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Indigenous Ethnomedicine: The Contested Futures Amidst Appropriation and Sovereignty

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ABSTRACT Indigenous ethnomedicine encompasses holistic knowledge systems integral to cultural identity and sovereignty. This study uses a qualitative meta-synthesis of 34 global cases to analyse their contested future. The researchers find that a synergistic triad of dispossession, spatial (extractive industries), intellectual (bioprospecting), and epistemological (biomedical reductionism), threatens these systems. However, Indigenous communities actively exercise agency through medical pluralism, cultural resurgence, and community-controlled enterprises. The findings demonstrate that the future of ethnomedicine hinges on the struggle for Indigenous sovereignty and epistemic justice. The researchers conclude that supporting its revitalisation requires dismantling structures of dispossession and implementing stakeholder-specific recommendations to secure land rights, promote community-led research, and foster epistemological pluralism in global health.

INTRODUCTION

The Contested Futures of Indigenous Ethnomedicine

Ethnomedicinal practices among Indigenous peoples worldwide represent more than an alternative biological remedy. They are deeply rooted spiritual and cultural knowledge systems that offer a holistic approach to health and healing. Ethnomedicinal practices among Indigenous peoples represent a sophisticated epistemology deeply embedded in cultural fabrics, spiritual worldviews, and reciprocal relationships with the natural environment. These practices operate within a framework that defines health and well-being as a state of balance and harmony between the individual, the community, the spiritual realm, and the land (Struthers and Eschiti 2004; Garnett et al. 2009). Unfortunately, in contemporary times, the future of these knowledge systems is fundamentally contested, poised between trajectories of erosion and pathways of resilience. This contestation unfolds under a triple threat of dispossession, that is, spatial, intellectual, and epistemological, which operate not as isolated processes but as a synergistic triad. By "synergistic", it means that each dimension actively reinforces and amplifies the destructive impact of the others, creating compounding effects that exceed the sum of the individual threats. For example,

1. Spatial dispossession, that is, extractive industries destroying medicinal plant habitats, removes the material base, making intellectual appropriation easier (corporations can more readily bioprospect from degraded or alienated lands without community oversight).
2. Intellectual dispossession (bioprospecting and commodification) generates economic incentives that accelerate spatial incursions (for example, patent-driven resource extraction).
3. Epistemological violence (biomedical reductionism pathologising holistic etiologies) legitimises both spatial and intellectual assaults by framing Indigenous relational ontologies as irrelevant or superstitious, thus justifying land alienation and knowledge extraction as "progress" or "development".

Existing literature often examines these challenges of biopiracy, land dispossession, epistemological conflict, in isolation. This study argues they are interconnected, forming a synergistic triad that extends the colonial project into the present. Crucially, a focus solely on vulnerability risks perpetuates a narrative of passivity,

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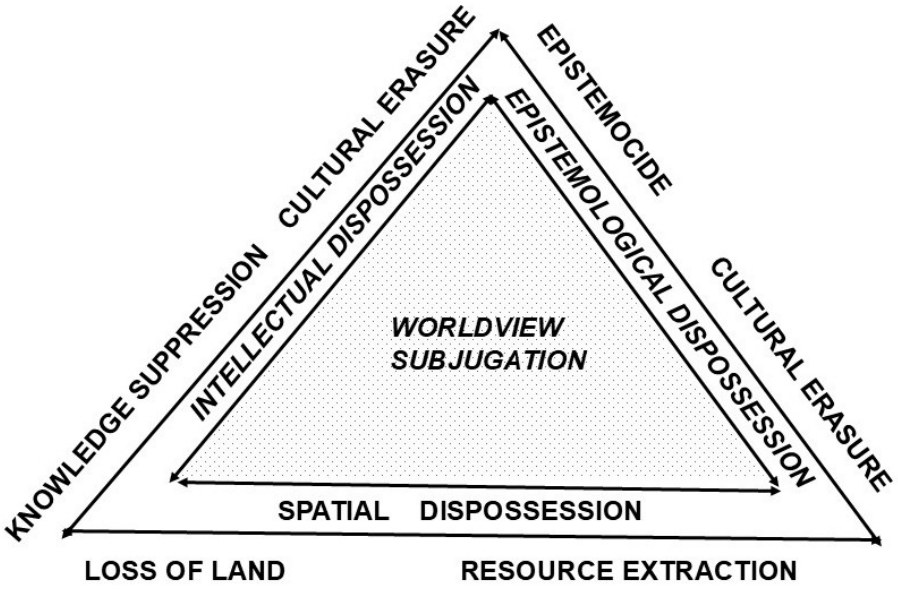

Fig. 1. The representational diagram of the synergistic triad

overlooking the profound agency of Indigenous communities who actively negotiate these threats through medical pluralism, cultural resurgence, and strategic adaptation (Torri 2011; Aferu et al. 2022). Therefore, this study provides a comprehensive analysis of this coordinated assault, highlighting strategies of resistance and reframing the narrative from mere endangerment to a contested future. It is guided by the overarching question: How is the future of Indigenous ethnomedicine being contested between trajectories of co-optation and sovereignty, and what mechanisms underpin this contestation?

This framework will be employed to analyse the triple threat of spatial, intellectual, and epistemological dispossession not as discrete issues, but as interconnected layers of a single power dynamic whose synergistic character arises from mutual amplification of spatial loss that facilitates intellectual theft by weakening community guardianship, intellectual commodification that fuels further spatial incursions through market-driven extraction, and epistemological invalidation that provides ideological cover for both, normalising them as inevitable or benign.

This paper will critically examine these futures through a decolonial political ecology of health lens. First, it will elucidate the holistic, relational foundations of Indigenous ethnomedicine. It will then analyse the multifaceted assaults of dispossession before exploring how communities navigate this terrain through negotiation, resistance, and strategic integration. Finally, it will map the divergent future trajectories, arguing that the vitality of ethnomedicine is inextricably linked to broader struggles for Indigenous sovereignty and epistemic justice.

Research Questions

This study is guided by the following overarching research question, followed by sub-questions:

Overarching Question: How is the future of Indigenous ethnomedicine being contested between trajectories of co-optation and sovereignty, and what are the mechanisms of this contestation?

Sub-Questions:

1. *Ontological Foundation:* What constitutes the holistic ontological foundation

of Indigenous ethnomedicine, and how does it function as a system of meaning-making and belonging?

2. *Structures of Dispossession:* How do spatial dispossession (for example, extractivism), intellectual dispossession (for example, bioprospecting), and epistemological violence (for example, pathologisation) operate as interconnected threats to the integrity of Indigenous ethnomedicine?
3. *Strategies of Resilience:* In what ways do Indigenous communities exercise agency through medical pluralism, cultural resurgence, and community-based enterprise to negotiate these threats and assert sovereignty over their health systems?
4. *Future Trajectories:* What are the potential future pathways for Indigenous ethnomedicine, and what actions are required by various stakeholders to support a trajectory of sovereign revitalisation over co-optation and erosion?

Research Objectives

The objectives of this study are to:

1. **Articulate** the holistic ontological framework of Indigenous ethnomedicine, elucidating its principles of interconnectivity between the natural, supernatural, and human realms and its role in fostering cultural meaning and ecological belonging.
2. **Analyse** the mechanisms and impacts of the triple threat of dispossession (spatial, intellectual, and epistemological) on the practice and transmission of Indigenous ethnomedical knowledge, drawing on global case studies.
3. **Examine** and document the strategic responses and practices of resilience employed by Indigenous communities, including the pragmatic use of medical pluralism (leveraging the healing/cure distinction) and acts of cultural reclamation.
4. **Synthesise** the findings to map divergent future trajectories for Indigenous ethnomedicine and generate a set of logical, achievable, and stakeholder-specific recommendations aimed at supporting epistemological pluralism and Indigenous sovereignty in health.

