



Original Article

Role of Indigenous Measures Adapted by Santal and Oraon Women in Reducing Socio-economic Vulnerabilities during Drought in Bangladesh

Abu Zoha Mohammad Zustisul Haider

Associate Professor, Sociology, Rajshahi College, Rajshahi 6000, Bangladesh

PhD Fellow, Institute of Bangladesh Studies (IBS), University of Rajshahi, Rajshahi 6205, Bangladesh

Author's email: mzustisulh@gmail.com

Received: 10 July 2024

Revised: 30 November 2024

Accepted: 25 December 2024

Volume 02

Issue 01

Page 1-8

Cite Haider, A. Z. M. Z. (2024) Role of Indigenous Measures Adapted by Santal and Oraon Women in Reducing Socio-economic Vulnerabilities during Drought in Bangladesh. *J. Raj. Col.* 2(1):1-8.

<https://doi.org/10.5281/zenodo.21777383>

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Journal of Rajshahi College published by Rajshahi College, Rajshahi 6000, Bangladesh.

www.rc.gov.bd

ABSTRACT: Indigenous measures encompass traditional techniques and knowledge systems that ancient communities have used to tackle contemporary challenges. This article explores the indigenous strategies employed by Santal and Oraon women in Bangladesh to alleviate their socio-economic vulnerabilities during droughts. By focusing on three unions—Sapahar, Goala, and Shironty—within the Sapahar Upazila of the Naogaon District, the article assesses how these traditional practices enhance the resilience and economic stability of indigenous women in these regions. Both quantitative and qualitative methods, including surveys, focus group discussions (FGD), and key informant interviews (KII), are utilized for this study. The research aims to understand how Santal and Oraon women apply these measures to reduce socio-economic vulnerabilities during droughts and evaluate the effectiveness of these indigenous strategies in improving their socio-economic conditions. The findings indicate that the small number of respondents who adhere to these indigenous measures experience considerable benefits. The study also highlights the traditional practices, knowledge systems, and social networks that help these women overcome challenges such as poverty, discrimination, and limited access to resources. Based on these findings, the study recommends that policymakers and development practitioners incorporate the strengths of indigenous people into broader socio-economic initiatives to better support marginalized communities in Bangladesh.

Keywords: Indigenous measures, Socio-economic vulnerabilities, Drought, Santal & Oraon women, Bangladesh

1. Introduction

Indigenous communities worldwide have long demonstrated their capacity to adapt to changing environmental conditions through localized strategies that integrate ecological knowledge with cultural practices (Berkes, Colding, & Folke, 2000). Understanding how Santal and Oraon women navigate and negotiate drought-related challenges offers valuable insights into community resilience and sustainable development in the context of climate change. In Bangladesh, among the major disasters, drought is one of the dangerous and devastating slow onset disasters. In 1973, 1975, 1978-1979, 1981-1982, 1989, 1992 and 1994-1995 Bangladesh faced unbearable drought (Siddiquee, 2005).

Droughts present significant challenges to socio-economic stability, particularly in communities heavily reliant on natural resources. In recent years, growing evidence has unequivocally confirmed the reality of anthropogenic climate change. Reports from the International Panel on Climate Change (IPCC) and other authoritative bodies highlight those developing nations, including Bangladesh, are expected to bear the brunt of climate change impacts (Climate Change Cell, 2008). Bangladesh, particularly its western regions, regularly contends with agricultural drought, which is most severe in central-western and north-western areas. In these drought-prone zones, local women face critical challenges such as food insecurity, difficulties in accessing drinking water, and increased risks of disease outbreaks.

