

ETHNOMEDICINAL KNOWLEDGE AND PRIMARY HEALTHCARE INTERFACES WITH ICDS AMONG THE BODO COMMUNITY OF GOSSAIGAON, ASSAM, INDIA

Barasha Roy¹ and Arifur Zaman²

¹Assistant Professor, Department of Anthropology, G.L Choudhury College, Barpeta, Assam, India. E-mail: nirmaliroy67@gmail.com.

²Associate Professor, Department of Anthropology, Gauhati University, Guwahati, Assam, India. E-mail: arifurzaman@gmail.com

Abstract: Ethnomedicinal knowledge remains central to everyday healthcare among many indigenous communities in India, functioning alongside formal medical institutions within plural therapeutic landscapes. This paper examines ethnomedicinal practices among the Bodo community of Gossaigaon in Kokrajhar District, Assam, focusing on how plant-based healing is embedded in household life, gendered care practices, and local ecological knowledge. Based on ethnobiological fieldwork conducted between 2022 and 2025, the study documents medicinal plant use, modes of preparation, and therapeutic applications, while situating these practices within broader anthropological debates on medical pluralism and traditional ecological knowledge. Drawing on semi-structured interviews, quasi-participant observation, and interactions with elder knowledge holders, mothers, caregivers, and Anganwadi Workers, the study records sixty-one medicinal plant species used to treat a range of ailments, including gastrointestinal disorders, respiratory conditions, febrile illnesses, skin diseases, and maternal and child health concerns. Ethnomedicinal remedies constitute the first line of treatment within Bodo households, reflecting culturally grounded understandings of illness, efficacy, and bodily balance. Engagement with state-supported services occurs selectively and pragmatically, shaped by local evaluations of need rather than by replacement of indigenous practices. The paper argues that Bodo ethnomedicine should be understood not as a residual tradition but as a living and adaptive system of knowledge, sustained through everyday practice and social transmission. By foregrounding the coexistence and negotiation of multiple healing traditions, the study contributes to anthropological discussions on indigenous healthcare, medical pluralism, and the persistence of ethnomedicinal knowledge in contemporary rural India.

Keywords: Ethnomedicine; Medical pluralism; Traditional ecological knowledge; Indigenous healthcare; Bodo community; ICDS; Maternal and child health.

Introduction

Ethnomedicine, Medical Pluralism, and the Making of Care in Indigenous Contexts

Across much of the world, particularly in indigenous and rural regions, healthcare is not delivered through a single unified system but through pluralistic arrangements

in which traditional ethnomedicinal knowledge coexists with state-supported biomedical interventions. Ethnomedicine is broadly understood as culturally embedded systems of healing that draw on local ecological knowledge, social relations, and experiential understandings of illness (Kleinman, 1980; Etkin, 2006).

Ethnobiology, as an interdisciplinary field, refers to the study of relationships between human societies and biological resources, including plants, animals, and ecosystems, with particular attention to indigenous knowledge systems and their cultural, ecological, and practical dimensions. Ethnobiological studies of medicine focus on how plant-based knowledge is generated, transmitted, and applied in everyday healthcare.

Ethnobiological and medical anthropological research has repeatedly demonstrated that indigenous plant-based medical systems continue to function as primary modes of care, particularly in contexts where formal healthcare infrastructure is limited, culturally distant, or economically inaccessible. Rather than disappearing under processes of modernization, ethnomedicine persists as a first line of treatment embedded in local ecologies and kinship relations.

Scholars working in Africa, Latin America, and Southeast Asia have shown that state-led health programmes rarely replace indigenous healing practices outright. Instead, they enter into complex relationships of negotiation, accommodation, and selective integration with local knowledge systems. This coexistence has been theorized as medical pluralism, a condition in which multiple therapeutic traditions operate simultaneously and are pragmatically mobilized by patients and caregivers (Leslie, 1976; Kleinman 1980; Whyte, 2014). Community health workers, midwives, and nutrition agents often act as intermediaries, translating biomedical advice into locally meaningful forms while simultaneously adapting traditional practices to institutional health priorities. These findings challenge linear narratives of medical transition and instead point to the durability of medical pluralism as a defining feature of healthcare delivery in indigenous contexts.

In India, such pluralism is particularly pronounced in tribal regions, where ethnomedicinal knowledge remains central to everyday healthcare. Despite the expansion of public health programmes, including maternal and child health initiatives, indigenous communities continue to rely on plant-based remedies for treating common illnesses, managing reproductive health, and caring for children. Assam, located within the Indo–Burma biodiversity hotspot, is home to numerous indigenous groups whose ethnobotanical knowledge is deeply intertwined with local landscapes. Yet systematic ethnobiological studies that examine how this knowledge interacts with contemporary public health institutions remain limited.

In the Indian context, several ethnobotanical and ethnomedicinal studies have documented plant-based healing practices among tribal communities, including the Bodos of Assam. Earlier works have primarily focused on documenting medicinal plant species, their therapeutic uses, and modes of preparation. Studies conducted in Assam have identified a rich diversity of ethnomedicinal plants used for treating gastrointestinal, respiratory, dermatological, and reproductive health conditions.

However, most of these studies remain limited to inventory-based documentation and do not sufficiently explore how ethnomedicinal knowledge operates within contemporary healthcare systems. In particular, there is a lack of research examining how indigenous medical practices interact with state-supported public health programmes such as the Integrated Child Development Services (ICDS).