Theoretical Perspective: A Decolonial Political Ecology of Health

This study is framed by an integrated theoretical perspective combining Political Ecology with Decolonial Theory. This Decolonial Political Ecology of Health posits that the challenges facing Indigenous ethnomedicine are interconnected manifestations of enduring colonial power structures that seek to control both territories and epistemologies. The perspective is founded on several core premises as follows.

***The Inseparability of Material and Epistemic Domination*:** Colonial and neocolonial projects operate through a dual process of dispossession: the material dispossession of land and resources and the epistemic dispossession of knowledge and worldview. These are intrinsically linked, with control over territory facilitating control over knowledge, and vice versa.

***Epistemic Violence as a Structure of Power*:** The systematic dismissal, pathologisation, and erasure of non-Western knowledge systems are fundamental mechanisms for maintaining hegemony, subalternising other ways of knowing, and justifying material extraction.

***Commodification as a Neo-Colonial Driver*:** Processes of commodification, like turning land, plants, and knowledge into alienable property, are modern extensions of colonial extraction. This logic fundamentally contradicts Indigenous worldviews based on relationality, reciprocity, and inalienable connection to place.

***Agency and Resistance are Central*:** Indigenous communities are not passive recipients of these forces but active agents who engage in sophisticated strategies of negotiation, adaptation, and resistance. Their resilience is an expression of epistemic sovereignty.

Application of the Framework

This framework will be employed to analyse the triple threat of spatial, intellectual, and epistemological dispossession not as discrete issues, but as interconnected layers of a single power dynamic. Furthermore, it will guide the examination of community responses, such as medical pluralism and cultural resurgence, not as mere coping mechanisms, but as deliberate acts of epistemic resistance and sovereign recla-

mation. Finally, this perspective provides the ethical foundation for the study's recommendations, framing them as necessary steps for decolonisation and epistemic justice.

MATERIAL AND METHODS

This study employed a Qualitative Meta-Synthesis (QMS)**.** This methodology was selected as it allows for the systematic review and interpretive integration of findings from a vast body of existing qualitative studies. A QMS is ethically imperative for a global analysis of this nature, as it synthesises research that has already undergone ethical review, avoiding the extractive nature of a new primary study. Furthermore, its interpretive nature is ideally suited to a decolonial political ecology approach, enabling the critical examination of underlying power structures across diverse contexts (Saini and Shlonsky 2012; Crandon et al. 2022).

Data Collection and Search Strategy

Data was collected through a systematic search of scholarly databases, including SAGE Journals, Wiley Online Library, and JSTOR. The search was conducted for literature published from database inception to December 2023 to ensure a comprehensive historical and contemporary overview.

A structured Boolean search string was developed to capture the core concepts of the study. The key terms and their combinations were designed to include (1) Indigenous populations, (2) ethnomedicine/traditional knowledge, and (3) the central themes of dispossession/commercialisation and resilience/pluralism. The primary search string used was:

("Indigenous" OR "Aboriginal" OR "First Nations" OR "traditional community" OR "tribe") AND ("ethnomedicine" OR "traditional medicine" OR "traditional knowledge" OR "healing practice") AND ("bioprospecting" OR "biopiracy" OR "dispossession" OR "appropriation" OR "resilience" OR "medical pluralism" OR "cultural resurgence" OR "sovereignty").

This string was slightly adapted for each database's specific syntax to optimise results.

This study employed a narrative literature review approach to critically synthesise existing qualitative research on Indigenous ethnomedicine, its challenges, and pathways of resilience. Narrative reviews provide a flexible, interpretive framework suitable for exploring complex, multifaceted topics within a decolonial political ecology of health perspective. This method allows for purposive selection of studies, thematic integration, and critical interpretation, prioritising depth of insight over exhaustive comprehensiveness or statistical aggregation (Greenhalgh et al. 2016; Siddaway et al. 2019).

Literature Search and Selection

Literature was identified through searches of key scholarly databases, including SAGE Journals, Wiley Online Library, and JSTOR, covering publications from database inception to December 2023. The search focused on core concepts related to Indigenous ethnomedicine, traditional healing practices, dispossession (spatial, intellectual, epistemological), bioprospecting, medical pluralism, cultural resurgence, and health sovereignty. Relevant studies were purposively selected for their alignment with the research questions and the theoretical framework, and for their contribution to understanding the contested futures of Indigenous ethnomedicine. Priority was given to qualitative empirical studies (for example, ethnography, interviews, case studies) that foregrounded Indigenous voices, community contexts, and socio-cultural/ecological dimensions.

A total of 34 qualitative studies were included, representing more than 22 Indigenous groups across five continents (for example, Maya, Mâori, Asur, Micronesian communities, among others). Selection emphasised global representation, methodological diversity, and ethical rigour (for example, evidence of community engagement or reflexivity). Studies were excluded if they were purely quantitative, pharmacological, or lacked socio-cultural depth.

Data Processing, Extraction, and Analysis

Data processing and analysis were conducted using ATLAS.ti software, which facilitated organisation, coding, and interpretive synthesis of the selected literature. Key findings, methodologies, contextual details, and ethical con-

siderations from each study were extracted using a standardised template focused on themes of dispossession, resilience, agency, and sovereignty.

An inductive coding process in ATLAS.ti was used to identify recurring concepts across the dataset, including "land-medicine nexus", "bioprospecting", "epistemic violence", and "medical pluralism". Initial codes were grouped into descriptive themes (for example, spatial dispossession, epistemological invalidation) through iterative reading and constant comparison. These descriptive themes were then refined into higher-level synthetic constructs (for example, the synergistic triad of dispossession and epistemic sovereignty) through ongoing interpretive dialogue with the decolonial political ecology framework.

To support trustworthiness, coding and theme development involved reflexive memoing and iterative refinement. A purposive subsample of studies was re-examined for consistency, with discrepancies resolved through discussion and codebook updates. The interpretive process was informed by the author's dual Indigenous-academic positionality, including informal consultations with Indigenous knowledge-holders (five elders from Sonowal Kachari, Mising, and Deori communities in Assam, India, in early 2025) to validate thematic relevance and alignment with community priorities (for example, epistemic sovereignty, land-based education).

Quality and Ethical Appraisal

The included studies were critically appraised for methodological clarity, appropriateness, reflexivity, ethical considerations (for example, community partnership and prioritisation of Indigenous voice), and alignment with decolonial principles. A modified Critical Appraisal Skills Programme (CASP) Qualitative Checklist was adapted to evaluate rigour, while relational ethics guided assessment of community engagement and benefit-sharing. Studies with overtly extractive practices were noted for ethical limitations, though methodological soundness was weighed alongside these concerns.

This narrative approach, while interpretive and theory-driven, enabled a cohesive synthesis that foregrounds interconnected threats and Indigenous agency, while honoring the relational and contextual nature of the knowledge synthesised.

Critical Reflexivity and Researcher Positionality

A critical reflexivity statement is integral to a decolonial methodology, not as a performative exercise, but as a necessary grounding of knowledge. The author's positionality is complex and intersectional, spanning Indigenous and academic worlds. As a member of the Sonowal Kachari tribal society in Assam and a professor of social anthropology at the Tata Institute of Social Sciences, the author navigates the responsibilities of an insider, rooted in the lived experience of relational ontologies, spiritual dimensions of healing, and community struggles, and the analytical frameworks of an academic trained in cultural and medical anthropology.

