

## **Forest-Based Livelihoods and Health Vulnerabilities among Scheduled Tribes in Odisha: A Sociological Analysis**

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### **ABSTRACT**

*Scheduled Tribe communities in Odisha continue to face persistent challenges related to livelihood insecurity and poor health outcomes, despite various development efforts in India. For many of these communities, forest-based activities remain the primary source of livelihood, shaping their everyday lives as well as their access to food and healthcare. However, this dependence is often unstable and seasonal, which can affect both economic security and overall well-being. This study seeks to understand how such livelihood patterns are connected to health vulnerabilities among tribal populations. Using secondary data, particularly from the National Family Health Survey (NFHS-5), along with relevant government reports and existing research, the paper explores the link between livelihood conditions and health outcomes from a sociological perspective. It also considers how broader factors such as poverty, marginalisation, and limited access to resources shape these experiences. The findings indicate a high prevalence of malnutrition, anaemia, and underweight conditions among tribal communities, particularly among women and children. These outcomes are associated with livelihood insecurity, limited access to healthcare, and broader socio-economic disadvantages, highlighting the need for more integrated policy approaches. The study also emphasizes the need to take a more holistic approach that combines both livelihood support and health interventions. Improving local healthcare provision, access to nutrition, and sustainable livelihoods may have a significant contribution to play in enhancing the well-being of tribal communities.*

**Keywords:** Forest-Based Livelihoods, Scheduled Tribes, Health Vulnerabilities, Nutritional Insecurity, Social Marginalization

## **1. Introduction**

Livelihood systems and health outcomes are deeply interconnected, particularly among marginalized populations whose survival depends largely on natural resources. In such contexts, the nature, stability, and accessibility of livelihood opportunities play a crucial role in shaping overall well-being, including food security, nutritional status, and access to healthcare services. This relationship becomes especially significant in the case of tribal communities, where economic activities are closely linked with the surrounding ecological environment.

In regions like Odisha, this interdependence is clearly visible, as a large proportion of Scheduled Tribe populations rely on forest-based livelihoods for their daily sustenance. Activities such as the collection of non-timber forest products, subsistence agriculture, and casual wage labour form the primary sources of income and survival. However, the seasonal and uncertain nature of these livelihood practices often creates economic instability, which in turn affects food security, nutritional intake, and access to healthcare. Thus, the link between forest-based livelihoods and health vulnerabilities becomes particularly important in understanding the everyday challenges faced by tribal communities in Odisha.

The socio-economic and health conditions of Scheduled Tribes in Odisha also present a wide range of differences, even though the state has witnessed continuous development in the socio-economic conditions of the people of India (Census of India, 2011). The tribal population is a substantial percentage of the total population of Odisha, and they are mostly concentrated in the forest areas, which is a major factor in the socio-economic conditions of the people (Census of India, 2011). Traditionally, the tribal population has relied on forest-based livelihood activities, which include the collection of non-timber forest products, farming, and wage work, which are the pillars of tribal economic and social systems (Forest Survey of India, 2021).

However, dependence on forest resources, as observed in most cases, is also marked by a sense of instability, which can prove detrimental to food security and well-being (NSSO, 2019). It has also been observed, through empirical research, that tribal households are often characterized by irregular income patterns and a lack of opportunities for livelihood diversification, leading to a sense of poverty and marginalization (NSSO, 2019). This also leads to a lack of access to basic facilities, especially in rural areas, with respect to healthcare and nutrition (Ministry of Tribal Affairs, 2020).

The health outcomes for the tribal communities continue to remain a major concern. The statistics provided by the National Family Health Survey show the high prevalence of malnutrition, anaemia, and underweight conditions for the Scheduled Tribes community, especially for women and children (IIPS & ICF, 2021). This poor health outcome is further

complicated by the poor healthcare infrastructure and the lack of service delivery mechanisms for the tribal communities, as highlighted by the National Health Mission (Ministry of Health and Family Welfare, 2021). Although the Integrated Child Development Services programme has been launched to address the nutritional problems for the children from the Scheduled Tribes community, the issues related to accessibility and awareness still remain a challenge (Ministry of Women and Child Development, 2020).

Apart from the above factors, other structural factors such as the prevalence of poverty, marginalisation, and unequal access to resources have a crucial impact on the health vulnerability of the tribal population (Ministry of Tribal Affairs, 2020). In fact, the tribal population has been lagging behind even after the formulation and implementation of various policies to address their health and other related issues (NITI Aayog, 2021). This is a pointer to the fact that the issue of health vulnerability needs to be viewed not only from a health point of view but also from a multi-dimensional angle by taking into account the interrelationship between the system of living, socio-economic factors, and structural factors. Most existing studies examine livelihood patterns and health conditions separately, with limited attention given to their interrelationship. In this context, it is important to understand the interrelation between forest-based livelihoods and health vulnerabilities in order to achieve a comprehensive understanding of the issues faced by tribal communities in the region. Although the existing policies have tried to address these issues, it is important to adopt a comprehensive approach towards these issues, considering the complex interrelation between livelihoods and health. Therefore, the present study attempts to understand these issues from a sociological perspective, with a focus on Scheduled Tribe communities in Odisha. In this context, the present study aims to analyse the socio-economic conditions of Scheduled Tribe communities in relation to forest-based livelihoods and to examine the interrelationship between forest-based livelihood systems and health vulnerabilities from a sociological perspective.