Conversely, waterlogging and salinity in other areas do not pose acute problems compared to drought-prone regions. Women in affected areas struggle to maintain homestead vegetable gardens and secure water and fodder for livestock. Despite groundwater irrigation as a means of managing drought, women have limited options to cope with the adverse conditions it brings. Often, their main strategy against drought-induced food shortages involves selling personal assets like jewelry, poultry, or livestock. Some women engage in day labor during both pre-harvest and post-harvest seasons to contribute to household income and manage domestic responsibilities. Additionally, they cultivate drought-tolerant vegetables in their courtyards to supplement their families' diet during drought periods (Climate Change Cell, 2008). In Bangladesh, the Santal and Oraon indigenous groups, predominantly led by women, have

developed unique strategies to lessen the negative effects of drought. These strategies include traditional knowledge, community support, and effective management of resources, all contributing to their resilience in the face of environmental pressures.

This study aims to investigate how Santal and Oraon women utilize these measures to reduce socio-economic vulnerabilities during periods of drought. Indigenous methods play a crucial role in mitigating socio-economic challenges faced by agrarian Santal and Oraon women in Bangladesh. These approaches, deeply rooted in their traditional knowledge and customs, are essential for building community resilience and self-sufficiency. Examples include activities such as rainwater harvesting, utilizing forest resources, and hunting wild game, which demonstrate the diverse indigenous practices adopted by these ethnic women. Through the utilization of local resources and community networks, these women effectively manage economic difficulties and enhance food security, particularly during drought periods.

This study also aims to investigate how effective these indigenous strategies are in improving the socio-economic conditions of Santal and Oraon women. Employing a mixed-methods approach involving surveys, focus groups, and interviews with key informants, the research intends to uncover the specific mechanisms through which these traditional practices contribute to resilience and economic stability. By illuminating these dynamics, the study seeks to provide insights that can guide policies and development efforts aimed at better integrating indigenous strengths into broader socio-economic frameworks, thereby benefiting marginalized communities throughout Bangladesh.

2. Objectives of the study

This study aims to investigate how Santal and Oraon women utilize these measures to reduce socio-economic vulnerabilities during periods of drought and how effective these indigenous strategies are in improving the socio-economic conditions of Santal and Oraon women. Objectives of this study are as follows:

1. To identify the indigenous measures and strategies adapted by Santal and Oraon women to cope with drought conditions in Bangladesh.

1. To assess the effectiveness of these indigenous measures in reducing socio-economic vulnerabilities during drought periods in Bangladesh.

3. Methodology

This study was assessing and analytical in nature, both qualitative and quantitative research approach has been followed in this study. Questionnaire survey, FGD, KII & case study has been used as data collection tools to conduct the study. In this study, 3 unions named Goala, Sapahar and Shironty under Sapahar Upazila in Naogaon district was selected by using purposive sampling to conduct this study. The data have been collected from 384 ethnic women. As the study included both the Santal and Oraon communities, it was chosen 192 women from Santal and 192 from Oraon. Respondents were selected by using purposive sampling to conduct this study.

3.1. Using Rainwater to Reduce Drought Vulnerability

Using rainwater during drought periods is an effective way to conserve our freshwater resources and address the challenges posed by early drought conditions. This practice decreases reliance on public water systems, thereby alleviating stress on freshwater supplies.

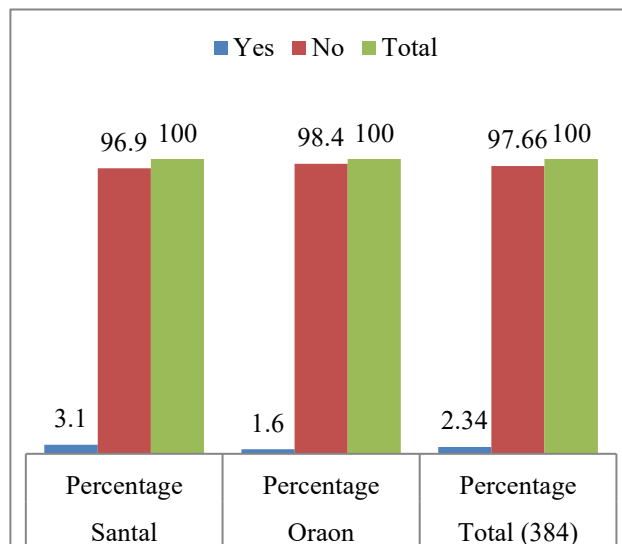


Figure 1. Using Rainwater to Reduce Drought Vulnerability

Rainwater is a renewable and cost-free resource that can be utilized for various household activities,