This dual vantage point profoundly shapes the synthesis. The insider perspective provides an embodied attunement to the nuances of epistemic violence (for example, the dismissal of spirit-mediated etiologies as superstition), the subtleties of cultural resilience amid land pressures, and the existential significance of acts of sovereignty that external observers might undervalue. Concurrently, the academic lens supplies the theoretical tools, political ecology and decolonial theory, to systematically articulate these experiences and structure the synergistic triad of dispossession as the paper's central contribution.

This positionality directly influenced key interpretive choices. For instance, it compelled foregrounding narratives of Indigenous agency over deficit-based framings, ensuring the analysis moved beyond vulnerability to emphasise contested futures and epistemic sovereignty. The author's prior ethnographic work among tea-tribe and riverine communities in Assam further attuned the reading to the centrality of the people-land-medicine nexus, reinforcing the weight given to spatial dispossession as an existential rather than merely environmental threat.

Note. These criteria guided the purposive selection of the 38 qualitative studies for the meta-synthesis. Priority was given to empirical works foregrounding Indigenous voices, socio-cultural/ecological contexts, and ethical community engagement, while excluding purely pharmacological or quantitative analyses lacking depth in dispossession/resilience themes.

To honour Indigenous perspectives and ensure interpretive accountability, the synthesis prioritised studies demonstrating community partnership and Indigenous voice (as per the ethical appraisal criteria in Table 1). Crucially, theme development and validation were informed by informal consultations in early 2025 with five elders from three neighbouring tribal communities in Assam, namely, Sonowal Kachari, Mising, and Deori. These community dialogues, held in relational contexts familiar to the author, provided critical feedback on thematic relevance. Specifically, elders strongly affirmed the centrality of epistemic sovereignty as a lived priority (beyond academic framing) and emphasised land-based intergenerational transmission (for example, through stories, rituals, and plant walks) as essential to countering knowledge erosion, leading the author to elevate land-based education more prominently in the recommendations and to foreground relational ontologies in the ontology section rather than treating them as secondary. While not formal co-research, this engagement reinforced decolonial ethics by centring community-defined priorities in interpretation and ensuring the synthesis serves solidarity rather than extraction.

Ethical rigour extended beyond methodological soundness to relational ethics, wherein studies were appraised for evidence of community partnership, reflexivity, prioritisation of Indigenous agency, and equitable benefit-sharing. Those with overtly extractive practices were flagged for ethical limitations, even if methodologically sound. The analysis followed a Critical Interpretive Synthesis approach, translating concepts across studies within the decolonial political ecology framework to develop a synthesising argument about the contested nature of Indigenous ethnomedicine.

RESULTS

This synthesis draws on findings from 34 qualitative studies, encompassing diverse Indigenous communities across 6 regions, including Latin America, North America, Africa, Asia, and Oceania. To understand the challenges they face, one must first appreciate the profound ontological foundation of Indigenous ethnomedicine. While acknowledging the profound diversity across Indigenous knowledge systems, from animist to totemist to perspectivist frameworks, this analysis focuses on their shared philosophical challenge to Cartesian dualism and their common vulnerability to dispossession. This foundation posits not a separation but a fundamental inseparability of the natural, supernatural, and human realms. Within this sentient cosmos, all entities are enmeshed in a continuous, communicative, and reciprocal relationship (Garnett et al. 2009; Berger-González et al. 2015). Health is the manifest state of harmony within this network, while illness signals a rupture in these vital connections. Healing, therefore, is the ritualised process of diagnosing and repairing these

Table 1: Study inclusion and exclusion criteria

Category	*Inclusion criteria*	*Exclusion criteria*
Focus	Empirical qualitative studies focused on Indigenous ethnomedicine, its challenges (for example, bioprospecting, land loss), and community resilience/adaptation.	Purely quantitative pharmacological studies, clinical trials, or reviews. Non-evidence-based opinion pieces, editorials.
Population	Studies involving Indigenous communities globally.	Studies not primarily focused on Indigenous populations or knowledge.
Study Design	Qualitative methodologies (for example, ethnography, phenomenology, case studies, interviews, focus groups).	Quantitative, mixed-methods where qualitative data could not be separated, or non-empirical research.
Context	Research detailing the socio-cultural, political, or ecological dimensions of ethnomedical knowledge.	Studies focused solely on the biochemical analysis of plants without a social context.
Language	Studies published in English.	Studies published in languages other than English.
Access	Full-text articles are available through institutional subscriptions or open access.	Abstracts-only records where the full text was unavailable.

fractured relationships. This integrated worldview functions as the primary engine of cultural meaning-making and the deepest source of individual and collective belonging.

An Ontology of Inseparability: The Sentient Cosmos

The core of indigenous ethnomedicine is a relational ontology that perceives the world as animate and interconnected.

The Natural World as Sentient Kin

The environment is not a passive repository of "resources" but a community of conscious, agentive beings. Groark (2010) exemplifies this in their study of Tzeltal and Tzotzil Maya use of tobacco (*Nicotiana tabacum*), which is not a simple stimulant but a sacred entity referred to as the "angel in the gourd". Its administration is a ritual act, preceded by prayers and offerings that acknowledge its spiritual personhood, positioning the plant as an active participant and mediator between the human and spiritual worlds. This view creates a profound ethical imperative for environmental stewardship, as seen in Demeulenaere et al. (2021), where the spiritual significance of *Serianthes* trees in Micronesia translates directly into conservation action and resistance against ecological destruction.

The Supernatural as an Immanent Force

The supernatural realm is an ever-present layer of reality. Ancestors and spirits are active participants, influencing fortune and health. Illness is frequently diagnosed as a disturbance in this relationship. Currie et al. (2018), in their study of the Ecuadorian Andes, detail a "medico-ritual framework" in which ailments are attributed to causes such as *susto* (soul loss) or transgressions that anger ancestral beings. Martinez-Radl et al. (2023) argue that such cultural conceptualisations as *susto* are not primitive anomalies but sophisticated, holistic idioms of distress that link emotional trauma, social conflict, and physical symptoms, requiring ritual technologies for rebalancing.

The Human as Mediator

The human being is the nexus where these realms meet. The healer's role is that of a cosmic diplomat, whose authority derives from the ability to traverse these realms to identify and resolve imbalance (Aston Philander 2012**).** This worldview makes moral conduct and social harmony fundamental to health, as ethical behaviour maintains right relations with the ancestral and spiritual world (Jewkes and Wood 1999; Roulette et al. 2018).

Meaning-Making and the Construction of Belonging

This ontology provides a comprehensive framework for understanding the universe and one's place within it, answering fundamental existential questions and fostering a deep sense of belonging.

Weaving a Coherent Cosmology

Ethnomedicine provides culturally coherent explanations for suffering. Illness is meaningful, often signifying social discord, spiritual imbalance, or a ruptured relationship. This provides a logical (within its worldview) and manageable framework for understanding misfortune, rather than the potential abstraction of a biomedical diagnosis (Jewkes and Wood 1999; Martinez-Radl et al. 2023). This meaning is embedded in language itself. Ojwang (2018) demonstrates the way the Luo of Kenya use rich, metaphorical language to conceptualise disease, framing it through environmental and social relationships.

