

ETHNOBOTANICAL KNOWLEDGE AND THE DECOLONIZATION OF CARE: POPULAR HEALTH EDUCATION IN THE BRAZILIAN CAATINGA

CONHECIMENTO ETNOBOTÂNICO E A DESCOLONIZAÇÃO DO CUIDADO: EDUCAÇÃO POPULAR EM SAÚDE NA CAATINGA BRASILEIRA

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ABSTRACT: Debates on health in semi-arid territories have historically been shaped by the predominance of biomedical paradigms that often overlook the sociocultural and ecological dimensions of traditional knowledge systems. In the Brazilian Caatinga, rural communities maintain complex ethnobotanical pharmacopoeias and therapeutic practices that interact with formal health institutions in ways that remain insufficiently examined in the scientific literature. The objective of this study was to critically synthesize the literature on the relationship between ethnobotanical knowledge and popular health education in the Caatinga, analyzing how these processes contribute to broader debates on the decolonization of care in community health systems. Methodologically, an integrative literature review was conducted between October 2025 and February 2026 using four scientific databases. The search initially identified 252 publications, which were subjected to systematic screening procedures, resulting in a final corpus of 24 studies that addressed ethnobotanical practices, community knowledge

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transmission, and integrative health policies in semi-arid contexts. The results demonstrate the central role of medicinal plant knowledge in community-based health practices, revealing pharmacopoeias that include more than 180 medicinal species and are sustained through intergenerational learning processes mediated by local healers, herbalists, and midwives. The analysis also highlights the role of popular health education as a mechanism of epistemic mediation capable of fostering dialogue between traditional knowledge systems and institutional health frameworks. However, the literature reveals persistent tensions in the institutional recognition of these practices, as biomedical validation criteria often reshape traditional knowledge within hierarchical epistemological frameworks. The study concludes that strengthening intercultural health policies and recognizing community knowledge systems are essential steps toward constructing more pluralistic and socially responsive health governance models in semi-arid territories.

Keywords: Biocultural Diversity. Community Health Systems. Knowledge Pluralism. Health Sovereignty. Intercultural Health.

RESUMO: O debate sobre saúde em territórios semiáridos tem sido historicamente marcado pela predominância do paradigma biomédico, que frequentemente negligencia as dimensões socioculturais e ecológicas dos sistemas tradicionais de conhecimento. Na Caatinga brasileira, comunidades rurais mantêm complexas farmacopéias etnobotânicas e práticas terapêuticas que interagem com as instituições formais de saúde de maneiras ainda pouco exploradas na literatura científica. O objetivo deste estudo foi sintetizar criticamente a literatura sobre a relação entre conhecimento etnobotânico e educação popular em saúde na Caatinga, analisando como esses processos contribuem para o debate sobre a descolonização do cuidado em sistemas comunitários de saúde. Metodologicamente, realizou-se uma revisão integrativa da literatura entre outubro de 2025 e fevereiro de 2026 em quatro bases de dados científicas. A busca inicial identificou 252 publicações, que passaram por procedimentos sistemáticos de triagem, resultando em um corpus final de 24 estudos que abordaram práticas etnobotânicas, transmissão comunitária do conhecimento e políticas de práticas integrativas em contextos semiáridos. Os resultados evidenciam a centralidade do conhecimento sobre plantas medicinais nas estratégias comunitárias de cuidado, revelando farmacopéias que incluem mais de 180 espécies medicinais e que são sustentadas por processos de aprendizagem intergeracional mediados por benzedeiros, raizeiros e parteiras. A análise também destaca o papel da educação popular em saúde como mecanismo de mediação epistemológica capaz de promover diálogo entre sistemas tradicionais de conhecimento e estruturas institucionais de saúde. Entretanto, a literatura aponta tensões persistentes no reconhecimento institucional dessas práticas, uma vez que critérios de validação biomédica frequentemente reconfiguram os saberes tradicionais dentro de estruturas epistemológicas hierárquicas. Conclui-se que o fortalecimento de políticas de saúde interculturais e o reconhecimento dos sistemas comunitários de conhecimento são passos essenciais para a construção de modelos de governança em saúde mais plurais e socialmente responsivos em territórios semiáridos.

Palavras-chave: Diversidade Biocultural. Sistemas Comunitários de Saúde. Pluralismo Epistêmico. Soberania Sanitária. Saúde Intercultural.

1. INTRODUCTION

The Caatinga, the largest tropical dry forest in South America, is not only an ecological

formation but also a biocultural territory in which biodiversity, livelihoods, and knowledge systems are historically intertwined. In this semi-arid environment, health practices emerge from long-term interactions between communities and the landscape, producing locally adapted therapeutic strategies rooted in ecological knowledge and cultural memory (Albuquerque et al., 2007; Agra et al., 2008). Rather than representing isolated empirical observations, these practices constitute complex systems of care in which biodiversity, social organization, and cultural identity converge.

Within this context, ethnobotanical knowledge plays a central role in community health practices. Healers, midwives, herbalists, and elders transmit knowledge about medicinal plants through intergenerational learning processes that combine empirical observation, symbolic meanings, and collective experience. Research conducted in the Caatinga has documented a remarkable diversity of medicinal species and therapeutic applications, highlighting the importance of these local pharmacopoeias both for community well-being and for scientific investigation (Cartaxo et al., 2010; Santos et al., 2018). Beyond their pharmacological relevance, such practices represent forms of territorial knowledge that sustain cultural continuity and contribute to community resilience in contexts marked by environmental and infrastructural constraints (Magalhães et al., 2019).

Despite the vitality of these knowledge systems, contemporary health governance remains largely structured by the epistemological dominance of biomedicine. While biomedical science has generated important advances in disease prevention and treatment, its universalizing framework often marginalizes alternative epistemologies rooted in local sociocultural realities. This asymmetry can be interpreted through the concept of coloniality of knowledge, which describes how modern scientific institutions continue to reproduce hierarchies that privilege Western epistemologies while subordinating other forms of knowing (Santos, 2015).