The present study addresses this gap by not only documenting ethnomedicinal plant use among the Bodo community but also analysing its interface with ICDS-based maternal and child healthcare. By doing so, it contributes both new empirical data (61 plant species with contextual use) and a novel analytical framework grounded in medical pluralism and institutional interaction.

This article addresses this gap through an ethnobiological study of the Bodo community of Gossaigaon, located in Kokrajhar District of Assam. The Bodos possess a rich tradition of ethnomedicinal plant use, transmitted primarily through elder women and household networks. At the same time, Bodo villages in Gossaigaon are integrated into the Integrated Child Development Services (ICDS) framework, one of India's largest state-supported health and nutrition programmes. Launched in 1975, ICDS is designed to address maternal and child health through a combination of supplementary nutrition, health education, growth monitoring, and early childhood care, delivered at the village level through Anganwadi Centres and Anganwadi Workers (AWWs).

Rather than treating ethnomedicine and ICDS as competing or mutually exclusive systems, this study examines how healthcare among the Bodos is produced at their interface. It asks how traditional plant-based remedies continue to shape household healthcare decisions, how Anganwadi Workers engage with indigenous health beliefs, and how maternal and child healthcare practices are negotiated in everyday life. By foregrounding these interactions, the article situates Bodo ethnomedicine within a broader theoretical discussion on traditional ecological knowledge, understood as cumulative, practice-based knowledge generated through long-term interaction with specific environments (Berkes, 2012), institutional mediation, and culturally grounded primary healthcare.

Theoretically, the article draws on scholarship in ethnobiology, medical anthropology, and political ecology to argue that indigenous healthcare systems are not static survivals but dynamic knowledge practices continually reshaped through engagement with state institutions. Cross-cultural ethnographic research from Africa, Latin America, and Southeast Asia has similarly shown that indigenous healing systems endure through negotiated coexistence with public health programmes rather than through resistance or isolation (Whyte, 2014; Pfeiffer & Nichter, 2008). In doing so, the study contributes to ethnobiological debates on the sustainability of traditional medical knowledge and the importance of culturally responsive approaches to healthcare in indigenous settings.

Objectives of the Study

The present study seeks to examine ethnomedicinal knowledge and healthcare practices among the Bodo community of Gossaigaon in Kokrajhar District, Assam, with particular attention to the ways in which traditional plant-based healing intersects with state-supported health and nutrition initiatives. Grounded in ethnobiological fieldwork, the study aims to document medicinal plant use while also analysing the social, cultural, and institutional contexts within which such knowledge is produced, transmitted, and practiced.

Specifically, the objectives of the study are to:

1. Document the range of medicinal plants used by the Bodo community for the treatment of common illnesses, maternal health concerns, and child-related ailments, including information on plant parts used, methods of preparation, and therapeutic applications;
2. Examine the role of ethnomedicinal knowledge in everyday household healthcare practices, with attention to gendered patterns of caregiving, intergenerational transmission of knowledge, and local understandings of illness and efficacy;
3. Analyse the interface between indigenous ethnomedicine and the Integrated Child Development Services (ICDS), focusing on how Anganwadi Workers engage with local health beliefs and how institutional health practices are negotiated within Bodo villages;
4. Explore the implications of these interactions for the continuity and adaptation of traditional ecological knowledge in the context of expanding public health interventions;
5. Situate the findings within broader anthropological and ethnobiological debates on medical pluralism, institutional mediation, and culturally grounded primary healthcare in indigenous settings.

Study Area and Methodology

Study Area: Gossaigaon, Kokrajhar District, Assam

The study was conducted in Gossaigaon subdivision of Kokrajhar District, Assam, an area predominantly inhabited by the Bodo community. Located in western Assam, Gossaigaon forms part of the broader Bodoland region and is characterized by a mosaic of rural settlements interspersed with agricultural land, forest patches, wetlands, and homestead gardens. The region lies within the Indo–Burma biodiversity hotspot, which supports a rich diversity of plant species and provides an important ecological foundation for local ethnomedicinal practices.

The Bodos are one of the largest indigenous communities of Assam and possess a long-standing tradition of plant-based medical knowledge closely tied to their agrarian livelihoods and surrounding environment. In Gossaigaon, ethnomedicinal knowledge is primarily embedded within households and transmitted through everyday caregiving practices, particularly by elder women, mothers, and experienced caregivers. At the same time, the area is well integrated into state-supported health and nutrition initiatives, most notably the Integrated Child Development Services (ICDS), which operates through a network of Anganwadi Centres across villages. This coexistence of indigenous healing practices and institutional healthcare provision makes Gossaigaon a suitable site for examining medical pluralism and institutional interfaces in an indigenous context.

Sampling Design

The study was conducted in selected villages within the Gossaigaon subdivision of Kokrajhar District, Assam, an area predominantly inhabited by the Bodo community. Although Gossaigaon subdivision constitutes a large administrative unit, the research focused on specific villages selected based on accessibility, presence of Bodo households, and active functioning of Anganwadi Centres.

A purposive sampling strategy was employed to identify respondents possessing relevant ethnomedicinal knowledge and healthcare experience. The selection criteria included:

- Elder knowledge holders with expertise in medicinal plants
- Mothers and caregivers involved in household healthcare
- Traditional practitioners (where available)
- Anganwadi Workers engaged in ICDS implementation

This approach ensured depth and reliability of ethnobiological data rather than statistical generalization.