## **2. Literature Review**

The existing literature on the tribal communities in the context of India has been able to provide considerable insights into the various aspects related to the livelihood systems, health conditions, and socio-economic factors. A number of studies have been undertaken to understand the reliance of the tribal communities on the forest-based resources as a primary means of subsistence. Similarly, the health and nutritional conditions of the tribal communities have also been a subject matter for a number of research studies. Moreover, a considerable number of recent research studies have been undertaken to understand the interrelations between the livelihood systems and health conditions, along with the impact of the socio-economic and structural factors on the same. However, the various aspects related to the forest-based livelihood

systems and health conditions have been researched independently; therefore, the literature has been reviewed to understand the interrelations between the various aspects.

### **2.1 Forest Dependency among Tribal Communities**

Forest dependence has been recognized as a key characteristic of tribal livelihoods, especially in areas such as Odisha where forests are rich. Global research findings confirm that forest income is an important component of rural livelihoods, especially for economically marginalized groups, as it serves as a vital safety net during critical times (Angelsen et al., 2014; Vedeld et al., 2007). In the context of India, it is evident that forest resources have continued to be a major component of livelihoods of indigenous people. The research findings confirm that tribal people depend on forests as a source of meeting their subsistent needs, including food, fuel, and income, and the socio-economic factors influence the extent of dependence (Islam et al., 2015). Although tribal dependence on forests is evident, it is seasonal and income unpredictable, which affects the extent of economic stability. Although a few research findings focus on the importance of forests to tribal people, only those research findings that are empirically grounded are considered to ensure the rigor of the analysis.

### **2.2 Tribal Health and Nutritional Status**

The health and nutritional conditions of tribal populations in India still reflect these disparities and vulnerabilities. In the early research, a high prevalence of communicable diseases, anaemia, and poor health conditions were identified, which were mainly due to poverty, geographical isolation, and inaccessibility of healthcare facilities (Balgir, 2004). In the subsequent research, a strong association between undernutrition and increased morbidity among tribal children was established; where poor sanitation facilities, food insecurity, and socio-economic deprivation are key contributing factors (Rao et al., 2015).

Regarding women, the nutritional conditions are extremely poor, with a high prevalence of underweight and micronutrient deficiencies due to poor dietary intake and economic constraints (Meshram et al., 2012; Bharati et al., 2011). Furthermore, dependence on conventional healthcare practices and a lack of awareness regarding conventional medical services also contribute to delayed treatment-seeking behaviors, which worsen health outcomes (Lenka, 2016). Overall, the above studies clearly establish that tribal health is deeply rooted in socio-economic and environmental factors rather than being a biomedical issue.

### **2.3 Forest-Based Livelihood and Health Nexus**

The relationship between livelihood systems and health conditions has been emphasized in the literature of sociology and development studies. The sustainable livelihood approach has

emphasized the importance of the accessibility of assets and livelihood systems in the determination of health conditions, particularly in vulnerable environments (Scoones, 1998). The social determinants of health have also emphasized the importance of income, occupation, and living conditions in the production of health inequalities (Deaton, 2003; Marmot, 2005). In the forest-dependent tribal environment, the livelihood insecurity of the community has emerged as an important health determinant. It has been emphasized that the households with high dependency on natural resources have unstable income and poor livelihood diversity, thereby limiting the accessibility of health and nutrition (Prateek & Punia, 2025; Behera et al., 2024).

Further research evidence from Odisha also shows that even with the availability of resources, structural constraints such as governance deficits, spatial disparities, and institutional support have led to continued poverty and vulnerabilities (Datta et al., 2015). Environmental factors such as climate change also exacerbate risks in livelihoods, thereby creating indirect impacts on health (Kumar et al., 2025). However, research also indicates that the diversification of livelihoods and promotion of sustainable livelihoods have a positive impact on the well-being of tribal communities (Maharana et al., 2025).

## **2.4 Gender and Livelihood Roles**

Gender is one of the most important factors in determining tribal livelihood practices and health. Women are at the core of forest-based livelihoods, especially activities such as the collection of forest produce and household resource management. This makes them more dependent on natural resources (Agarwal, 1992). Nevertheless, despite their important role in natural resource management and utilization, tribal women are often denied opportunities to participate in decision-making and access resources, a situation attributed to gender inequalities (Agarwal, 2001; Kelkar, 2007).

Moreover, recent research has further emphasized the fact that the division of labour by gender and high work burdens without sufficient autonomy have a negative impact on the nutritional and health conditions of women. Women's involvement in socio-economic and institutional spaces is still restricted by cultural factors and practices (Sabar, 2022; Nag, 2025). At the same time, women are found to be playing an important role in the maintenance and perpetuation of the indigenous knowledge system pertaining to forest resources through their daily involvement in local ecological practices (Mohanty & Suresh, 2026).