Fostering Ecological and Social Belonging

The most profound sense of belonging is to the land itself. The principle of "Healthy Country, Healthy People" (Garnett et al. 2009) encapsulates this, asserting that the health of the land and its people are mutually constitutive. This ecological belonging explains the land dispossession as an existential crisis (Aldred et al. 2021). Furthermore, healing rituals are often communal events that reinforce in-group solidarity and collective identity. The transmission of knowledge from elders to youth is a critical process that ensures cultural continuity and creates a

powerful bond of intergenerational belonging. The erosion of this knowledge, as lamented by the Purko Maasai (Hedges et al. 2020), is thus a severing of this generational thread and a wound to identity itself.

The Distortion of the Holistic Framework

The integrity of this system is most threatened by forces that dismantle its holistic nature through reductionism. The biomedical and commercial gaze often engages in what McGonigle (2017) identifies as a failure of "symmetrical epistemological pluralism", where only the materially verifiable components of a knowledge system are deemed valuable. This leads to the epistemic violence of extracting the "active compound" while discarding the rituals, relationships, and stories that give it meaning (Clapp and Crook 2002). This process disenchants the world, reducing a sacred, relational practice to a mere commodity and invalidating the entire cosmological framework that underpins it. As Tym (2020) argues, this imposes a capitalist epistemology that sees nature as "resources" and knowledge as "data", which is antithetical to Indigenous worldviews that see plants as relatives and knowledge as a sacred responsibility.

In conclusion, Indigenous ethnomedicine is a sophisticated philosophy of existence. It is a system that provides meaning, fosters belonging, and maintains health through a relational ontology of inseparable realms. This holistic foundation, where the spiritual, natural, and human are inextricably linked, is the core asset that faces systematic distortion and erosion from the external forces examined in the next section.

The Multifaceted Assault

The holistic foundations of Indigenous ethnomedicine exist under a state of siege. The threats it faces are not isolated but form a synergistic triad of dispossession of spatial, intellectual, and epistemological, that attacks its physical base, its economic and cultural value, and its very logic and meaning. Their synergy lies in reciprocal reinforcement, wherein each assault intensifies the others, producing a compounded crisis that systematically erodes the integrated worldview of health and well-being. This section critically examines this multifaceted assault through the lenses of spatial, intellectual, and epistemological dispossession, arguing that, together, they constitute an ongoing project of erasure that extends the colonial legacy into the present day.

Spatial Dispossession: Severing the People-Land-Medicine Nexus

The most fundamental assault is spatial, wherein the physical and spiritual separation of Indigenous peoples from their traditional territories, which directly severs the vital connection between people, land, and medicine.

Extractivism and 'Mining Sick' Land: Colonial and post-colonial development is often predicated on extractive capitalism, which treats land as a resource to be exploited rather than a resource to be cherished. Aldred et al. (2021) powerfully argue that extractive industries in British Columbia make Indigenous communities "mining sick", a concept that captures the profound illness arising from the loss of land, clean water, and sacred sites. This is not merely environmental damage, it is a direct attack on health, as it destroys the biodiversity that is the material foundation of healing practices and disrupts the relational ties that sustain well-being. This logic of dispossession in the name of progress is further evidenced in India, where state-sanctioned extractivism destroys the ecology sustaining Asur culture and medicine (Majumdar et al. 2025).

Environmental Degradation and Knowledge Erosion: The loss of specific flora and fauna has a direct, catastrophic impact on ethnomedical knowledge. Hedges et al. (2020) document this cascade effect among the Kenyan Purko Maasai. The lament, "*There are no trees here*", signifies more than just deforestation, as it marks the intergenerational breakdown of knowledge transmission tied to those specific species. When medicinal plants disappear, the knowledge of how to use them, passed down through generations, becomes obsolete, leading to an irreversible erosion of cultural heritage. The creation of protected areas that restrict access, as analysed by Zank et al. (2019), similarly severs the physical connection necessary for healing practices, constituting a dispossession of both territory and meaning.

Intellectual Dispossession: The Theft and Alienation of Knowledge

The second front of assault is intellectual, where traditional knowledge is extracted, decontextualised, and alienated from its source communities for external profit and benefit.

Bioprospecting and the 'Magic Well': This process involves treating Indigenous knowledge as a free commodity. Clapp and Crook (2002) provide the seminal critique in their analysis of Shaman Pharmaceuticals, which they accuse of "drowning in the magic well". The company's approach epitomises intellectual dispossession, wherein diving into the well of traditional knowledge to extract valuable chemical data for commercial gain, while discarding the cultural and spiritual context. This transforms communal, intergenerational heritage into private intellectual property, a modern enclosure of the knowledge commons.

The Politics of Knowledge and Value: This dispossession is reinforced by a political economy that sidelines Indigenous communities. Handa (2022), in her study of India, analyses the "politics of knowledge" that surrounds medicinal plants, showing how corporations, collectors, and cultivators all become powerful "constituents" in a contested market, while the original knowledge-holders are often marginalised and uncompensated. The commercial value chain is captured by external actors, reducing communities to mere sources of raw information. This aligns with Masango's (2014) concerns about the inadequacy of legal frameworks to protect Traditional Knowledge (TK) from such appropriation, often because disclosure for protection destroys its novelty for patent law.

Epistemological Violence: Dismantling the Holistic Framework

The most insidious form of dispossession is epistemological, where the very worldview underpinning ethnomedicine is dismissed, pathologised, and systematically invalidated.

Pathologisation and Dismissal: Colonial and biomedical systems have consistently framed Indigenous health beliefs as superstition or pathology. Jewkes and Wood (1999) point out that concepts of ritual pollution were dismissed as unhygienic rather than understood as complex symbolic systems for managing social risk and order. This distortion continues, as seen in the biomedical tendency to label culturally coherent idioms of distress like *susto* as "culture-bound syndromes," a term that often carries a pejorative and exoticising connotation (Martinez-Radl et al. 2023).

Reductionism and the Molecular Gaze: Biomedicine's materialist epistemology actively erases non-biological explanations. McGonigle (2017) calls for a "symmetrical epistemological pluralism" that takes spirits as seriously as molecules, critiquing a conventional ethnopharmacology that only validates the "molecular" aspect of medicine while ignoring the "spiritual" dimensions crucial to its efficacy. This reductionism is a form of violence that disenchants a sacred reality.

The Epistemic Violence of Documentation: Even well-intentioned efforts to "preserve" knowledge can be destructive. The project of textual documentation risks enacting epistemic violence by divorcing knowledge from its oral, embodied context (Bayles 2008). Carothers et al. (2014) note that Indigenous knowledge is "situated, relational, and dynamic", and writing it down makes it static and decontextualised, bypassing traditional pedagogical gatekeepers. Furthermore, as Clapp and Crook's (2002) case shows, documentation can facilitate bioprospecting. The paradox, per Masango (2014), is that disclosure for protection can make knowledge ineligible for legal protection while making it easier for others to exploit, creating a lose-lose scenario for communities. This process severs the spiritual from the biological (Groark 2010), disembodies knowledge from place (Garnett et al. 2009), and reduces holistic diagnoses to mere symptom checklists (Martinez-Radl et al. 2023).

In conclusion, this triple assault of dispossession is a coordinated, ongoing crisis. Spatial dispossession destroys the environmental base, intellectual dispossession steals and alienates the knowledge itself, and epistemological violence invalidates the very logic and meaning that hold the system together. This multifaceted assault ensures that the threat is not just to individual practices but to the entire integrated worldview of Indigenous health and well-being, setting the stage for the acts of resilience and negotiation discussed in the following section.