such as gardening, car washing, flushing toilets, such as gardening, car washing, flushing toilets, and running washing machines. In areas like the Barind tract, including Naogaon, where freshwater resources are scarce, utilizing rainwater can diminish dependence on these limited sources, conserving them for future generations. Additionally, it minimizes the environmental impact of water usage, lowers energy costs, and reduces greenhouse gas emissions linked to water treatment. However, in the study area, it is surprising that most people are unable to use rainwater due to insufficient rainfall. While rainwater is directly used for agriculture, the majority do not preserve it for future use. Almost all Santal and Oraon individuals fished in nearby public sources such as ponds or rivers, even though most of these ponds were privately owned and reserved (Focus Group Discussion of Oraon Ethnic Community, Birampur Village, Goala Union, Sapahar, Naogaon, 16 April, 2022).

3.2. Using Forest Resources to Deal with Drought of Respondents

Many forest resources, beyond just timber, offer crucial support during drought periods. Non-timber forest products like fruits, nuts, berries, medicinal plants, and mushrooms can enhance diets and generate income for communities when other food sources are limited. Grazing livestock in forests, when managed correctly, can prevent overgrazing in open grasslands, preserving soil moisture and vegetation. Practices like rotational grazing and silvopastoral systems can mitigate the effects of drought on grazing lands. Additionally, forests provide a renewable source of fuel wood and biomass for energy needs during drought. Sustainable harvesting practices ensure these resources are used without depleting the forest ecosystem.

The figure indicates that 52.1% of Santal and 55.7% of Oraon people use forest resources by cutting wood for household tasks and collecting wild leaves for firewood. It also shows that nearly 40% of both Santal and Oraon communities actively gather wild leaves to meet their daily firewood needs. Additionally, the Santal and Oraon obtain bamboo for their attic construction from the surrounding area and collect dried tree twigs from nearby forests to use as cooking fuel, helping to reduce costs during drought periods.