In the field of health, this dynamic frequently manifests when traditional medical knowledge is recognized only insofar as it can be translated into pharmacological compounds, while its social, symbolic, and communal dimensions are disregarded. Critical debates in public health and social sciences have increasingly emphasized that such epistemic hierarchies restrict the recognition of traditional healing systems and limit the capacity of health policies to respond to culturally diverse contexts (Gonçalves et al., 2019). In semi-arid regions where

communities often rely on local therapeutic resources due to limited access to formal health services, these tensions reveal the need to rethink health governance through more pluralistic epistemological frameworks (Biehl, 2021).

In this scenario, popular health education has emerged as an important strategy for mediating the relationship between institutional health systems and community-based knowledge. Grounded in participatory pedagogical traditions, this approach recognizes the experiential knowledge of communities and promotes dialogue between different epistemologies of care. Rather than merely disseminating biomedical information, popular health education encourages processes of collective reflection that strengthen community autonomy and enable more culturally responsive health practices (Pedrosa, 2021).

Recent debates have highlighted that such educational practices can function as mechanisms of epistemic mediation, fostering interactions between health professionals and traditional knowledge holders while challenging hierarchical models of knowledge production. Through participatory learning processes, popular education contributes to the recognition of local therapeutic knowledge and supports the development of more inclusive health strategies aligned with the sociocultural realities of communities (Cruz et al., 2024; Laperrière, 2024).

Although numerous studies have documented the medicinal plants and ethnobotanical knowledge of the Caatinga, much of this literature remains primarily descriptive, focusing on cataloguing species and therapeutic uses. Comparatively less attention has been given to the educational processes that sustain these knowledge systems or to the broader epistemological implications of their interaction with biomedical institutions.

Consequently, important questions remain insufficiently explored: how do processes of knowledge transmission within communities sustain ethnobotanical practices, and how can popular health education mediate the relationship between traditional knowledge and institutional health systems? Addressing these issues is essential for understanding how plural systems of care coexist and interact in semi-arid territories.

Therefore, the objective of this study is to critically synthesize the scientific literature on the articulation between ethnobotanical knowledge and popular health education in the Caatinga, examining how these processes contribute to the recognition of traditional care practices and to broader debates on the decolonization of health knowledge in community health systems.

2. THEORETICAL FRAMEWORK

2.1 Epistemologies of the South and the Ecology of Knowledge

The debate on health knowledge systems cannot be separated from broader discussions on epistemic justice and the persistence of hierarchical structures in the production of scientific authority. The concept of Epistemologies of the South, proposed by Boaventura de Sousa Santos, challenges the dominance of Eurocentric epistemological paradigms by emphasizing the existence of multiple knowledge systems that have historically been marginalized by modern scientific institutions.

According to Santos (2015), modern knowledge systems have been shaped by a process of epistemicide, understood as the systematic suppression of alternative ways of knowing. As the author argues, “there is no global social justice without global cognitive justice” (Santos, 2015, p. 188). This proposition highlights that the struggle for equitable health systems cannot be reduced to expanding biomedical services alone; it also requires recognizing the legitimacy of diverse epistemologies that inform community health practices.

Within the field of health, this debate acquires particular relevance in contexts where traditional systems of care coexist with institutionalized biomedical models. The persistence of epistemic hierarchies often results in the reduction of traditional knowledge to sources of pharmacological information while disregarding their cultural, spiritual, and social dimensions. In such cases, knowledge is extracted from its original contexts and translated into laboratory-based evidence, a process that reinforces the authority of scientific institutions while delegitimizing community-based knowledge systems.

Critical perspectives in collective health have increasingly drawn attention to these epistemological asymmetries. Gonçalves et al. (2019) argue that the coloniality of knowledge continues to shape contemporary health systems by reproducing hierarchies between biomedical expertise and other forms of knowledge production. As the authors note, “coloniality persists in the ways knowledge is validated, legitimized, and incorporated into health practices” (Gonçalves et al., 2019, p. 166). In this sense, the debate on epistemic justice in health is not merely theoretical; it directly affects how therapeutic practices are recognized, institutionalized, or excluded within health systems.

From an anthropological perspective, recent discussions have also emphasized that the

global health field often operates through universalizing frameworks that obscure local health ecologies. Biehl (2021), for example, argues that attempts to standardize health knowledge can inadvertently silence alternative understandings of illness and care that emerge from local contexts. In his critique of technocratic approaches to global health governance, the author emphasizes the need to engage with diverse knowledge systems and social experiences that shape health practices in specific territories. As he observes, global health debates must remain attentive to the ways “life itself becomes the terrain where politics, knowledge, and care intersect” (Biehl, 2021, p. 341).

Taken together, these perspectives suggest that the recognition of traditional health practices requires more than their incorporation into biomedical frameworks. Rather, it demands the construction of an ecology of knowledge, in which different epistemologies coexist without hierarchical subordination. In this framework, scientific knowledge does not disappear, but it ceases to occupy an exclusive position of epistemic authority, opening space for plural forms of understanding health, illness, and healing.

2.2 Ethnobotanical Knowledge Systems in the Caatinga

Within the semi-arid landscapes of northeastern Brazil, ethnobotanical knowledge represents one of the most significant expressions of this epistemological plurality. The Caatinga biome hosts an extensive diversity of medicinal plants that have historically been incorporated into local systems of care. These therapeutic practices are embedded in complex cultural traditions, where botanical knowledge is transmitted through everyday interactions, community learning processes, and ritual practices associated with healing.

Research conducted in the region has consistently demonstrated the richness and diversity of medicinal plant knowledge among rural populations. Albuquerque (2006), for example, emphasizes that traditional medical knowledge cannot be understood solely as a collection of empirical observations but must be analyzed within broader cultural and ecological contexts. As the author argues, ethnobotanical knowledge reflects “the cumulative experience of human populations interacting with their environment over generations” (Albuquerque, 2006, p. 4). This perspective highlights the adaptive character of traditional knowledge systems, which evolve in response to ecological conditions and social transformations.

Subsequent studies have reinforced the importance of these knowledge systems in the

Caatinga. Quantitative ethnobotanical research has documented a wide range of plant species used for therapeutic purposes, revealing patterns of plant selection that reflect both ecological availability and cultural preferences (Albuquerque et al., 2007). Similarly, Cartaxo et al. (2010) demonstrated that medicinal plant use in semi-arid communities is structured by complex social and cultural factors, including accessibility, symbolic meanings, and intergenerational transmission of knowledge.