Negotiation and Resilience

In the face of the multifaceted assault detailed previously, Indigenous communities are not passive victims. They are active agents who navigate, negotiate, and resist, demonstrating remarkable resilience within a contested health landscape. Their responses reveal a sophisticated understanding of the different offerings of knowledge systems, strategically engaging in medical pluralism to meet their holistic needs. This section analyses how communities leverage the distinction between healing and cure, and assert agency through cultural resurgence and controlled enterprise, to protect the integrity of their ethnomedical traditions.

Medical Pluralism as a Strategic Negotiation

The reality for millions of Indigenous individuals is not a binary choice between systems but a pragmatic, simultaneous use of both, creating a de facto continuum of care. This pluralism is not a sign of confusion but a strategic exercise of agency aimed at achieving complete well-being.

Leveraging Complementary Competence: Communities intuitively navigate the different domains of competence offered by each system. Studies across diverse contexts, from Ethiopia (Aferu et al. 2022) to high-income countries (Gall et al. 2018), consistently show this pattern. People strategically use biomedicine for its curative power against acute, biological, or surgical issues (the domain of *disease*). Conversely, they rely on traditional medicine for chronic conditions, mental health, spiritual distress, palliative care, and culturally defined illnesses (the domain of *illness*). This is a calculated decision to access the best each system has to offer.

The Healing/Cure Dichotomy in Practice: This strategy is underpinned by the critical distinction between curing and healing, a conceptual dichotomy long recognised in medical anthropology but particularly salient in Indigenous contexts (for example, Kleinman 1980; Eisenberg 1977). Building directly on Struthers and Eschiti's (2004) seminal findings among Indigenous cancer patients, who sought traditional healers not for biological eradication of disease but for holistic restoration of spiritual harmony, fear management, and psychosocial meaning-making, healing is here framed as the subjective, experiential process of restoring meaning, identity, and relational balance, which may occur even in the absence of a cure. This meta-synthesis extends that insight beyond cancer-specific cases to a broader range of chronic, spiritual, and culturally defined illnesses across global Indigenous groups (for example, susto in Latin America; intergenerational knowledge erosion among Maasai), positioning the distinction as a deliberate act of epistemic sovereignty rather than mere pragmatic adaptation. Ethnomedicine provides solace and assurance by answering existential questions biomedicine ignores: 'Why me?', 'Why now?' It offers a culturally coherent narrative for suffering, as seen with susto (Martinez-Radl et al. 2023), reaffirming one's place in the cosmos and community.

Internal Tensions and Contradictions: However, this pragmatic navigation is not a seamless integration but a complex terrain, often contested and fraught with internal tensions. The practice of medical pluralism can be a source of significant community disagreement and personal conflict. Generational divides often emerge, with elders sometimes perceiving engagement with biomedicine as an abandonment of tradition, while younger generations may view certain traditional practices as ineffective or outdated for managing acute biological conditions. Furthermore, the logistical and epistemological clash between systems creates profound dilemmas for individuals. A patient might be advised by a traditional healer to avoid certain foods or activities to maintain ritual purity, while a biomedical doctor might prescribe a pharmaceutical with contradictory requirements. Navigating these conflicting directives can induce significant stress and uncertainty (Aferu et al. 2022).

There is also a persistent risk of syncretism, where the deep cosmological meaning of a ritual may be gradually hollowed out when practised alongside biomedical treatment, reducing it to a superficial cultural artefact. Finally, the very act of formal integration into biomedical systems, as seen in cultural safety models (Coones Long et al. 2025), presents a paradox, as it risks bureaucratising and standardising knowledge that is inherently fluid, relational, and context-dependent. Thus, medical pluralism represents not only

a strategy of resilience but also a continuous, difficult negotiation of power, meaning, and identity at both the individual and community level, where the goal of holistic well-being is often pursued amidst challenging compromises and internal debate.

Asserting Agency: Resistance, Resurgence and Reclamation

Beyond pragmatic use, communities actively engage in practices that reassert sovereignty over their health systems and cultural identity.

Cultural Resurgence as Resistance

The conscious revitalisation of tradition is a powerful political act. Dove (2008) frames the "return to traditional health care practices" in Ghana as a deliberate post-colonial move to reclaim cultural identity and autonomy. Similarly, Te Huia et al. (2023) illustrate how the practice of Mâori weaving (Te Whare Pora) by pregnant women serves as a specific, applied resilience strategy. This practice is a "way of weaving the unborn child into the fabric of Mâori culture", a deliberate act of cultural revitalisation that promotes maternal well-being through spiritual connection, identity affirmation, and the intergenerational transmission of knowledge. It is a powerful example of health promotion that operates entirely outside yet in parallel to biomedical systems.

Additional cases highlight diverse resurgence pathways. Among the Karuk Tribe in Northern California (USA), family-based management of ceremonial trails integrates ethnomedicinal plant stewardship with ecological restoration and cultural relearning. Community members revive land-based protocols for gathering medicinal plants (for example, for chronic conditions and spiritual balance), countering historical dispossession while transmitting knowledge intergenerationally through hands-on caretaking. This resurgence reframes healing as inseparable from territorial reclamation and epistemic sovereignty (as seen in broader Indigenous revitalisation efforts). In urban North American contexts, Indigenous-led health organisations (for example, community wellness centres) reclaim place through holistic programs blending traditional healing circles, smudging, and land-based activities with modern support, fostering mental and physical resilience amid ongoing colonial pressures.

Community-Controlled Enterprise

Some initiatives strategically engage the market on their own terms to foster empowerment. The work of Torri (2011) provides a concrete example from India, where initiatives have shifted from being victims of external bioprospecting to architects of internal, community-controlled commercialisation. These models focus on owning the entire value chain, from the sustainable cultivation of medicinal plants to the ethical marketing of value-added products (for example, teas, salves). This approach uses commerce as a strategic tool for cultural and economic self-determination, ensuring that benefits are retained within the community and that traditional knowledge is circulated on its own terms.

The Unresolved Yet Productive Tension

The relationship between ethnomedicine and biomedicine remains characterised by an unresolved tension fraught with power imbalances. However, the pervasive practice of medical pluralism also shows it is a space of immense creativity, pragmatism, and resilience. Indigenous communities navigate this contested terrain with a clear-eyed understanding of what each system can provide. They seek cures from biomedicine but turn to their own traditions for healing, for the solace, meaning, and holistic balance that are essential to their concept of well-being.

Yet this navigation is rarely seamless. Internal tensions often surface as generational divides, wherein elders may view biomedical engagement as cultural abandonment or dilution of spiritual authority, while younger members prioritise biomedicine's efficacy for acute issues, perceiving some traditional practices as outdated. Conflicting directives exacerbate dilemmas, for example, a healer prescribing ritual fasting or the avoidance of certain foods for spiritual purity, while a physician recommends pharmaceuticals that conflict with those dietary needs, creating stress, uncertainty, and difficult individual negotiations (Aferu et al. 2022). Syncretism risks

further complicating matters, wherein blending elements can hollow out cosmological depth over time, reducing rituals to superficial cultural markers or subordinating Indigenous epistemologies to biomedical dominance. These frictions underscore that resilience is not romantic harmony but an ongoing, power-laden struggle where communities assert epistemic sovereignty amid compromise, debate, and adaptation. Through resurgence and strategic enterprise, they move beyond mere negotiation toward active reclamation, ensuring ethnomedical traditions endure as dynamic, living systems. The impact of the synergistic triad can be presented in a tabular form, as shown in Table 2.