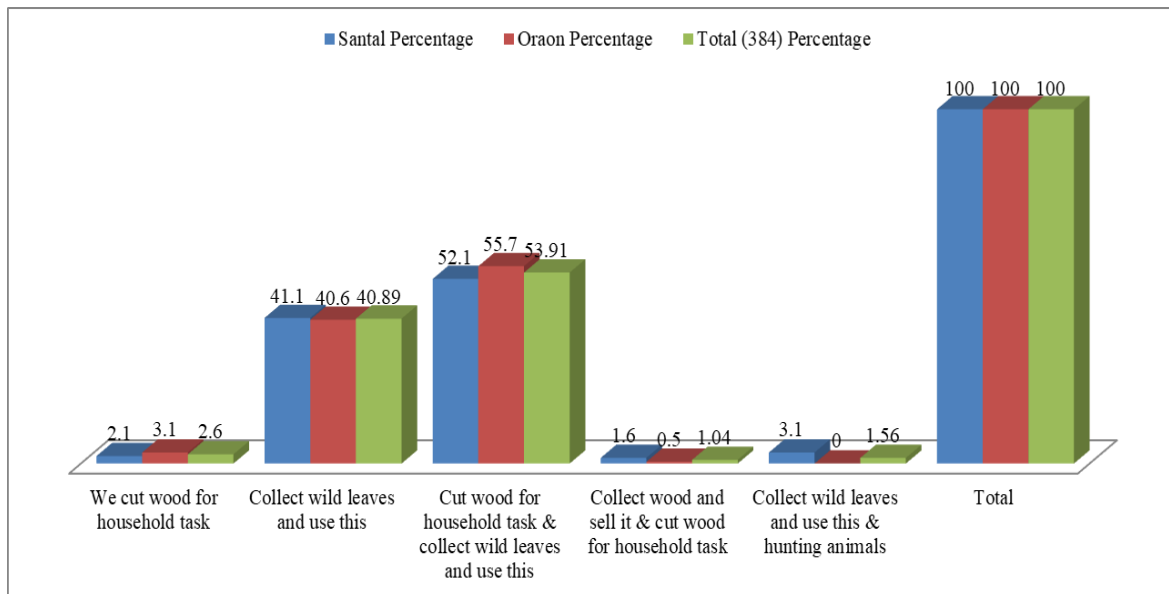


Figure 2: Using Forest Resources to Deal with Drought of Respondents

3.3. Hunting Wild Animal to Manage Meal for Family during Drought of Respondents

The Santal community has traditionally depended on agriculture, gathering, and hunting for their livelihood. Hunting, in particular, has played a crucial role in their way of life, offering essential protein and nutrition, especially during times of scarcity like drought.

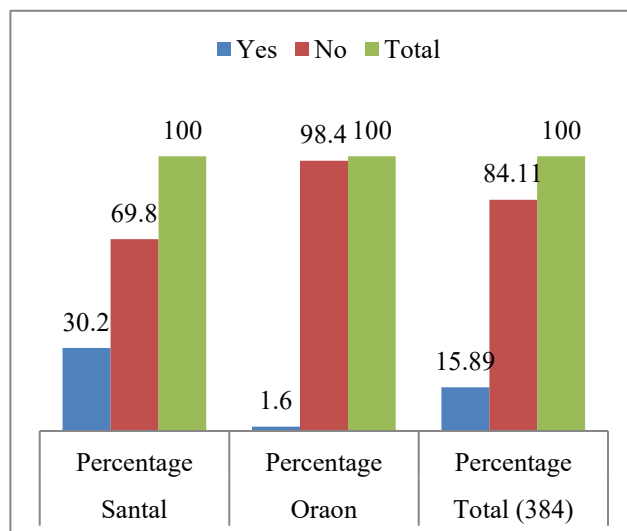


Figure 4: Hunting Wild Animal to Manage Meal for Family during Drought of Respondents

Hunting for subsistence is influenced by cultural, environmental, and legal factors. For the Santal community in Bangladesh, hunting holds cultural significance and is a vital part of their heritage, often carrying spiritual and symbolic meanings along with providing food. In times of agricultural challenges, such as drought, hunting can supplement the community's food resources. However, this tradition is declining, with only 30.2% of the Santal currently engaged in hunting wild animals. In contrast, the Oraon community does not participate in hunting.

3.4. Skills to Deal with Drought of Respondents

Addressing drought necessitates a diverse set of skills across agriculture, water management, community organization, and environmental stewardship. These skills are crucial for helping individuals, communities, and governments mitigate drought impacts and build long-term resilience. Effective water management techniques, such as drip irrigation, rainwater harvesting, and water-efficient technologies, optimize water use in agriculture and other sectors, minimizing wastage during drought. Skills in building and maintaining water storage facilities like reservoirs, ponds, and tanks allow

communities to store water during abundant periods for use during drought. Additionally, farmers need the expertise to adopt drought-tolerant crop varieties and water-efficient farming techniques tailored to local climate conditions.

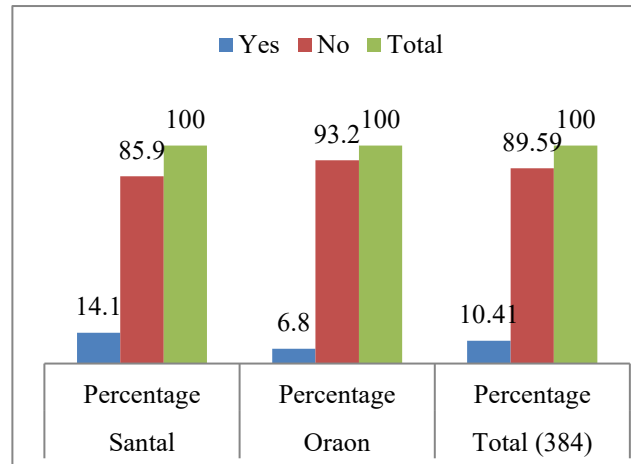


Figure 5: Skills to Deal with Drought of Respondents

In the study area, a significant majority of the population lacks the skills necessary to manage drought conditions, with 85.9% of Santal and 93.2% of Oraon individuals having no relevant skills. Only a small fraction, 14.1% of Santal and 6.8% of Oraon, possess some skills, but these are not substantial enough to effectively cope with drought.