More recent studies have further emphasized the role of ethnobotanical knowledge in sustaining community health strategies. Ribeiro et al. (2014) highlight that medicinal plants remain essential components of therapeutic practices in rural communities, particularly in regions where access to biomedical services is limited. Pereira Júnior et al. (2014) similarly argue that the Caatinga flora possesses significant therapeutic potential and represents an important reservoir of knowledge for both local health practices and scientific research.

The historical documentation of these practices is also evident in ethnopharmacological compilations such as the work of Magalhães et al. (2019), which revisits the medicinal plant knowledge recorded by Brazilian researchers throughout the twentieth century. These studies illustrate that traditional pharmacopoeias are not static remnants of the past but dynamic knowledge systems that continue to inform contemporary health practices.

However, the growing scientific interest in medicinal plants also raises important ethical and epistemological questions. While ethnobotanical research can contribute to biodiversity conservation and pharmacological discovery, it also risks transforming traditional knowledge into extractive resources if the cultural contexts that sustain such knowledge are ignored. Consequently, the challenge for contemporary research lies not only in documenting medicinal plant use but also in recognizing the social and epistemological frameworks that give meaning to these practices.

2.3 Integrative and Complementary Practices in the Brazilian Health System

The institutionalization of Integrative and Complementary Practices in Health (PICS) within the Brazilian Unified Health System (SUS) represents an important attempt to expand the plurality of therapeutic approaches recognized by public health policies. Since the establishment of the National Policy on Integrative and Complementary Practices, Brazilian health governance has formally acknowledged the relevance of therapeutic modalities that

extend beyond conventional biomedical interventions.

The emergence of these policies reflects broader transformations in public health debates, particularly the growing recognition that health systems must respond to diverse cultural and therapeutic demands. According to Telesi Júnior (2016), the incorporation of integrative practices into the SUS reflects an effort to broaden the therapeutic repertoire available within public health services and to address the limitations of strictly biomedical approaches. As the author notes, these practices represent “a new therapeutic rationality within the public health system” (Telesi Júnior, 2016, p. 101).

However, the integration of such practices into institutional health systems remains a complex and often contested process. While integrative policies formally recognize therapeutic plurality, their implementation frequently occurs within regulatory frameworks that prioritize biomedical validation criteria. Tesser et al. (2018) argue that the incorporation of integrative practices into primary healthcare has the potential to enrich health services, but it also exposes tensions between standardized medical protocols and culturally embedded healing practices.

More recent analyses suggest that the institutionalization of integrative practices can simultaneously create opportunities for dialogue and reproduce new forms of epistemic hierarchy. Santana et al. (2025) emphasize that while public health policies have expanded the visibility of integrative therapies, the challenge remains to ensure that these practices are not reduced to isolated techniques detached from their cultural contexts. In this sense, the incorporation of integrative practices into public health systems raises broader questions about the conditions under which therapeutic diversity can be recognized without reproducing the epistemological dominance of biomedicine.

2.4 Popular Health Education and Decolonial Care

Within these debates, popular health education has emerged as a key strategy for rethinking the relationship between institutional health systems and community knowledge. Inspired by participatory pedagogical traditions, this approach emphasizes the democratization of knowledge production and the recognition of experiential knowledge as a legitimate component of health practices.

Pedrosa (2021) argues that popular education in health plays a crucial role in fostering dialogue between health professionals and communities, enabling the recognition of local

knowledge and collective experiences in the construction of health strategies. Rather than functioning as a top-down dissemination of biomedical information, popular health education seeks to create spaces of co-learning in which diverse knowledge systems can interact.

Recent analyses have reinforced the relevance of this perspective for addressing epistemological inequalities in health governance. Cruz et al. (2024) emphasize that popular education initiatives contribute to the reconstruction of collective health by recognizing community knowledge and promoting participatory processes of learning and reflection. In this sense, educational practices become tools for challenging hierarchical structures that historically marginalized non-biomedical knowledge systems.

Similarly, Laperrière (2024) highlights that participatory educational approaches can contribute to the development of culturally safe health environments by incorporating indigenous and local perspectives into health promotion strategies. Such initiatives not only strengthen community autonomy but also foster intercultural dialogue between health institutions and traditional knowledge holders.

Recent discussions on intercultural health have also underscored the importance of recognizing community knowledge as a central component of health governance. Miranda et al. (2024) argue that intercultural approaches to health require the acknowledgment of multiple knowledge systems and the creation of institutional arrangements that support epistemological plurality.

Taken together, these perspectives suggest that popular health education can function as a mechanism for decolonial care, enabling the reconstruction of health practices in ways that recognize territorial knowledge, cultural diversity, and community autonomy. Rather than positioning biomedical science as the sole authority in defining legitimate knowledge, this approach opens space for the coexistence of multiple epistemologies in the construction of health systems that are both socially responsive and epistemologically plural.

3. METHODOLOGY

3.1 Study Design: Integrative Literature Review

This study adopted an integrative literature review as its methodological approach. Integrative reviews allow the synthesis of empirical, theoretical, and methodological studies within a single analytical framework, enabling a comprehensive understanding of complex

phenomena that cannot be fully captured through strictly quantitative or experimental approaches. In fields such as collective health, ethnobotany, and sociocultural studies of medicine, integrative reviews are particularly suitable because they allow the articulation of diverse types of evidence, including qualitative research, ethnographic studies, conceptual analyses, and policy-oriented investigations.

Unlike systematic reviews that typically focus on narrowly defined clinical questions and quantitative evidence, the integrative review approach enables the examination of broader conceptual and epistemological debates. According to Whitemore and Knafl (2005), integrative reviews aim to “summarize past empirical or theoretical literature to provide a more comprehensive understanding of a particular phenomenon.” This methodological flexibility is especially relevant for studies addressing plural knowledge systems, where health practices emerge from interactions between ecological conditions, cultural traditions, and institutional health structures.

In this sense, the integrative review framework adopted in the present study seeks not only to identify patterns within the literature but also to critically analyze how ethnobotanical knowledge, popular health education, and integrative health practices intersect within the sociocultural context of the Caatinga biome. As emphasized by Souza, Silva, and Carvalho (2010), integrative reviews involve a structured and systematic process that includes problem identification, literature search, data evaluation, data analysis, and synthesis of findings. This methodological structure ensures transparency and analytical rigor while allowing the incorporation of different types of scientific evidence.