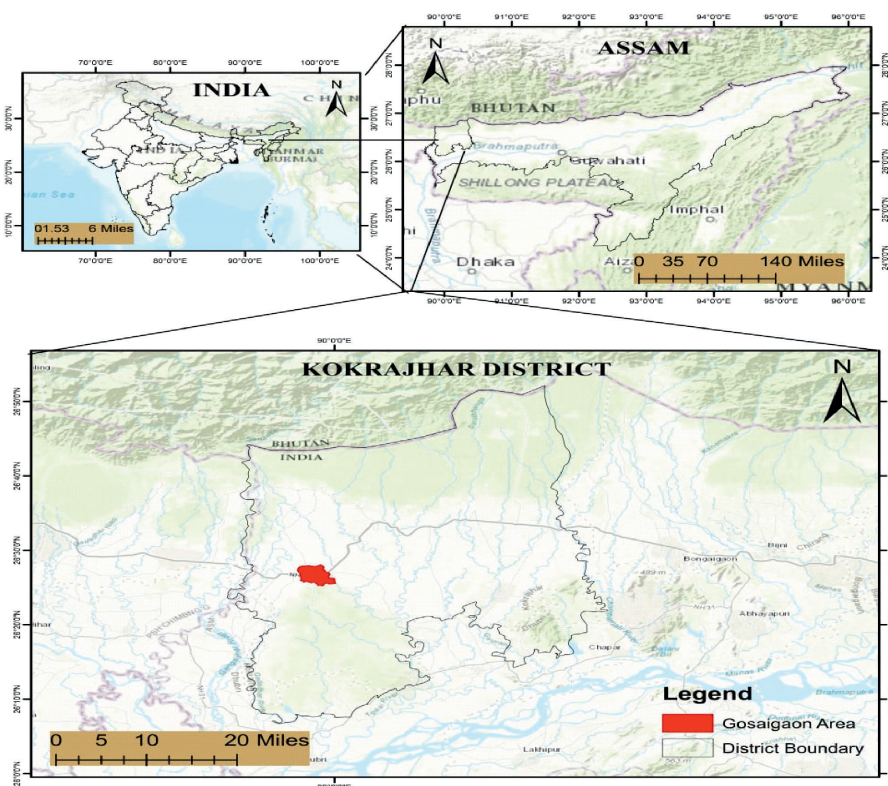


Figure 1: Map of the study area — Gossaigaon, Kokrajhar District, Assam

Methodology

The study is based on ethnobiological fieldwork conducted between 2022 and 2025. A qualitative research design was adopted to document ethnomedicinal plant use and to examine the social and institutional contexts in which such knowledge is practiced and negotiated. Data were collected through a combination of semi-structured interviews, participant observation, informal conversations, and guided plant walks.

A total of 110 respondents participated in the study, including elder knowledge holders, mothers of young children, traditional caregivers, and Anganwadi Workers. While all respondents contributed insights into healthcare practices and decision-making, detailed ethnomedicinal plant information was primarily provided by elder community members and experienced caregivers who possessed specialized knowledge of plant identification, preparation methods, and therapeutic use. Anganwadi Workers contributed perspectives on maternal and child health practices, nutrition counseling, and their interactions with local households.

Semi-structured interviews focused on illness categories treated through ethnomedicine, plant parts used, modes of preparation, routes of administration, and perceptions of efficacy. Interviews were conducted in the local language with the assistance of community members when required, and care was taken to ensure that discussions were conducted in culturally appropriate settings. Quasi-participant observation was carried out during routine household activities, caregiving practices, visits to Anganwadi Centres, and community interactions related to health and nutrition. Guided plant walks with knowledgeable informants enabled the identification of medicinal plant species in home gardens, agricultural fields, and nearby forested areas.

Illness categories documented in this study are primarily based on local (emic) classifications rather than formal biomedical diagnoses. Respondents identified diseases through symptom-based descriptions, experiential knowledge, and culturally specific understandings of the body and illness.

To improve reliability:

- “Information was cross-verified across multiple respondents”
- “Local illness terms were interpreted through comparative symptom analysis”
- “Where possible, approximate biomedical equivalents were inferred cautiously”
- Medicinal plant species were identified using:
 - “Regional floras and botanical manuals”
 - “Standard taxonomic references”
 - “Verification through online databases such as Plants of the World Online (POWO)”

Where necessary, identification was cross-checked through consultation with botanical experts. Scientific names were standardized to ensure taxonomic accuracy.

ICDS Interface: Conceptualization and Methodological Approach

The study conceptualizes “interface” as the interaction, coexistence, and negotiation between indigenous ethnomedicinal practices and ICDS-based institutional healthcare.

This interface was examined through:

- “Interviews with Anganwadi Workers”
- “Observation of Anganwadi Centres”
- “Household-level healthcare decision tracking”

- “Comparative analysis of traditional and institutional practices”

Ethical considerations were central to the research process. Prior informed consent was obtained from all participants, and the study adhered to principles of respect for indigenous knowledge, confidentiality, and community ownership of ethnomedicinal information. The research did not involve the collection of biological samples for commercial purposes, and findings are presented with the intention of documentation and scholarly analysis rather than exploitation.

Ethnomedicine, Ethnobiology, and Medical Pluralism in Indigenous Contexts

Across much of the world, particularly in indigenous and rural regions, healthcare is not delivered through a single unified system but through pluralistic arrangements in which traditional ethnomedicinal knowledge coexists with state-supported biomedical interventions. Ethnomedicine is broadly understood as culturally embedded systems of healing that draw on local ecological knowledge, social relations, and experiential understandings of illness (Kleinman, 1980; Etkin, 2006).