3.5. Types of Group Activities to Deal with Drought of Respondents

Group activities are essential in addressing drought as they promote community cooperation, increase awareness, and facilitate the implementation of effective mitigation strategies. Collaboration and assistance are valued virtues within these efforts, contributing significantly to their success. (Md. Abdullah Al Mamun, Upazila Nirbahi Officer, Sapahar Naogaon: Upazila Key Informants Interview, 17 April, 2022).

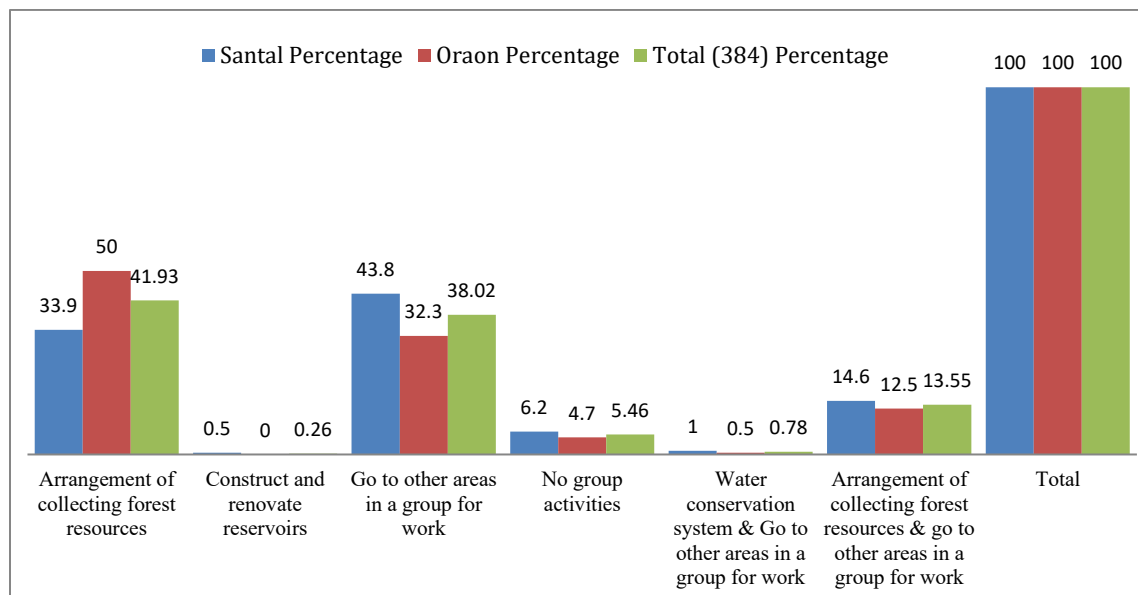


Figure 6. Types of Group Activities to Deal with Drought of Respondents

During the drought, many people in the research area migrate in groups to find work when they are unemployed, with Santal engaging in this practice more than Oraon (43.8% vs. 32.3%). Additionally, 33.9% of Santal and 50% of Oraon gather forest resources collectively to cope with the drought.

Women from both communities, particularly 14.6% of Santal and 12.5% of Oraon, are actively involved in organizing the collection of forest resources and traveling long distances for work in groups. Entire families are also involved in fetching water, a demanding and time-consuming task during this

period. (Hasina Khatun, Women Member, Goala Union Parishad, Sapahar, Naogaon: Key Informants Interview, 17 April, 2022).