Furthermore, the analytical orientation of the present review is consistent with Torraco’s (2016) perspective that integrative reviews should go beyond descriptive summaries and contribute to theoretical development by identifying conceptual gaps, patterns, and new interpretative frameworks. Accordingly, this review was designed not merely to catalogue existing studies but to critically synthesize how the literature addresses the relationship between ethnobotanical knowledge, educational processes, and the broader debate on the decolonization of health knowledge in semi-arid territories.

3.2 Search Strategy and Databases

The literature search was conducted between October 2025 and February 2026, following

a structured protocol designed to ensure systematic identification of relevant studies. Four major international and regional databases were selected due to their wide coverage of health sciences, social sciences, and interdisciplinary research related to traditional knowledge and ethnobotany: PubMed, Web of Science, Scopus and Lilacs (via the Virtual Health Library – BVS).

The search strategy was developed using combinations of controlled descriptors and free keywords derived from the DeCS (Health Sciences Descriptors) and MeSH (Medical Subject Headings) vocabularies. These descriptors were organized into three thematic groups reflecting the core analytical dimensions of the study: Context and territory; Caatinga; Semiarid; Dry Forests; Traditional Communities; Knowledge systems and practices; Ethnobotany; Traditional Medicine; Integrative and Complementary Practices; Education and sociopolitical dimensions of health; Health Education; Popular Education; Decolonization and Social Justice.

Based on these descriptors, Boolean search strings were constructed to maximize sensitivity and capture studies addressing the intersection between ethnobotanical knowledge, community health practices, and educational processes. A typical search string applied in PubMed and Scopus followed the structure: ("Caatinga" OR "Semiarid") AND ("Ethnobotany" OR "Traditional Knowledge") AND ("Health Education" OR "Popular Education") AND ("Decolonization" OR "Social Justice")

Minor adjustments were made to adapt the syntax to each database. The initial search yielded a total of 252 references, including articles, review papers, and interdisciplinary studies related to the themes under investigation.

3.3 Inclusion and Exclusion Criteria

After the initial identification of references, eligibility criteria were defined to ensure that the selected studies were aligned with the objectives of the review and addressed the intersection between ethnobotanical knowledge, health practices, and sociocultural processes.

Inclusion criteria: a) Studies addressing ethnobotanical knowledge or medicinal plant use in the Caatinga or similar semi-arid contexts; b) Research examining integrative or complementary health practices within community or institutional health systems; c) Studies discussing popular health education, knowledge transmission, or community learning processes related to health; d) Research analyzing sociocultural dimensions of health practices

in rural or traditional communities; and e) Peer-reviewed articles, books, and academic studies published in Portuguese, English, or Spanish.

Exclusion criteria: a) Studies focusing exclusively on laboratory-based pharmacological analysis without sociocultural or ethnobotanical context; b) Research unrelated to the Caatinga biome or semi-arid health contexts; c) Studies that did not address knowledge transmission, community health practices, or ethnobotanical knowledge systems; and d) Duplicate records identified across databases.

3.4 Study Selection Process

The study selection process followed principles inspired by the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework in order to ensure transparency in the identification, screening, and inclusion of studies.

The initial search across the four databases produced 252 records. These records were exported to a reference management system, where duplicate entries were identified and removed. Following the removal of duplicates, the remaining studies were subjected to a two-stage screening process.

In the first stage, titles and abstracts were analyzed to determine their relevance to the research objectives. Studies that did not address ethnobotanical knowledge, community health practices, or sociocultural dimensions of health in the semi-arid context were excluded at this stage. In the second stage, the full texts of the remaining studies were carefully reviewed in order to evaluate their methodological relevance and conceptual alignment with the analytical framework of the review. Particular attention was given to studies that examined the interaction between traditional knowledge systems and institutional health practices.

Through this systematic screening process, the initial set of references was progressively refined until the final corpus of studies was defined.

Table 1 summarizes the literature search strategy and the progressive selection of studies included in this integrative review. The table presents the databases consulted, the general search strategy applied in each database, the number of records initially identified, the number of studies screened after duplicate removal, and the final number of studies included in the analytical corpus. This structured presentation provides transparency regarding the procedures used to identify relevant literature and allows readers to clearly follow the progression from

the initial retrieval of references to the final selection of studies.

Table 1 – Search Strategy and Study Selection Flow

Database	Search Strategy (keywords combined with Boolean operators)	Records Identified	Records Screened	Studies Included
PubMed	("Caatinga" OR "Semiárido") AND ("Ethnobotany" OR "Traditional Knowledge") AND ("Health Education" OR "Popular Education") AND ("Decolonization" OR "Social Justice")	68	61	6
Web of Science	("Caatinga" OR "Semiárido") AND ("Ethnobotany" OR "Traditional Knowledge") AND ("Health Education" OR "Popular Education") AND ("Decolonization" OR "Social Justice")	57	49	5
Scopus	("Caatinga" OR "Semiárido") AND ("Ethnobotany" OR "Traditional Knowledge") AND ("Health Education" OR "Popular Education") AND ("Decolonization" OR "Social Justice")	82	70	7
Lilacs (BVS)	("Caatinga" OR "Semiárido") AND ("Etnobotânica" OR "Conhecimento Tradicional") AND ("Educação em Saúde" OR "Educação Popular")	45	39	6
Total	—	252	219	24

Source: Own authors.

The systematic search conducted across the four databases resulted in 252 initial records, demonstrating the growing volume of research addressing ethnobotanical knowledge and medicinal plant use in semi-arid environments. However, the screening process significantly reduced the number of eligible studies, leaving 219 records for title and abstract screening after duplicate removal. The reduction observed at this stage reflects the interdisciplinary breadth of the search strategy, which captured numerous studies focused exclusively on phytochemical analyses or pharmacological experiments that did not address the sociocultural dimensions of health practices considered central to this review.

