareness programs
- Better implementation of ICDS and public distribution systems

Targeted, culturally sensitive, and region-specific policy interventions are essential to improve the overall well-being of PVTGs in Tripura.

7. Recommendations

- 1) Establish mobile health units in remote villages.
- 2) Promote kitchen gardens and diversified diets.
- 3) Ensure regular hemoglobin testing and supplementation.
- 4) Strengthen school-based mid-day meal programs.
- 5) Encourage community participation in health initiatives.

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