3.6. Using Indigenous Technology to Deal with Food Crisis during Drought

The Santal community, similar to other indigenous

groups, utilizes traditional hunting methods honed over generations to fit their environment and available resources. These practices are typically sustainable and tailored to the behaviors and habitats of local wildlife, with bows and arrows frequently employed to hunt animals of various sizes.

Table 4. Using Indigenous Technology to Deal with Food Crisis during Drought

Indigenous Technology	Santal		Oraon		Total (384)	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Animal hunting tools (Ballam)	2	1.04	0	0.0	2	0.52
Animal hunting arrow-bow and batul	13	6.78	1	0.5	14	3.66
Fish hunting harpoon (Toda)	4	2.08	4	2.1	8	2.08
Preservation of food in special way	5	2.61	7	3.6	12	3.12
Animal hunting tools (ballam) & fish hunting harpoon (toda)	8	4.16	0	0.0	8	2.08
Animal hunting arrow –bow & fish hunting harpoon (toda)	4	2.08	0	0.0	4	1.04
Animal hunting tools (ballam) animal hunting arrow-bow	8	4.16	0	0.0	8	2.08
Animal hunting tools (ballam), animal hunting arrow-bow & fish hunting harpoon (toda)	5	2.61	0	0.0	5	1.30
Nothing special	138	71.88	180	93.8	318	82.82
Other (batul)	5	2.60	0	0.0	5	1.30
Total	192	100.00	192	100.00	385	100.00

Source: Self-employed

The Santal people crafted bows from bamboo and arrows tipped with bone, metal, or other materials, with about 6.78% using this traditional method. A small percentage also used Ballam for hunting (1%) and Toda for fishing (2.08%). They also employed various traps and snares ingeniously fashioned from local materials to capture birds and small mammals. Additionally, Santal artisans demonstrated skill in crafting tools like digging sticks and knives from locally sourced materials, essential for hunting, skinning, and processing game.

4. Recommendations

- Emergency funds for drought victims, particularly the Santal and Oraon communities in the study areas are needed to be established by the government.

- Training programs are needed to be organized to teach people how to utilize rainwater effectively, find alternative employment, and sustain their families during drought periods.

- Specialized training programs for women to empower them are needed to be conducted by the NGOs to handle drought conditions, manage vulnerabilities, and effectively engage with government and NGO helplines for emergency assistance

- Alternative water sources upon receiving drought forecasts and educate the public on water conservation practices are needed to be secured by the local governments

- Awareness seminars and training sessions are essential to educate communities about drought challenges and preparedness.
- Street dramas and meetings with women and girls at institutions and homes to educate them about their roles in preventing and managing drought situations are needed to be organized by the educational and cultural organizations.
- Meetings between stakeholders, NGOs, and ethnic women to clarify the roles and responsibilities of each party during drought emergencies, ensuring effective support and assistance mechanisms are in place are needed to be facilitated.

5. Conclusion

The indigenous strategies employed by Santal and Oraon women are pivotal in reducing socio-economic vulnerabilities during droughts in Bangladesh. These strategies, which are deeply entrenched in traditional knowledge and communal resilience, encompass advanced water management techniques, the cultivation of drought-resistant

crops, and the sustenance of diverse livelihoods. The success of these approaches is evident in their capacity to bolster food security, stabilize family incomes, and mitigate the broader impacts of drought on their communities. The unique challenges faced by these women underscore the convergence of environmental stressors and social inequalities. Despite facing considerable resource limitations and lacking external support, Santal and Oraon women display significant adaptability and ingenuity. Their methods not only provide short-term relief but also contribute to long-term sustainability and resilience. To better support these communities, it is crucial to incorporate indigenous knowledge into wider climate adaptation policies. It is imperative for policymakers and development practitioners to acknowledge and strengthen the role of women in climate resilience, ensuring that their insights and experiences inform effective and inclusive strategies. Promoting sustainable practices and enabling the transfer of knowledge across generations can further enhance the resilience of these communities to future climatic challenges.

Declaration of competing interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Funding

No funding

Data availability

Data will be made available on request.

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<https://doi.org/10.1016/j.socec.2005.01.002>

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