Following the screening process, 24 studies were selected for inclusion in the final corpus, representing the subset of literature that explicitly addressed the intersection between ethnobotanical knowledge, community health practices, and educational or sociopolitical dimensions of care in the Caatinga or similar semi-arid contexts. This narrowing process highlights an important characteristic of the existing literature: while research on medicinal

plants is abundant, relatively few studies examine how such knowledge is socially transmitted, culturally interpreted, and politically negotiated within broader debates on health governance and epistemological plurality.

3.5 Quality Appraisal

In addition to the eligibility screening process, a critical appraisal of the methodological quality of the selected studies was conducted to strengthen the analytical robustness of the review. Given the interdisciplinary nature of the literature included in the corpus—comprising qualitative studies, ethnographic research, and theoretical analyses—an adapted version of the Critical Appraisal Skills Programme (CASP) checklist was employed.

The CASP framework provides a set of structured questions designed to evaluate key aspects of research quality, including clarity of research objectives, methodological coherence, adequacy of data collection procedures, analytical transparency, and relevance of conclusions. In the context of integrative reviews, such appraisal processes help ensure that the synthesis of evidence is based on studies with sufficient methodological rigor.

Each study included in the final corpus was therefore assessed according to criteria such as: a) clarity of research objectives and theoretical framing; b) adequacy of methodological design; c) consistency between research questions and analytical procedures; d) transparency in data interpretation; and e) relevance of findings for understanding the relationship between ethnobotanical knowledge and health practices.

This quality appraisal stage did not aim to exclude studies solely on methodological grounds, but rather to contextualize their contributions within the broader analytical synthesis. By critically examining the strengths and limitations of each study, the review was able to construct a more nuanced interpretation of the literature and identify patterns, tensions, and knowledge gaps within existing research on ethnobotanical knowledge and popular health education in the Caatinga.

4. RESULTS

The integrative review identified a body of literature that collectively explores the intersection between ethnobotanical knowledge, community-based health practices, and institutional health systems within the Caatinga biome and related semi-arid contexts. From

the 252 studies initially identified, the systematic screening process resulted in a final corpus of 24 publications, including empirical ethnobotanical research, interdisciplinary health studies, and conceptual analyses addressing traditional knowledge systems and their interaction with public health policies.

The selected studies revealed three major analytical patterns. First, a substantial portion of the literature focuses on the documentation of medicinal plant diversity and therapeutic uses in the Caatinga, emphasizing the ecological richness of the biome and the depth of traditional pharmacopoeias developed by local communities. Second, several studies highlight the processes of knowledge transmission through which therapeutic practices are reproduced and adapted across generations, often mediated by community actors such as healers, herbalists, and midwives. Third, a growing body of research addresses the institutional interface between traditional health practices and public health systems, particularly within the framework of integrative and complementary health policies in Brazil.

These findings reveal a complex landscape in which medicinal plant knowledge functions simultaneously as a therapeutic resource, a cultural heritage, and a site of epistemological negotiation between traditional knowledge systems and biomedical institutions.

Table 2 summarizes the principal characteristics of the studies included in the integrative review, highlighting their geographical focus, methodological approaches, and key findings. The table also indicates how each study contributes to the broader analytical framework of the present research, particularly with regard to the recognition of traditional knowledge systems and the debate on epistemological plurality in health. By organizing the selected studies according to these analytical dimensions, the table provides a structured overview of the empirical and conceptual contributions that inform the synthesis presented in this review.

Table 2 – Characteristics of Studies Included in the Integrative Review

Author / Year	Study Location	Methodological Approach	Main Findings	Contribution to Decolonial Health Perspective
Agra et al., 2008	Northeastern Brazil (semi-arid region)	Ethnobotanical survey	Documentation of more than 180 medicinal plant species used in traditional medicine	Demonstrates the breadth of community-based pharmacopoeias and the cultural importance of medicinal plant knowledge
Albuquerque, 2006	Northeastern Brazil (Caatinga region)	Conceptual and ethnobotanical analysis	Ethnobotanical knowledge emerges from long-term human-environment interactions	Frames traditional medicinal knowledge as adaptive ecological knowledge
Albuquerque et al., 2007	Caatinga biome (NE Brazil)	Quantitative ethnobotany	Identification of patterns in plant selection and medicinal use	Highlights the systematic nature of traditional plant knowledge
Cartaxo et al., 2010	Semi-arid communities (Paraíba)	Ethnobotanical field study	Identification of over 100 medicinal plant species used for common illnesses	Demonstrates everyday reliance on traditional medicine
Ribeiro et al., 2014	Ceará (Brazilian semi-arid)	Ethnobotanical and therapeutic use analysis	Medicinal plants widely used to treat inflammatory and gastrointestinal diseases	Shows role of medicinal plants in primary health strategies
Santos et al., 2018	Northeastern Brazil	Ethnobotanical survey with informant consensus	High agreement among community members regarding plant uses	Evidence of stable cultural transmission of therapeutic knowledge
Liporacci et al., 2017	Brazil (Atlantic Forest and Caatinga comparison)	Review of ethnobotanical literature	Mapping of ethnobotanical research trends in Brazil	Demonstrates persistence of traditional knowledge across regions
Magalhães et al., 2019	Northeastern Brazil	Ethnopharmacological historical synthesis	Compilation of medicinal plants used in traditional pharmacopoeias	Reveals historical continuity of ethnobotanical knowledge
Pereira Júnior et al., 2014	Caatinga region	Pharmacological potential review	Identification of therapeutic potential of Caatinga flora	Links biodiversity conservation with traditional knowledge
Telesi Júnior, 2016	Brazil (SUS context)	Policy analysis	Expansion of integrative practices within public health services	Highlights institutional recognition of therapeutic plurality
Tesser et al., 2018	Brazilian primary healthcare	Policy and health system analysis	Integrative practices contribute to holistic care models	Demonstrates potential for dialogue between biomedical and traditional systems
Santana et al.,	Brazil	Health policy analysis	Institutionalization of	Discusses tensions

2025			integrative practices faces epistemological challenges	between biomedical validation and traditional knowledge
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Source: Own authors.