Ethnobiology, as an interdisciplinary field, refers to the study of relationships between human societies and biological resources, including plants, animals, and ecosystems, with particular attention to indigenous knowledge systems and their cultural, ecological, and practical dimensions. Ethnobiological studies of medicine focus on how plant-based knowledge is generated, transmitted, and applied in everyday healthcare.

Ethnobiological and medical anthropological research has repeatedly demonstrated that indigenous plant-based medical systems continue to function as primary modes of care, particularly in contexts where formal healthcare infrastructure is limited, culturally distant, or economically inaccessible. Rather than disappearing under processes of modernization, ethnomedicine persists as a first line of treatment embedded in local ecologies and kinship relations.

The following tables present both qualitative and quantitative ethnobiological data, including frequency distribution of plant use, ailment categories, preparation methods, and plant parts used.

Socio-demographic profile of Bodo knowledge holders

A total of 110 Bodo respondents participated in the study, including elder knowledge holders, mothers/caregivers, and Anganwadi Workers (AWWs). Women constituted the majority of respondents and were especially prominent in domains related to maternal and child health, food-based therapies, and home remedies, underscoring the gendered organization of care documented across ethnomedical settings (Etkin, 2006).

Table 1: Socio-demographic profile of Bodo respondents in Gossaigaon

Variable	Category	Number (n)	Percentage (%)
Gender	Male	42	38.2
	Female	68	61.8
Age group	18–30 years	21	19.1
	31–50 years	47	42.7
	≥51 years	42	38.2
Role	Traditional knowledge holders	39	—
	Mothers/caregivers	51	—
	Anganwadi Workers (Bodo)	20	—

Note: Percentages may not total 100 due to rounding.

Table 1 presents the socio-demographic profile of respondents, indicating a strong concentration of ethnomedicinal knowledge among older age groups. This distribution highlights both the depth of experiential knowledge and the potential vulnerability of intergenerational transmission.

Diversity of ethnomedicinal plants used by the Bodos

The study documented 61 medicinal plant species belonging to 34 botanical families used by the Bodos of Gossaigaon. Families such as *Zingiberaceae*, *Fabaceae*, *Lamiaceae*, and *Euphorbiaceae* were most represented, reflecting both ecological availability and therapeutic versatility. The documented ethnomedicinal plants and their therapeutic applications are summarized in Table 2 (Tables 2A–2C).

Table 2A: Ethnomedicinal plants used for infectious, respiratory, and gastrointestinal ailments among the Bodos

Disease / Ailment	Medicinal plant species	Plant part(s) used	Preparation	Route
Fever & common cold	<i>Kola Tulsi</i> (<i>Ocimum tenuiflorum</i>); <i>Jogalawri</i> (<i>Blumea lanceolaria</i>); <i>Monamzari</i> (<i>Ageratum conyzoides</i>); <i>Nim</i> (<i>Azadirachta indica</i>)	Leaves, twigs	Decoction, juice	Oral
Cough & bronchitis	<i>Kansingsa</i> (<i>Leucas aspera</i>); <i>Sijou</i> (<i>Euphorbia neriifolia</i>); <i>Maisundri</i> (<i>Houttuynia cordata</i>)	Leaves, latex	Juice, decoction	Oral

<i>Disease / Ailment</i>	<i>Medicinal plant species</i>	<i>Plant part(s) used</i>	<i>Preparation</i>	<i>Route</i>
Diarrhea & dysentery	<i>Manimuni</i> (<i>Centella asiatica</i>); <i>Sumfram</i> (<i>Psidium guajava</i>); <i>Mukhuuna</i> (<i>Clerodendrum infortunatum</i>)	Leaves, fruit	Juice, decoction	Oral
Gastritis & stomach ache	<i>Bel</i> (<i>Aegle marmelos</i>); <i>Thaika</i> (<i>Garcinia pedunculata</i>); <i>Lebu</i> (<i>Citrus aurantifolia</i>)	Fruit, leaves	Decoction, raw	Oral
Intestinal worms	<i>Kal</i> (<i>Musa balbisiana</i>); <i>Mathru</i> (<i>Carica papaya</i>); <i>Motha</i> (<i>Cyperus rotundus</i>)	Stem, fruit, rhizome	Juice, vegetable	Oral

Table 2B: Ethnomedicinal plants used for hepatic, urological, metabolic, and neurological ailments among the Bodos

<i>Disease / Ailment</i>	<i>Medicinal plant species</i>	<i>Plant part(s) used</i>	<i>Preparation</i>	<i>Route</i>
Jaundice & liver disorders	<i>Akashi-lota</i> (<i>Cuscuta reflexa</i>); <i>Khambranga</i> (<i>Averrhoa carambola</i>); <i>haladwi</i> (<i>Curcuma longa</i>); <i>Jetuka</i> (<i>Lawsonia inermis</i>)	Whole plant, fruit, rhizome	Decoction, juice	Oral
Urological disorders	<i>Paanfutti</i> (<i>Kalanchoe pinnata</i>)	Leaves	Juice	Oral
Diabetes	<i>Chirota</i> (<i>Andrographis paniculata</i>); <i>Parvati pul</i> (<i>Catharanthus roseus</i>); <i>Nim</i> (<i>Azadirachta indica</i>)	Leaves, twigs	Juice, decoction	Oral
Neurological & memory support	<i>Brahmi</i> (<i>Bacopa monnieri</i>); <i>Bel-gathwi</i> (<i>Aegle marmelos</i>)	Whole plant, fruit	Juice, decoction	Oral
General weakness	<i>Mani-muni</i> (<i>Centella asiatica</i>); <i>Kal</i> (<i>Musa balbisiana</i>)	Leaves, stem	Juice, vegetable	Oral

Table 2C: Ethnomedicinal plants used for dermatological, musculoskeletal, reproductive, and post-partum care among the Bodos.