DISCUSSION

This synthesis reveals that the contest over Indigenous ethnomedicine is not a series of isolated struggles but a unified conflict over the right to define reality itself. The findings confirm that the triple threat of dispossession functions as a synergistic architecture of oppression, where spatial, intellectual, and epistemological assaults are mutually reinforcing. This architecture extends the colonial project by simultaneously seizing land, alienating knowledge, and invalidating the worldview that binds them together. While frameworks analysing postcolonial health disparities effectively map inequitable health outcomes, the decolonial political ecology lens extends this analysis by foregrounding the interconnected epistemic and territorial structures that produce those disparities, moving from documenting inequality to critiquing the foundational power dynamics that sustain it.

This interconnected architecture explains why isolated interventions (for example, standalone anti-biopiracy laws) often prove insufficient, as they target single dimensions while the underlying neo-colonial power structure remains intact. By centring epistemic violence as co-equal to material dispossession, the framework reveals how biomedical hegemony and bioprospecting reinforce territorial alienation to erode Indigenous health sovereignty.

The most critical implication of this analysis is that the defence of Indigenous ethnomedicine is, therefore, inextricable from the broader struggle for Indigenous sovereignty, over territory, cultural heritage, and epistemic justice. This framework challenges literature that siloes these threats. It demonstrates that bioprospecting (intellectual dispossession) is not merely an ethical lapse in economic practice but is facilitated by land alienation (spatial dispossession) and justified by biomedical hegemony (epistemological violence). This interconnectedness explains why isolated solutions, such as a standalone law against biopiracy, often fail, as they address a single symptom while the underlying system of dispossession remains intact.

Conversely, the findings compellingly refute narratives of passive victimhood. Indigenous resilience, particularly through medical pluralism, emerges as a sophisticated praxis of navigating this oppressive architecture. The strategic distinction between healing and cure is not a compromise but an assertion of epistemic sovereignty. Communities are not simply "using" both systems, as they are also critically engaging with them, leveraging biomedicine's technical efficacy for biological cure while relying on their own traditions for the deeper work of healing, the restoration of meaning, identity, and relational balance that biomedicine systematically ignores. Extending Struthers and Eschiti's (2004) cancer-specific observation to diverse global contexts, the healing/cure distinction emerges as a scalable strategy for asserting sovereignty over meaning-making in health, challenging biomedical hegemony while selectively incorporating its tools.

This study advances the discourse on Indigenous ethnomedicine by introducing a novel "synergistic triad of dispossession" framework, which integrates spatial, intellectual, and epistemological threats as interconnected manifestations of ongoing colonial processes. Unlike existing frameworks such as settler colonialism, which primarily emphasises land dispossession and governance (Wolfe 2006), or bioculturral heritage loss, which focuses on the erosion of cultural and ecological knowledge (Maffi 2005), the synergistic triad explicitly articulates how these dimensions, land alienation, knowledge appropriation, and worldview invalidation, function as a unified architecture of oppression. This approach extends settler colonial theory by centring epistemic violence as a co-equal force along-

Table 2: The impact of the synergistic triads of dispossession

Type of dispossession	*Impact category*	*Specific impacts*	*Key examples from cases*	*Synergistic effects (how it reinforces the other two)*	*Resilience strategies adopted by indigenous communities*
Spatial Dispossession	Destruction of Medicinal Resources	- Loss of biodiversity and medicinal plant habitats - Irreversible species extinction	- Mining destroying habitats (British Columbia, the Asur tribe in India) - Deforestation (Purko Maasai, Kenya)	Weakens community guardianship →easier intellectual appropriation; land loss framed as "progress"→ epistemological invalidation	-Land-based resurgence and stewardship Reviving ceremonial trails and plant gathering protocols (for example, Karuk Tribe, USA) to restore ecosystems and counter habitat loss. - Conservationactions tied to spiritual significance (for example, Serianthes trees in Micronesia) to resist ecological destruction and maintain biodiversity.
	Health Crises from "Mining Sick" Communitie	- Physical/spiritual illness from polluted water and destroyed sacred sites - Disruption of relational well-being	- "Healthy Country, Healthy People" principle (Australian Indigenous groups) - Restricted access in protected areas (Brazil)	Economic desperation → incentivises selling knowledge (intellectual dispossession); justifies land alienation as development (epistemological)	- Medical pluralism: Strategic use of biomedicine for acute physical issues while relying on ethnomedicine for spiritual and relational healing (for example, Ethiopian and high-income Indigenous contexts) to address compounded health crises. - Community wellness centers blending traditional practices with modern support (for example, urban North America) to foster resilience amid environmental pressures.
	Erosion of Cultural Continuity and Belonging	- Breakdown of intergenerational transmission - Existential identity wounds	- Severing of generational thread (Purko Maasai) - Loss of land-based rituals and plant walks	Reduces ability to protect knowledge →intellectual theft; portrays land ties as superstitious →epistemological dismissal	- Cultural resurgence: Intergenerational programs like land-based camps and elder-youth knowledge transmission (for example, Mâori weaving for pregnant women) to reaffirm belonging and continuity. - Acts of territorial reclamation: Integrating ecological restoration with cultural relearning (for example, Karuk Tribe) to rebuild the people-land-medicine nexus.
Intellectual Dispossession	Biopiracy and Commodification of Knowledge	- Extraction of chemical data without consent or benefit-sharing - Transformation of communal heritage into private IP	- Shaman Pharmaceuticals "magic well" (Clapp and Crook 2002) - Marginalisation in value chains (for example, India (Handa 2022)	Creates market incentives for resource extraction →spatial incursions; reduces sacred knowledge to "data"→ epistemological erasure	- Community-controlled enterprises: Owning value chains for sustainable cultivation and ethical marketing (for example, India (Torri 2011)) to retain benefits and control knowledge circulation. - Internal protocols for engagement: Setting terms for external access to prevent theft and ensure prior informed consent.

Table 2: Contd...

Type of dispossession	*Impact category*	*Specific impacts*	*Key examples from cases*	*Synergistic effects (how it reinforces the other two)*	*Resilience strategies adopted by indigenous communities*
	Inadequate Legal Protections and Paradoxes	-Disclosure destroys patent novelty -Documentation facilitates further theft	-Traditional Knowledge protection issues (Cameroon (Masango 2014)) -Documentation risks (Bayles 2008	Encourages exploitation of degraded/alienated lands → spatial; frames commodification as benign progress → epistemological	- Advocacy for sui generis IP frameworks: Pushing for collective heritage protections (for example, via Nagoya Protocol) to counter paradoxes and mandate benefit-sharing. - Selective documentation: Community-led approaches that maintain relational, oral contexts while avoiding decontextu-alisation.
	Economic Marginalisation and Loss of Control	-Communities excluded from benefits -Knowledge becomes static and disembodied	-External actors dominate value chains (India) -Alienation from place-based origins	Economic pressure forces land concessions → spatial; prioritises capitalist epistemology over relational views →epistemological	-Economic self-determination initiatives: Developing value-added products (for example, teas, salves) under community control to reclaim economic benefits and dynamic knowledge use. - Strategic market engagement: Using commerce for empowerment while preserving cultural integrity (for example, ethical enterprises in India).
Epistemological Dispossession (Violence)	Pathologisation and Dismissal of Beliefs	-Labelling of Indigenous concepts as superstition or culture-bound syndromes - Exoticising and devaluing holistic etiologies	-Ritual pollution dismissed (Jewkes and Wood 1999) -Susto as pejorative syndrome (Ecuadorian Andes (Martinez-Radl et al. 2023))	Justifies land progress against "irrelevant" ontologies→ spatial; legitimises extracting only "verifiable" parts →intellectual	- Assertion of epistemic sovereignty: Framing medical pluralism as border thinking (for example, engaging biomedicine without subsumption) to validate Indigenous idioms like susto. - Cultural reclamation: Revitalising practices like weaving or healing circles (for example, Mâori, Ghana) to resist pathologisation and reaffirm holistic worldviews.
	Reductionism and Disenchant-ment	-Focus only on molecular/biological aspects -Erasure of spiritual and relational dimensions	-Tobacco reduced to a stimulant (Tzeltal/Tzotzil Maya (Groark 2010)) - Lack of symmetrical epistemological pluralism (McGonigle 2017)	Validates commodification of active compounds → intellectual; normalises nature as exploitable "resources" →spatial	- Promotion of symmetrical pluralism: Advocating for spirits/molecules equivalence in research (for example, Maya-Guatemala collaborations) to counter reductionism. - Holistic integration: Using ethnomedicine for meaning-making in chronic/spiritual care (for example, cancer patients (Struthers and Eschiti 2004) while selectively incorporating biomedicine.