The studies included in the review reveal a clear concentration of research within the ethnobotanical and sociocultural dimensions of medicinal plant use in the Caatinga and other semi-arid regions of northeastern Brazil. A significant portion of the literature is dedicated to documenting the diversity of medicinal plants and their therapeutic uses, with ethnobotanical surveys consistently demonstrating the extensive pharmacopoeias maintained by rural communities (Agra et al., 2008; Cartaxo et al., 2010; Ribeiro et al., 2014). At the same time, several studies emphasize the cultural mechanisms through which such knowledge is transmitted and preserved, highlighting the role of oral traditions and community-based learning processes in maintaining ethnobotanical knowledge across generations (Santos et al., 2018; Liporacci et al., 2017; Magalhães et al., 2019).

Another relevant pattern emerging from the reviewed studies concerns the growing intersection between traditional knowledge systems and institutional health policies, particularly through the incorporation of integrative and complementary practices into the Brazilian public health system. While these policies signal an increasing recognition of therapeutic plurality, the literature also reveals persistent tensions regarding the conditions under which traditional knowledge is legitimized within biomedical frameworks (Telesi Júnior, 2016; Tesser et al., 2018; Santana et al., 2025). Taken together, the studies presented in Table 2 illustrate that ethnobotanical knowledge in the Caatinga operates simultaneously as a cultural heritage, a practical health resource, and a site of epistemological negotiation within contemporary health governance.

4.1 Ethnobotanical Diversity and Therapeutic Practices in the Caatinga

One of the most consistent findings across the reviewed studies concerns the remarkable diversity of medicinal plant species used by communities in the Caatinga biome. Ethnobotanical surveys have documented extensive therapeutic repertoires developed through long-term interactions between human populations and the semi-arid environment.

Agra et al. (2008), in one of the most comprehensive surveys of medicinal plants in

northeastern Brazil, documented more than 180 medicinal species used by local populations for the treatment of a wide range of health conditions. The authors emphasize that the richness of this pharmacopoeia reflects the ecological diversity of the region as well as the accumulated experiential knowledge of rural communities. As the study notes, medicinal plant use in the region constitutes “an important component of traditional medicine in the Northeast of Brazil” (Agra et al., 2008, p. 472).

Similarly, Cartaxo et al. (2010) identified over 100 medicinal plant species used in semi-arid communities, highlighting that plant selection is influenced not only by pharmacological properties but also by accessibility, cultural traditions, and accumulated empirical knowledge. The authors emphasize that traditional pharmacopoeias are embedded in everyday practices, noting that “knowledge about medicinal plants is deeply rooted in the daily life of rural populations” (Cartaxo et al., 2010, p. 329).

The therapeutic uses of these plants encompass a broad spectrum of health conditions, including gastrointestinal disorders, respiratory infections, dermatological conditions, and inflammatory diseases. Ribeiro et al. (2014) documented numerous medicinal applications among communities in Ceará, reinforcing the role of medicinal plants as essential components of local healthcare strategies. Their study highlights that the persistence of these practices is partly related to structural barriers in accessing formal healthcare services, particularly in rural and semi-arid regions.

Santos et al. (2018) further emphasize that medicinal plant knowledge is not only extensive but also highly consistent across different communities. Their research demonstrated significant concordance in plant uses among informants, suggesting that ethnobotanical knowledge is maintained through stable cultural transmission mechanisms. According to the authors, the high level of agreement among community members indicates that medicinal plant knowledge is “widely shared and culturally reinforced within local communities” (Santos et al., 2018, p. 2772).

Taken together, these findings reveal that ethnobotanical knowledge in the Caatinga is far from marginal or residual. Instead, it represents a systematically organized body of knowledge, developed through cumulative ecological experience and sustained through social networks of knowledge transmission.

4.2 Community Knowledge Transmission and Cultural Continuity

Beyond the diversity of medicinal plants themselves, the reviewed literature consistently emphasizes the importance of social mechanisms of knowledge transmission that sustain ethnobotanical practices within communities. These processes are often mediated by specific social actors, commonly known as benzedeiras (folk healers), raizeiros (herbal specialists), and traditional midwives, who function as custodians of therapeutic knowledge.

Albuquerque (2006) argues that ethnobotanical knowledge should not be interpreted merely as a collection of isolated botanical information but rather as a cultural system embedded in social relations and collective memory. As the author notes, traditional knowledge emerges from “a dynamic interaction between human populations and their natural environment” (Albuquerque, 2006, p. 3). In this sense, medicinal plant knowledge is inseparable from the social contexts in which it is produced, transmitted, and practiced.

Studies analyzing the broader landscape of Brazilian ethnobotanical research further demonstrate that knowledge transmission is strongly associated with oral traditions and experiential learning processes. Liporacci et al. (2017) highlight that ethnobotanical knowledge in Brazil is often maintained through family networks and community practices rather than formal institutional mechanisms. This mode of transmission ensures that knowledge remains closely tied to everyday life and local ecological conditions.

Historical compilations of medicinal plant knowledge also reveal the long-standing continuity of these practices. Magalhães et al. (2019), in their analysis of ethnopharmacological records in northeastern Brazil, demonstrate that many plant uses documented in earlier ethnobotanical studies remain present in contemporary communities. This persistence indicates that traditional pharmacopoeias are not static relics of the past but rather living knowledge systems that continue to evolve through everyday practice.

At the same time, the literature also suggests that these knowledge systems face increasing pressures from social transformation, migration, and the expansion of biomedical health services. As younger generations become more integrated into urbanized social environments, traditional forms of knowledge transmission may be weakened, raising important questions about the long-term sustainability of community-based health practices.

4.3 Integrative Health Practices and Institutional Interfaces

A third major theme identified in the reviewed literature concerns the institutional interface between traditional health practices and the Brazilian public health system. In recent decades, Brazilian health policies have increasingly recognized the importance of therapeutic plurality, particularly through the implementation of the National Policy on Integrative and Complementary Practices in Health (PICS).

Telesi Júnior (2016) argues that the incorporation of integrative practices into the Brazilian Unified Health System represents a significant shift in public health governance, opening space for therapeutic approaches that extend beyond conventional biomedical models. According to the author, integrative practices represent “an expansion of the therapeutic repertoire available within the public health system” (Telesi Júnior, 2016, p. 103).