<i>Disease / Ailment</i>	<i>Medicinal plant species</i>	<i>Plant part(s) used</i>	<i>Preparation</i>	<i>Route</i>
Skin diseases	<i>Nim</i> (<i>Azadirachta indica</i>); <i>Sal Kungri</i> (<i>Aloe vera</i>); <i>Daoganzwla</i> (<i>Eclipta prostrata</i>); <i>Nashrai khor</i> (<i>Commelina benghalensis</i>)	Leaves, sap, latex	Paste, juice	External
Cuts & wounds	<i>Bishalyakarani</i> (<i>Alternanthera brasiliana</i>); <i>Jarmuni</i> (<i>Chromolaena odorata</i>); <i>Meoai</i> (<i>Bambusa tulda</i>)	Leaves, bark	Paste	External
Bone fracture & body pain	<i>Bol-merang</i> (<i>Cissus quadrangularis</i>); <i>Akhan</i> (<i>Calotropis gigantea</i>); <i>Gegere-bogo</i> (<i>Equisetum ramosissimum</i>)	Stem, leaves	Paste, bandage	External
Menstrual & reproductive health	<i>Jaba</i> (<i>Hibiscus rosa-sinensis</i>); <i>Maithru</i> (<i>Carica papaya</i>); <i>Goy-Khoung</i> (<i>Cryptolepis sinensis</i>)	Leaves, fruit	Juice, vegetable	Oral
Post-partum recovery	<i>Bon channa</i> (<i>Homalomena aromatica</i>); <i>Jaba</i> (<i>Hibiscus rosa-sinensis</i>)	Rhizome, leaves	Cooked vegetable	Oral
Hair & scalp disorders	<i>Daoganzwla</i> (<i>Eclipta prostrata</i>); <i>Jaba</i> (<i>Hibiscus rosa-sinensis</i>); <i>Sambram gwja</i> (<i>Allium cepa</i>)	Leaves, flowers, bulb	Paste, juice	External

As shown in Table 3, the dominance of these families mirrors broader ethnobotanical patterns in South and Southeast Asia, where aromatic leaves and rhizomes are central to household medicine for digestive, respiratory, and febrile conditions.

Table 3: Ethnomedicinal plant diversity among the Bodo community of Gossaigaon

<i>Botanical family</i>	<i>Number of species</i>	<i>Percentage (%)</i>
<i>Zingiberaceae</i>	7	11.5
<i>Fabaceae</i>	6	9.8
<i>Lamiaceae</i>	5	8.2
<i>Euphorbiaceae</i>	5	8.2
<i>Asteraceae</i>	4	6.6
<i>Other families</i>	34	55.7
Total	61	100

Plant Parts used and Sustainability Implications

Analysis of plant parts used reveals a strong preference for leaves (47.5 per cent), followed by roots and rhizomes (23.0 per cent), with bark, fruits/seeds, and whole plants used less frequently. This pattern, presented in Table 4, is significant from a sustainability perspective, as leaf harvesting is generally less destructive than root or whole-plant extraction.

Table 4: Parts of plants used in Bodo ethnomedicine

<i>Plant part used</i>	<i>Number of species</i>	<i>Percentage (%)</i>
Leaves	29	47.5
Roots/Rhizomes	14	23.0
Bark	6	9.8
Fruits/Seeds	9	14.8
Whole plant	3	4.9
Total	61	100

This finding aligns with ethnobiological arguments that indigenous harvesting practices often reflect long-term ecological sensibilities embedded in everyday use (Berkes, 2012).

Modes of Preparation and Administration

Bodo ethnomedicine employs diverse preparation techniques, including decoctions, pastes, infusions, raw consumption, and inhalation, depending on the ailment and

plant characteristics. Table 5 shows that decoction is the most common method, particularly for internal ailments, while topical pastes are used for skin conditions and musculoskeletal complaints.

Table 5: Modes of preparation and administration of ethnomedicinal remedies

<i>Preparation method</i>	<i>Frequency of use</i>	<i>Mode of administration</i>
Decoction	High	Oral
Paste	Moderate	Topical
Infusion	Moderate	Oral
Raw consumption	Low	Oral
Smoke/Inhalation	Rare	Inhalation

These practices reflect what Etkin (2006) describes as the cultural logic of ethnopharmacology, in which preparation methods are integral to therapeutic meaning and efficacy.

Ethnomedicinal Treatment of Major Ailment Categories

Ethnomedicinal plant use among the Bodos is concentrated around ailment categories that correspond to everyday vulnerabilities and life-cycle needs. As summarized in Table 6, gastrointestinal disorders represent the largest category, followed by respiratory ailments, fever/infections, maternal and child health conditions, and skin diseases.

Table 6: Ethnomedicinal Plants used for Major Ailment Categories

<i>Ailment category</i>	<i>Number of species</i>	<i>Common plant examples</i>
Gastrointestinal disorders	17	<i>Manimuni (Centella asiatica)</i> , <i>Haijen (Zingiber officinale)</i>
Respiratory ailments	11	<i>Tulsi (Ocimum tenuiflorum)</i> , <i>Barsikho jola (Adhatoda vasica)</i>
Fever and infections	13	<i>Nim (Azadirachta indica)</i>
Maternal and child health	9	<i>Haldwi (Curcuma longa)</i> , <i>Sujona (Moringa oleifera)</i>

Maternal and child health emerges as a distinct domain of care, with specific plants used for postpartum recovery, lactation support, and childhood fever—areas where household control over treatment remains strong. A thematic overview of major ailment categories, dominant plant parts used, preparation methods, and therapeutic orientation is presented in Table 7.