## **3. Methodology**

The current study aims to explore the association between forest-based livelihood systems and health risks, based on a descriptive-analytical research design, focusing on the Scheduled Tribes in the state of Odisha. The entire research is based on secondary data sources, with a major

emphasis on the National Family Health Survey (NFHS-5, 2019-21), which is a reliable source of data on health issues, including undernutrition, anaemia, and healthcare access. In addition, some reports from government sources, such as the Ministry of Tribal Affairs, Forest Survey of India, National Health Mission, and scholarly studies, are also used for the purpose of this research. The research is based on Scheduled Tribe populations living in the state of Odisha, particularly in forest and rural areas. Health vulnerability is measured through the use of certain indicators and its relationship with socio-economic and location factors. The research utilizes descriptive interpretations of secondary data and thematic knowledge obtained from existing literature to understand the relationship between livelihood and health through a sociological lens. Although the research is constrained by the use of secondary data and the lack of direct measures of dependence on forests, it ensures a systematic understanding of the structural relationship between livelihood systems and health vulnerabilities.

#### **4. Results and Discussion**

From the analysis, it is evident that the Scheduled Tribe population in Odisha is concentrated in rural and forest areas, where forest-based livelihoods are the primary sources of subsistence. Forest-based livelihoods, such as non-timber forest product collection, subsistence farming, and casual wage work, are inherently seasonal and uncertain. This is a major constraint for the Scheduled Tribe population, as they are dependent on natural resources, which is a source of unstable income. Evidence has drawn from the National Family Health Survey (NFHS-5, 2019–21) highlights persistent nutritional vulnerabilities among Scheduled Tribe populations. A substantial proportion of ST women are underweight, and more than half of women in Odisha suffer from anaemia, indicating chronic undernutrition and poor dietary diversity. These outcomes are closely associated with livelihood insecurity, as irregular income limits the ability of households to access adequate and nutritious food. The seasonal nature of forest-based earnings further intensifies periods of food scarcity, thereby reinforcing cycles of malnutrition.

The child health indicators also reinforce the gravity of the challenges being faced. The high prevalence rate of stunting, wasting, and underweight among the tribal-dominated areas indicates a historical period of nutritional deprivation. Therefore, it may be inferred that the dynamics of livelihood security have a bearing on the negative health outcomes for children in the region. The access to healthcare facilities is also unevenly distributed among the tribal areas due to geographical inaccessibility, poor infrastructural facilities, and lack of awareness among the tribals. Such challenges often lead to a delayed response to healthcare facilities and a continued reliance on traditional forms of healing practices, thereby heightening the risks for the tribals in the remote forest areas.

Thus, the overall findings show a high interconnection between forest-based livelihood systems and health outcomes. Insecurity related to livelihood systems, influenced by the seasonal use of forest resources, limits income, food, and healthcare opportunities and therefore creates health vulnerability for the people. From a sociological point of view, the findings indicate the existence of underlying inequalities related to health outcomes, such as poverty, marginalization, and unequal resource and healthcare opportunities. Thus, the overall findings suggest that an effective approach to improve the health outcomes for Scheduled Tribes needs to address the insecurity related to their livelihood systems, nutritional requirements, and healthcare opportunities. Without a holistic approach, the improvement of health outcomes may remain limited.

## **5. Conclusion**

The present research has also established that forest-based livelihood systems continue to play a vital role in determining the socio-economic conditions of the Scheduled Tribes of Odisha. Even though the forests continue to be the vital sources of subsistence, income, and identity, the dependency on these forests has also been accompanied by uncertainties, lack of livelihood diversity, and restricted access to markets, which are significant factors in the economic vulnerability of the Scheduled Tribes of the region. The present research has also established that the health vulnerabilities of the Scheduled Tribes, including undernutrition, anaemia, and lack of healthcare, are also closely related to the vulnerable livelihood systems of the Scheduled Tribes of the region, thereby establishing the role of livelihood insecurity as one of the vital determinants of the health conditions of the Scheduled Tribes of the region. The health conditions of the Scheduled Tribes of the region cannot be understood without considering the overall socio-economic and environmental context of the Scheduled Tribes of the region.

From a sociological perspective, the analysis emphasizes that structural inequalities such as marginalization, uneven access to resources, and poor institutional support remain key factors that perpetuate cycles of risk. Though various government interventions have been implemented to mitigate the challenges faced in livelihoods and health, their fragmented approach to addressing these challenges on a sector-wise basis often fails to yield desirable outcomes in tribal areas. Thus, the study emphasizes the need for a holistic approach to policy-making that addresses both livelihood security and health outcomes in a simultaneous manner. Improving forest-based livelihoods in terms of better market access, sustainable forest management, and livelihood diversification must go hand-in-hand with improved access to healthcare services and nutritional interventions. Moreover, promoting community engagement is crucial in order to ensure that development interventions remain sensitive to the local context in addressing the requirements of tribal communities.

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