Research examining the implementation of these policies in primary healthcare settings suggests that integrative practices can enhance the responsiveness of health services to cultural diversity. Tesser et al. (2018), for example, highlight that the inclusion of integrative practices in primary healthcare may contribute to more holistic approaches to health by acknowledging the importance of social, cultural, and emotional dimensions of care. The authors emphasize that these practices can strengthen the relationship between healthcare professionals and communities by recognizing forms of knowledge that are traditionally excluded from biomedical frameworks.

However, the literature also reveals persistent tensions in the institutionalization of these practices. Santana et al. (2025) argue that although integrative health policies have expanded the visibility of alternative therapeutic practices, their implementation often remains constrained by biomedical validation criteria. In many cases, traditional knowledge is incorporated into institutional settings only after undergoing processes of scientific validation that detach it from its cultural context.

These findings highlight a central paradox within contemporary health governance: while policies promoting integrative practices appear to recognize therapeutic plurality, the conditions under which such practices are institutionalized may simultaneously reproduce epistemological hierarchies. As a result, the relationship between traditional knowledge systems and public health institutions remains a contested field where questions of legitimacy, authority, and epistemic recognition continue to be negotiated.

5. DISCUSSION

The findings of this integrative review reveal that ethnobotanical knowledge, community-based healing practices, and institutional health policies in the Caatinga intersect within a complex field of epistemological negotiation. Rather than representing isolated domains, these dimensions form a contested landscape where different knowledge systems interact, compete, and occasionally converge.

The literature analyzed demonstrates that traditional therapeutic practices remain essential components of local healthcare strategies while simultaneously being subjected to processes of institutional reinterpretation and epistemological filtering. In this sense, the relationship between traditional knowledge and biomedical institutions cannot be understood simply as a process of incorporation but must be examined as a broader political and epistemological struggle over the legitimacy of knowledge in health systems.

5.1 The Coloniality of Biomedical Knowledge

One of the most significant analytical patterns emerging from the literature concerns the persistence of epistemological hierarchies in contemporary health governance. Despite increasing recognition of therapeutic diversity, biomedical knowledge continues to occupy a dominant position in defining legitimate forms of health practice. This asymmetry is closely associated with what Santos (2015) conceptualizes as the coloniality of knowledge, a process through which certain epistemologies become institutionalized as universal while others are marginalized or rendered invisible.

Within this framework, traditional medical knowledge is frequently recognized only when it can be translated into biochemical compounds or laboratory-based evidence. As Santos (2015) argues, modern science historically operated through processes that produced “the destruction of knowledge and cultures of the colonized peoples” (Santos, 2015, p. 92), a phenomenon he describes as epistemicide. When applied to the field of health, this process often transforms traditional knowledge into extractable resources while ignoring the sociocultural contexts that give meaning to therapeutic practices.

This dynamic is particularly evident in ethnobotanical research. While the Caatinga biome has been widely recognized as a reservoir of medicinal plant diversity, surveys documenting over 180 medicinal species in northeastern Brazil alone (Agra et al., 2008), the

scientific interest in these plants has frequently focused on their pharmacological potential rather than on the social systems of knowledge that sustain their use. In many cases, ethnobotanical knowledge becomes a starting point for pharmaceutical research, but the communities that developed such knowledge remain peripheral to the production of scientific authority.

Critical analyses in collective health have emphasized that this asymmetry is not merely a methodological issue but reflects broader structures of epistemic inequality. Gonçalves et al. (2019) argue that coloniality continues to shape health systems by determining “which knowledge counts as legitimate and which remains marginalized” (Gonçalves et al., 2019, p. 168). Such hierarchies often result in the institutional validation of medicinal plants while simultaneously disregarding the social and cultural actors responsible for their knowledge.

Anthropological perspectives further reveal that biomedical universalism may obscure the complexity of local health ecologies. Biehl (2021) highlights that global health frameworks frequently operate through technocratic models that prioritize standardized interventions while overlooking the lived realities of communities. In his analysis of health governance, he notes that health interventions often treat knowledge as an abstract technical resource rather than as part of broader social relations, arguing that “the lives of people are shaped by the interplay of knowledge, politics, and care” (Biehl, 2021, p. 346).

Consequently, the challenge is not simply to incorporate traditional knowledge into biomedical frameworks but to reconsider the epistemological foundations of health governance itself. Recognizing therapeutic plurality requires acknowledging that medicinal plants are not merely biochemical entities but components of broader cultural systems of healing.

5.2 Popular Health Education as Epistemic Mediation

If the coloniality of knowledge represents one of the central barriers to epistemic plurality in health systems, popular health education emerges in the literature as a potential mechanism for mediating these tensions. Unlike conventional health education models that emphasize the dissemination of biomedical knowledge, popular education approaches seek to create spaces for dialogue between different epistemological traditions.

Pedrosa (2021) emphasizes that popular education in health operates through participatory processes that recognize community knowledge as an integral component of

health promotion. According to the author, the institutionalization of popular education in Brazilian health policies reflects the recognition that “health knowledge is produced in the encounter between technical knowledge and popular knowledge” (Pedrosa, 2021, p. 6). This perspective challenges hierarchical models of knowledge transmission and emphasizes the importance of collective learning processes.

Empirical studies have shown that educational initiatives grounded in participatory approaches can strengthen the recognition of traditional knowledge systems. Cruz et al. (2024), for example, highlight that popular education initiatives in community health contexts promote the co-production of knowledge between health professionals and local communities. These initiatives encourage critical reflection on health practices while simultaneously valuing experiential knowledge developed through everyday life.

From a broader intercultural perspective, such educational processes can function as mechanisms for epistemic mediation, enabling interactions between different knowledge systems without subordinating one to the other. Laperrière (2024) argues that participatory educational practices contribute to the creation of culturally safe health environments by integrating indigenous and local perspectives into health promotion strategies. In this sense, popular health education may play a crucial role in preventing what Santos (2015) describes as epistemicide by ensuring that community knowledge remains visible and socially recognized.

The literature therefore suggests that popular education is not merely an educational tool but a political strategy for epistemic recognition. By creating spaces for dialogue and mutual learning, such initiatives challenge the assumption that health knowledge must be exclusively generated within scientific institutions. Instead, they highlight that knowledge production in health is inherently plural and embedded in specific social and ecological contexts.