Table 7: Ailment-wise ethnomedicinal plant use and therapeutic orientation among the Bodos of Gossaigaon in Kokrajhar District, Assam

<i>Ailment category</i>	<i>Examples of treated conditions</i>	<i>Dominant plant parts</i>	<i>Common preparation</i>	<i>Therapeutic role</i>
Infectious diseases	Fever, cold, skin infections	Leaves	Decoction, paste	Curative
Gastrointestinal disorders	Diarrhea, dysentery, gastritis	Leaves, fruit	Juice, decoction	Curative & preventive
Hepatic disorders	Jaundice, liver weakness	Whole plant, rhizome	Decoction	Specialized curative
Respiratory ailments	Cough, bronchitis	Leaves, latex	Juice	Curative
Musculoskeletal conditions	Fracture, body pain	Stem, leaves	Paste	External curative
Urological disorders	Kidney stones	Leaves	Juice	Targeted curative
Dermatological disorders	Scabies, boils, wounds	Leaves, sap	Paste	External
Parasitic infections	Intestinal worms	Stem, rhizome	Juice, vegetable	Preventive & curative
Reproductive health	Menstrual pain, lactation	Leaves, fruit	Juice, vegetable	Supportive
General health & vitality	Weakness, memory	Whole plant	Juice	Preventive

ICDS-based maternal and child healthcare among the Bodos

ICDS services in Gossaigaon focus on supplementary nutrition, growth monitoring, immunisation support, and health counseling. Anganwadi Centres function as accessible institutional spaces, particularly for women with young children. However, engagement with ICDS is selective and mediated through existing ethnomedicinal understandings.

Field observations indicate that growth monitoring and food supplementation are widely accepted, while biomedical advice is evaluated in relation to established household practices.

Interface between Bodo ethnomedicine and ICDS interventions

One of the central findings of this study concerns the interface between ethnomedicine and ICDS, where healthcare practices are negotiated rather than hierarchically imposed. Table 8 illustrates how traditional practices and ICDS interventions coexist across key health domains.

Table 8: Interface between Bodo ethnomedicine and ICDS interventions

<i>Health domain</i>	<i>Bodo traditional practice</i>	<i>ICDS intervention</i>	<i>Nature of interface</i>
Child nutrition	<i>Aoluri</i> (Rice gruel), <i>onga-monga</i> (local leafy vegetables)	Supplementary nutrition	Complementary
Postpartum care	<i>Dwi sarnai janai</i> (Herbal baths and tonics)	Nutrition counseling	Negotiated
Childhood illness	<i>Muli khangnai</i> (Home-based herbal remedies)	Referral advice	Coexistence
Growth assessment	<i>Nijwmnai</i> (Visual assessment by elders)	Growth monitoring charts	Partial adoption

Rather than displacing traditional remedies, ICDS interventions often complement them, particularly in nutrition and preventive care. This pattern supports cross-cultural findings on pragmatic medical pluralism (Whyte, 2014).

Anganwadi Workers as cultural mediators

Anganwadi Workers play a pivotal role as cultural mediators, translating institutional health messages into locally meaningful terms. As detailed in *Table 9*, AWWs frequently adapt nutrition counseling by referencing local Bodo foods and avoid directly challenging herbal practices unless they are perceived as harmful.

Table 9: Role of Anganwadi Workers as cultural mediators in Bodo communities

<i>ICDS function</i>	<i>Locally adapted practice</i>
Nutrition education	Emphasis on locally available Bodo foods
Health counseling	Respect for herbal beliefs
Behaviour change communication	Gradual persuasion rather than instruction
Referral services	Negotiated and context-sensitive

This mediating role aligns with ethnographic research on community health workers in Africa and Latin America, where frontline workers shape how biomedical knowledge is interpreted and adopted (Pfeiffer & Nichter, 2008).

Household healthcare decision-making

Healthcare decision-making among Bodo households follows a sequential logic: initial reliance on home-based ethnomedicine, followed by ICDS consultation if symptoms persist or worsen, and referral to biomedical facilities when necessary. Following is the flow diagram of healthcare decision-making among Bodo households-

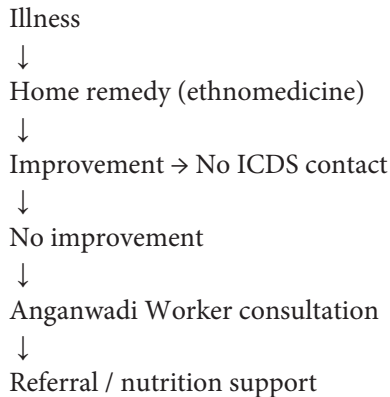


Figure 2: Healthcare decision-making flow among Bodo households

This sequence reinforces the argument that ethnomedicine and institutional care form a continuum rather than a dichotomy.

Emerging implications for knowledge continuity

While ICDS has enhanced awareness of nutrition and child growth, it has also contributed to subtle shifts in knowledge transmission. Younger mothers increasingly depend on AWWs for advice, raising concerns about long-term continuity of ethnomedicinal knowledge. At the same time, the continued reliance on plant-based remedies indicates resilience through adaptation rather than simple decline.