Table 2: Contd...

Type of dispossession	*Impact category*	*Specific impacts*	*Key examples from cases*	*Synergistic effects (how it reinforces*	*Resilience strategies adopted by indigenous communities*
Violence	- Knowledge Through Documentation and Integration	- Oral → written made static and decontextualised - Risk of bureaucratisation and hollowing out meaning via syncretism	Enables shift bypasses gatekeepers (Carothers et al. 2014) - Formal integration risks (cultural safety models)	- Relational ethics in documentation: bioprospecting sources→ intellectual; provides ideological cover for extraction as advancement → spatial	Prioritising community partnership and Indigenous voice (for example, in qualitative studies) to maintain dynamism. - Navigating syncretism: Deliberate acts like mentor-apprentice programs to preserve cosmological depth amid integration (for example, across global contexts) .

side material dispossession, revealing how biomedical hegemony and bioprospecting reinforce territorial loss to undermine Indigenous health sovereignty.

The comparison in Table 3 illustrates how the synergistic triad of dispossession extends beyond existing frameworks (Wolfe 2006; Maffi 2005) by treating epistemic violence and the invalidation of Indigenous health ontologies as coequal drivers of dispossession, rather than secondary or incidental effects. While settler colonialism prioritises territorial elimination and biocultural heritage loss emphasises parallel declines in diversity, the triad explicitly frames health sovereignty, the right of Indigenous peoples to define, practise, and protect relational ontologies of well-being, as the essential counterforce. By centring the interconnected assault on land, knowledge, and worldview, this approach reveals why revitalisation of ethnomedicine requires not isolated protections but holistic decolonial interventions that secure epistemic justice alongside territorial and cultural self-determination. By synthesising global case studies, including underrepresented regions such as the Asur tribe in India (Majumdar et al. 2025) and Micronesian communities (Demeulenaere et al. 2021), this study illuminates how these interconnected threats manifest across diverse contexts, offering a more holistic understanding of the challenges facing Indigenous ethnomedicine. Unlike environmental justice frameworks, which focus on equitable resource access, the synergistic triad integrates epistemic dispossession to reveal how colonial power undermines Indigenous health ontologies, offering a holistic lens for analysing the interconnected threats to ethnomedicine.

Dixon-Woods et al. (2006) conceptualise healthcare access as a dynamic process of "candidacy", in which patients and services continually negotiate who is eligible for care, a framework that illuminates how Indigenous peoples' traditional healing practices are systematically marginalised within biomedical systems. Furthermore, while prior work, such as Torri (2011), has explored Indigenous agency through community-controlled commercialisation, this study offers unique insights by framing medical pluralism and cultural resurgence as deliberate acts of epistemic sovereignty. Unlike narratives that

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Table 3: Comparison of key frameworks addressing threats to indigenous knowledge and health systems

Framework	*Core focus*	*Key mechanism(s) of threat*	*Scope of analysis*	*Treatment of epistemic dimensions*	*Implications for health sovereignty*	*Limitations relative to the current study*
Settler Colonialism (Wolfe 2006)	Territoriality and elimination of the native as structure (not event)	Logic of elimination: displacement, assimilation, replacement to secure settler access to land	Primarily material/ territorial (land as an irreducible element); comparative across settler states (for example, Australia, North America, Palestine)	Secondary; elimination includes cultural erasure but prioritises physical/structural removal over epistemology	Frames sovereignty mainly as territorial/ political self-determination; health ontologies are subsumed under broader cultural elimination, with limited direct attention to epistemic control over healing systems	Does not foreground epistemic violence or intellectual appropriation (for example, bioprospecting) as co-equal drivers; less emphasis on health ontologies
Biocultural Heritage Loss (Maffi 2005)	Interlinked decline of linguistic, cultural, and biological diversity	Converging global pressures (for example globalisation, habitat loss, modernisation) are eroding co-evolutionary diversity	Global/regional patterns; measurement and assessment of diversity links; policy for protection	Includes cultural/ linguistic erosion but treats knowledge loss as part of broader biodiversity decline	Links health indirectly via biocultural integrity, but sovereignty appears as conservation -oriented rather than active epistemic self-determination in health paradigms	Focuses on co-occurrence and mutual reinforcement of diversities; less explicit on power dynamics of dispossession (for example, neocolonial commodification or biomedical reductionism)
Synergistic Triad of Dispossession (this study)	Interconnected spatial, intellectual, and epistemological dispossession as neo-colonial architecture	Synergistic triad: spatial (extractivism/l and loss), intellectual (bioprospecting/ commodification), epistemological (biomedical invalidation/ pathologisation)	Global qualitative meta-synthesis of ethnomedicine cases: links threats to resilience and sovereignty	Central: epistemic violence as co-equal with material dispossession; frames invalidation of holistic ontologies as key to ongoing erasure	Directly centres health sovereignty as epistemic self-determination: Indigenous control over relational ontologies (sentient cosmos, healing as relational repair) is essential to resist the triad's compounding assaults; revitalisation requires securing land, knowledge, and worldview against co-optation	Builds on prior frameworks by integrating epistemic justice and health-specific sovereignty; highlights agency/resilience as epistemic reclamation

position resilience as pragmatic adaptation, this study's analysis highlights how Indigenous communities strategically navigate biomedical and traditional systems to reclaim control over their health paradigms. For instance, the case of Mâori weaving as a health-promoting practice (Te Huia et al. 2023) underscores culturally specific resilience strategies that integrate spiritual and social well-being, offering fresh perspectives on how Indigenous knowledge systems thrive in dialogue with, rather than subordination to, biomedicine. By foregrounding these underrepresented cases and linking them to the broader struggle for epistemic justice, this study enriches medical anthropology and global health scholarship, advocating for epistemological pluralism as a critical pathway to decolonising health systems.

The decolonial political ecology framework not only illuminates the synergistic triad of dispossession but also provides a lens to reinterpret resilience strategies as acts of epistemic sovereignty, moving beyond pragmatic adaptation to assert Indigenous control over knowledge and health paradigms. Drawing on Mignolo's (2000) concept of "border thinking," this study frames medical pluralism as a deliberate epistemic strategy where Indigenous communities navigate the borderlands between biomedical and traditional systems to reclaim agency. Border thinking posits that subaltern knowledges can engage with dominant systems without being subsumed, creating hybrid spaces where Indigenous ontologies thrive. For instance, the strategic use of medical pluralism, that is, leveraging biomedicine for acute cures while relying on ethnomedicine for holistic healing (Struthers and Eschiti 2004; Aferu et al. 2022), reflects a form of border thinking that preserves cultural meaning while accessing biomedical efficacy. Similarly, cultural resurgence, such as Mâori weaving practices (Te Huia et al. 2023), embodies epistemic sovereignty by reasserting traditional knowledge as a living, dynamic system that resists biomedical hegemony. These acts challenge the colonial logic of epistemological violence by centring Indigenous worldviews as valid and indispensable, aligning with decolonial calls for pluriversal health systems (Escobar 2018). By situating resilience within this framework, the study underscores how Indigenous communities actively reshape the epistemic landscape, ensuring their health systems endure as sovereign expressions of identity and belonging. The synthesis prioritises studies representing diverse Indigenous ontologies globally, ensuring broad applicability across varied cultural and ecological contexts. This synthesis uniquely highlights underrepresented regions, such as the Asur in India and Micronesian communities, and reveals novel resilience strategies that have not been fully explored in prior studies.