Discussion

Ethnomedicine, Medical Pluralism, and Institutional Mediation in Indigenous Healthcare

Ethnomedicinal Knowledge as Living Practice, Not Residual Tradition

The findings from Gossaigaon reaffirm a central insight of ethnobiology and medical anthropology: ethnomedicinal knowledge among indigenous communities is not a residual or declining system displaced by biomedical modernity, but a living, adaptive practice embedded in everyday life. Among the Bodos, plant-based remedies continue to function as the primary mode of healthcare for common illnesses, maternal well-being, and child care. This supports Berkes (2012) argument that traditional ecological knowledge (TEK) is best understood as a processual system of knowing, shaped by practice, experimentation, and social transmission rather than as a static body of inherited lore.

Unlike earlier ethnobotanical studies that focus primarily on plant inventories, the present study demonstrates that ethnomedicinal knowledge is embedded within a broader institutional context. The interaction with ICDS reveals that indigenous healthcare systems are not isolated but actively engaged with state-supported interventions, thereby reshaping both practice and knowledge transmission.

Rather than conceptualizing ethnomedicine as an alternative to biomedicine, the Bodo case demonstrates that it operates as part of a local health care system (Kleinman, 1980), in which multiple therapeutic options are available and activated sequentially. Illness is first addressed through household-based remedies, drawing on familiar plants and preparation techniques, and only later escalated to institutional care if necessary. This pattern underscores that therapeutic choice is shaped not only by accessibility but by culturally grounded evaluations of efficacy, safety, and moral appropriateness.

Gender, Household Authority, and the Transmission of Medical Knowledge

The predominance of women—particularly elder women—as custodians of ethnomedicinal knowledge among the Bodos aligns with cross-cultural ethnomedical research emphasizing the gendered nature of care (Etkin, 2006). Women's roles in food preparation, childcare, and postpartum care place them at the centre of everyday therapeutic decision-making. Knowledge transmission occurs largely through observation, participation, and oral instruction within households, reinforcing what Ingold (2000) describes as enskilled learning, where knowledge is acquired through practice rather than formal teaching.

However, the results also reveal generational shifts. Younger Bodo women increasingly rely on Anganwadi Workers for nutritional and health advice, reflecting broader patterns of institutionalization of care. This raises concerns, echoed in ethnobiological literature from Latin America and Southeast Asia (Reyes-García et al., 2013; Vandebroek et al., 2018), about the partial erosion of intergenerational transmission of ethnomedicinal knowledge. Yet erosion is not uniform; instead, knowledge is selectively retained, particularly for ailments perceived as manageable within the household domain.

ICDS and the Reconfiguration of Indigenous Healthcare A key theoretical contribution of this study lies in its analysis of ICDS not as a hegemonic biomedical force but as an institutional mediator within a plural healthcare landscape. ICDS interventions—nutrition supplementation, growth monitoring, immunisation referral—reshape healthcare practices among the Bodos without fully displacing ethnomedicine. This finding resonates with studies from sub-Saharan Africa, where community health worker (CHW) programmes coexist with indigenous healing

systems, producing layered forms of care rather than linear transitions (Whyte, 2014; Pfeiffer & Nichter, 2008).

In Gossaigaon, Anganwadi Workers function as cultural brokers, translating biomedical categories into locally intelligible advice and adapting institutional norms to fit Bodo food practices and health beliefs. Rather than directly challenging herbal remedies, AWWs often focus on discouraging only those practices considered harmful, while accommodating others. This negotiated approach reflects what Whyte (2014) terms “pragmatic pluralism”, where institutional actors prioritize functional outcomes over ideological conformity.

Cross-Cultural Comparisons: Indigenous Health Interfaces beyond India

Comparative ethnobiological research reveals striking parallels between the Bodo experience and indigenous healthcare systems elsewhere. In Amazonian Peru and Bolivia, ethnomedicinal plant use remains central to maternal and child health, even as state nutrition and vaccination programmes expand (Vandebroek et al., 2018). Similarly, among Indigenous Maya communities in Mexico, traditional remedies coexist with biomedical clinics, with households navigating between systems based on illness severity and social context (Lopez-Garcia, 2017).

In Southeast Asia, studies among Karen and Hmong communities show that state health initiatives often depend on indigenous knowledge holders to gain legitimacy, particularly in maternal and child health programmes (McElwee et al., 2020). Across these contexts, the role of intermediary actors—midwives, CHWs, nutrition workers—emerges as crucial. The Bodo case adds to this literature by showing how Anganwadi Workers, embedded within ICDS, perform a similar mediating function, shaping not only health outcomes but the future trajectory of ethnomedicinal knowledge itself.

Medical Pluralism and the Limits of Biomedical Universalism

The persistence of ethnomedicine among the Bodos challenges assumptions embedded in public health planning that biomedical knowledge will naturally supersede indigenous practices. Instead, the findings support anthropological critiques of biomedical universalism, which argue that health interventions must engage with local epistemologies to be effective (Kleinman, 1980; Farmer 2004). Ethnomedicine is not merely tolerated by Bodo households; it is actively preferred for its familiarity, affordability, and perceived moral alignment with bodily and social norms.

This insight has significant implications for ethnobiology and health policy. When institutional programmes fail to recognize the legitimacy of indigenous

medical knowledge, they risk alienating communities or producing superficial compliance without meaningful behavioural change. Conversely, programmes like ICDS demonstrate greater effectiveness when they work through existing knowledge systems, rather than attempting to overwrite them.

Theoretical Implications for Ethnobiology and Health Policy

The Bodo case contributes to ethnobiological theory in three important ways. First, it demonstrates that traditional ecological knowledge related to medicine is sustained not solely through cultural continuity but through institutional engagement and negotiation. Second, it highlights the importance of frontline health workers as epistemic actors, whose everyday decisions shape how knowledge systems intersect. Third, it underscores the need to move beyond dichotomous models of “traditional vs. modern” medicine toward relational frameworks that account for hybridity, mediation, and adaptation.

For policy, the findings suggest that strengthening primary healthcare in indigenous regions requires recognizing ethnomedicine as a resource rather than an obstacle. Integrating ethnobiological knowledge into nutrition education, maternal care, and preventive health strategies could enhance both cultural acceptability and long-term sustainability.

Conclusion

Ethnomedicine, Institutional Interfaces, and the Plural Making of Care

This study has demonstrated that ethnomedicinal knowledge remains central to primary healthcare among the Bodo community of Gossaigaon, even as state-supported health and nutrition programmes expand their reach. Far from being displaced by institutional interventions, Bodo ethnomedicine continues to function as a first line of care for common illnesses, maternal wellbeing, and child health, embedded in everyday practices, household authority, and local ecological knowledge. These findings underscore that healthcare in indigenous contexts is best understood not as a transition from “traditional” to “modern” systems, but as a plural and negotiated field in which multiple therapeutic logics coexist.

By examining the interface between Bodo ethnomedicine and ICDS, the article advances a key ethnobiological insight: institutional programmes do not merely introduce new services, but actively reshape knowledge practices through processes of mediation, accommodation, and selective integration. Anganwadi Workers emerge as pivotal actors in this process, functioning as cultural brokers who translate biomedical norms into locally intelligible forms while respecting the legitimacy of plant-based remedies and food practices. This mediating role enables

ICDS to operate within Bodo villages, while also subtly influencing which elements of ethnomedicinal knowledge are sustained, modified, or deprioritized over time.

From a theoretical perspective, the study contributes to debates on traditional ecological knowledge by demonstrating that the persistence of ethnomedicine depends not only on cultural transmission and ecological availability, but also on ongoing engagement with institutional forms of care. Traditional medical knowledge is neither static nor oppositional; it adapts through everyday encounters with state-supported health systems. This finding resonates with cross-cultural ethnographic research from Africa, Latin America, and Southeast Asia, where indigenous healing practices endure through pragmatic coexistence rather than resistance or isolation.

At the same time, the study highlights emerging tensions. Generational shifts in caregiving and increasing reliance on institutional advice raise concerns about the continuity of ethnomedicinal knowledge transmission. Addressing these challenges requires institutional approaches that recognize indigenous medical knowledge as socially embedded, ethically grounded, and collectively owned, rather than as informal practices to be replaced or standardized.

In conclusion, the Bodo case illustrates that sustainable healthcare in indigenous contexts cannot be achieved through biomedical expansion alone. It requires attention to the lived realities of medical pluralism, acknowledgment of the vitality of ethnomedicine, and careful engagement with the institutional interfaces through which diverse knowledge systems are negotiated. By situating ethnomedicine within the everyday workings of ICDS, this study offers an ethnobiological contribution to understanding how care is produced, contested, and sustained in contemporary indigenous life.

References

- Berkes, F. (2012). *Sacred Ecology* (3rd ed.). New York: Routledge.
- Etkin, N. L. (2006). *Edible Medicines: An Ethnopharmacology of Food*. Tucson: University of Arizona Press.
- Farmer, P. (2004). *Pathologies of Power: Health, Human Rights, and the New War on the Poor*. Berkeley: University of California Press.
- Ingold, T. (2000). *The Perception of the Environment: Essays on Livelihood, Dwelling and Skill*. London: Routledge.
- Kleinman, A. (1980). *Patients and Healers in the Context of Culture: An Exploration of the Borderland between Anthropology, Medicine, and Psychiatry*. Berkeley: University of California Press.
- Leslie, C. (1976). *Asian Medical Systems: A Comparative Study*. Berkeley: University of California Press.

- Lopez-Garcia, J. (2017). Medical pluralism and indigenous healing in Mesoamerica. *Medical Anthropology Quarterly* 31(3): 345–362.
- McElwee, P., Nguyen, V. T., Nguyen, D. T. and Tran, N. H. (2020). Indigenous knowledge, conservation, and health in Southeast Asia. *Human Ecology* 48(4): 417–431.
- Pfeiffer, J. and Nichter, M. (2008). What can critical medical anthropology contribute to global health? *Medical Anthropology Quarterly* 22(4): 410–415.
- Reyes-García, V., Guèze, M., Luz, A. C., Paneque-Gálvez, J., Macía, M. J., Orta-Martínez, M., Pino, J. and Rubio-Campillo, X. (2013). Evidence of traditional knowledge loss among a contemporary indigenous society. *Evolution and Human Behavior* 34(4): 249–257.
- Vandebroek, I., Balick, M. J., Ososki, A., Kronenberg, F., Yukes, J., Wade, C., Jiménez, F. and Castillo, D. (2018). The importance of ethnobotanical knowledge in healthcare systems. *Journal of Ethnobiology and Ethnomedicine* 14(1): 1–15.
- Whyte, S. R. (2014). *Second Chances: Surviving AIDS in Uganda*. Durham: Duke University Press.