Validation of the Core Argument

The results of this meta-synthesis, validated by a global body of evidence, strongly support the study's core argument. The future of Indigenous ethnomedicine is indeed contested, poised between co-optation and sovereignty. The discussion has detailed how dispossession operates through interconnected spatial, intellectual, and epistemological channels, and how resilience is enacted through pragmatic pluralism and cultural resurgence. Ultimately, the literature demonstrates that supporting Indigenous ethnomedicine is synonymous with supporting Indigenous sovereignty, that is, the right of peoples to control their lands, protect their knowledge, and live according to their own ontological and epistemological frameworks. The choice between the trajectories is a fundamental question of epistemic justice. These examples, ranging from community enterprises (Torri 2011) to Mâori weaving as health promotion (Te Huia et al. 2023) and cultural safety reforms (Coones Long et al. 2025), illustrate how resilience transcends pragmatism to embody epistemic sovereignty. Johnson-Jennings et al. (2017) found that provider-patient racial concordance significantly increased the likelihood of clinicians referring Indigenous patients to traditional healing practices, underscoring that even well-intentioned integration efforts remain contingent on providers' cultural positioning and highlighting the need for systematic cultural safety training rather than relying on serendipitous concordance.

Collectively, they demonstrate that defending ethnomedicine requires not just preserving practices but securing the ontological conditions (land, relational epistemologies) that sustain them.

CONCLUSION

In conclusion, this analysis demonstrates that the future of Indigenous ethnomedicine is contested between a path of co-optation and one of sovereign revitalisation. The synergistic triad of dispossession of spatial, intellectual, and epistemological functions as an enduring colonial architecture that systematically dismantles the holistic foundations of these knowledge systems. However, Indigenous communities are not passive in this struggle, as they actively assert agency through strategic negotiation of medical pluralism, cultural resurgence, and community-controlled enterprise. The findings unequivocally show that the vitality of Indigenous ethnomedicine is inextricably linked to broader struggles for land, cultural heritage, and epistemic justice. The survival of these systems as dynamic, living entities rather than historical footnotes or commodified resources hinges, therefore, on a global commitment to decolonisation. This requires all stakeholders to actively dismantle structures of dispossession and to support Indigenous sovereignty, thereby embracing a future in which epistemological pluralism is recognised as essential to a just and holistic global health paradigm.

RECOMMENDATIONS

Charting a path toward epistemic justice and sovereign revitalisation requires a coordinated and respectful effort from all stakeholders, with actions building from immediate, practical steps to long-term structural reforms. The journey should begin within the realm of healthcare delivery itself. As a foundational step, healthcare providers and biomedical institutions must implement mandatory cultural safety and humility training to combat the pathologisation of Indigenous beliefs and foster respect. This should be paired with practical adjustments, such as creating inclusive patient intake processes that respectfully ask about the use of traditional medicine, thereby opening a safe space for dialogue and integrated care.

Concurrently, a fundamental shift is needed within the research ecosystem. Researchers and academic institutions must move from extractive practices to ethical partnerships by adopting community-led research frameworks. This ensures projects are co-designed with Indigenous communities from the outset and adhere to principles of Indigenous data sovereignty, such as OCAP® (Ownership, Control, Access, Possession) or CARE (Collective Benefit, Authority to Control, Responsibility, Ethics). To make this sustainable, universities must reform their tenure and funding structures to incentivise and reward this long-term, relational work rather than rapid, extractive publication.

With these foundational supports in place, the focus must expand to the policy level, where the most significant structural changes can be enacted. Policymakers and government agencies have a critical role in legislating and enforcing Indigenous land rights, as securing territorial tenure is the non-negotiable foundation for preserving the people-land-medicine nexus. Furthermore, governments must develop and fund genuinely culturally safe healthcare policies that go beyond tokenism to establish formal referral pathways to traditional healers, particularly for mental health and palliative care. To address intellectual dispossession, there is a pressing need for legal innovation through sui generis intellectual property frameworks that protect traditional knowledge as collective, intergenerational heritage, and prevent biopiracy by mandating prior informed consent and equitable benefit-sharing.

Empowered by these external enablers, Indigenous communities and organisations can strengthen their systems from within. A key strategy is the development of internal protocols for engagement, which allow communities to set their own terms for how external actors request access to knowledge. To combat intergenerational erosion, communities can invest in formal mentor-apprentice programs and land-based camps. Exploring community-controlled economic initiatives, such as ethical enterprises for cultivating plants or marketing value-added products, represents a powerful strategy for cultural and economic self-determination, ensuring benefits are retained locally and knowledge is circulated on their own terms.

Finally, international organisations and funders play a crucial role in scaling these efforts and upholding global standards. Their most direct impact comes from prioritising direct funding for Indigenous-led initiatives rather than externally driven

projects. They can also provide targeted support to help communities navigate complex protective agreements, such as the Nagoya Protocol. Ultimately, these bodies must use their global platforms to champion epistemological pluralism, advocating for the formal recognition of Indigenous knowledge systems as indispensable contributors to global health and sustainability, thereby solidifying the move from tolerance to respect and partnership.

LIMITATIONS

This qualitative meta-synthesis, while providing a comprehensive global synthesis aligned with a decolonial political ecology framework, is subject to several methodological limitations inherent to the approach.

First, the search strategy was restricted to studies published in English, as per the inclusion criteria (Table 1). This language bias may have excluded relevant qualitative research published in other languages (for example, Spanish-language studies on Latin American Indigenous groups, French-language work on African or Canadian First Nations contexts, or Indigenous-language publications), potentially underrepresenting non-Anglophone perspectives and reinforcing global knowledge inequities. Future syntheses could mitigate this by incorporating multilingual search teams or translation resources, as recommended in qualitative evidence synthesis guidelines.

Second, reliance on secondary data, synthesising findings from 34 existing qualitative studies, constrains interpretation by the scope, depth, and framing of the original primary research. While this avoids extractive primary data collection (a key decolonial ethical choice), it introduces risks, such as incomplete representation of Indigenous voices, if primary studies lack full community partnership or reflexivity. The synthesis cannot recover nuances or raw data omitted from published accounts, and potential publication bias (for example, over-representation of successful resilience cases or under-reporting of failed adaptations) may influence the emergent themes.

Third, although the Critical Interpretive Synthesis approach allowed for reflexive, theory-driven integration, the interpretive nature of the process introduces subjectivity, particularly given the author's dual Indigenous-academic positionality. While reflexivity was employed throughout (including community consultations with elders from Assam tribal groups), different researcher teams might yield alternative emphases or synthetic constructs. These limitations do not invalidate the core findings, the synergistic triad of dispossession and the centrality of epistemic sovereignty, but highlight areas for caution in generalisation and avenues for future research, such as multilingual syntheses or primary Indigenous-led studies in underrepresented regions.

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