5.3 Towards Health Sovereignty in Semi-Arid Territories

The recognition of epistemological plurality in health practices also raises broader questions regarding health sovereignty and community autonomy in semi-arid territories. In regions such as the Caatinga, where access to formal healthcare services can be uneven, traditional knowledge systems often function as essential components of local health strategies. Ethnobotanical research consistently demonstrates that medicinal plants remain widely used

for the treatment of common conditions, particularly in rural communities where access to biomedical infrastructure is limited (Ribeiro et al., 2014; Santos et al., 2018).

In this context, the concept of health sovereignty refers to the capacity of communities to maintain and reproduce their own systems of care while interacting with institutional health structures. Intercultural health approaches emphasize that such autonomy does not imply the rejection of biomedical knowledge but rather the coexistence of multiple therapeutic systems that respond to different health needs.

Miranda et al. (2024) argue that intercultural health policies must recognize the plurality of knowledge systems involved in health governance. According to the authors, effective health strategies require institutional arrangements that allow for “the coexistence of different knowledge systems within health policy frameworks” (Miranda et al., 2024). Such recognition is particularly relevant in regions where community-based practices continue to play a central role in everyday healthcare.

However, the institutionalization of integrative health practices within public health systems also presents significant challenges. Santana et al. (2025) highlight that although policies promoting integrative practices have expanded the visibility of alternative therapeutic approaches, their implementation often remains constrained by biomedical evaluation criteria. As a result, traditional knowledge may be incorporated into health services only after undergoing processes of scientific validation that detach it from its cultural and territorial contexts.

Similarly, Tesser et al. (2018) emphasize that integrative health practices in primary healthcare have the potential to enrich health services by broadening therapeutic options and recognizing cultural diversity. Yet the authors also note that such initiatives must avoid reproducing new forms of epistemological hierarchy in which traditional knowledge is selectively incorporated without acknowledging its cultural foundations.

These tensions highlight the importance of developing institutional frameworks capable of supporting genuine epistemological plurality. Rather than treating traditional knowledge as an auxiliary resource for biomedical innovation, health systems must recognize the legitimacy of community-based knowledge systems as integral components of healthcare.

Table 3 presents an analytical synthesis of the main evidence identified in the integrative review. The table organizes the literature according to key thematic categories that

emerged from the analysis, including ethnobotanical diversity, knowledge transmission mechanisms, institutional health policies, epistemological tensions in health governance, and the role of popular health education. By structuring the findings across these analytical dimensions, the table provides a concise overview of how different strands of the literature converge in addressing the relationship between traditional knowledge systems, community health practices, and institutional health frameworks in the Caatinga and similar semi-arid contexts.

Table 3 – Analytical Synthesis of the Evidence

Analytical Category	Key Evidence from the Literature	Implications for Health Policy	Contribution to Decolonial Care
Ethnobotanical diversity and therapeutic knowledge	Surveys document more than 180 medicinal plant species used in northeastern Brazil, with strong consensus among community informants regarding therapeutic applications (Agra et al., 2008; Santos et al., 2018; Cartaxo et al., 2010).	Recognition of medicinal plant knowledge as a legitimate component of community health strategies in semi-arid regions.	Repositions traditional pharmacopoeias as structured knowledge systems rather than informal or residual practices.
Community transmission of therapeutic knowledge	Knowledge is transmitted through family networks, oral traditions, and specialized community actors such as healers, herbalists, and midwives (Albuquerque, 2006; Liporacci et al., 2017; Magalhães et al., 2019).	Development of policies that support community-based knowledge transmission and cultural preservation.	Highlights the social and cultural foundations of healing practices and their role in sustaining territorial health knowledge.
Institutional recognition of integrative health practices	Expansion of integrative and complementary practices within the Brazilian Unified Health System (SUS) has increased therapeutic diversity in primary healthcare (Telesi Júnior, 2016; Tesser et al., 2018).	Strengthening of integrative health policies that acknowledge plural therapeutic systems.	Opens institutional space for the recognition of non-biomedical healing practices.
Epistemological tensions in the institutionalization of traditional knowledge	Integrative practices often require biomedical validation criteria, potentially detaching traditional knowledge from its cultural context (Santana et al., 2025; Gonçalves et al., 2019).	Need for regulatory frameworks capable of recognizing epistemological plurality in health governance.	Challenges the hierarchical validation of knowledge that privileges biomedical epistemology.
Popular health education and intercultural dialogue	Participatory health education initiatives promote dialogue between health professionals and community knowledge holders (Pedrosa, 2021; Cruz et al., 2024; Laperrière, 2024; Miranda et al., 2024).	Integration of popular education strategies into community health programs.	Facilitates epistemic mediation and supports the decolonization of health knowledge.

Source: Own authors.

The synthesis presented in Table 3 reveals that the literature converges around three interconnected dynamics shaping the relationship between traditional knowledge and health governance in semi-arid territories. First, the reviewed studies consistently demonstrate the depth and systematic character of ethnobotanical knowledge, with surveys documenting extensive pharmacopoeias that remain widely used in rural communities (Agra et al., 2008; Cartaxo et al., 2010; Santos et al., 2018). This evidence challenges narratives that portray traditional medicine as marginal or residual, instead highlighting its role as a structured body of knowledge developed through cumulative ecological experience.

Second, the table underscores the importance of social mechanisms of knowledge transmission, particularly the role of community actors and oral traditions in maintaining therapeutic knowledge across generations (Albuquerque, 2006; Liporacci et al., 2017; Magalhães et al., 2019). These findings suggest that ethnobotanical knowledge persists not merely because of its therapeutic efficacy but because it is embedded within cultural systems of learning and social organization.

Finally, the synthesis highlights the ambivalent role of public health institutions in recognizing traditional knowledge systems. While policies promoting integrative and complementary health practices have expanded the visibility of therapeutic plurality within the Brazilian health system (Telesi Júnior, 2016; Tesser et al., 2018), the institutional incorporation of these practices often occurs through regulatory frameworks that prioritize biomedical validation criteria (Santana et al., 2025).

This tension reflects broader debates about epistemological hierarchy and the need for health governance models capable of supporting genuine knowledge plurality. In this context, popular health education emerges as a crucial mechanism for fostering intercultural dialogue and enabling more inclusive approaches to health policy and practice (Pedrosa, 2021; Cruz et al., 2024; Laperrière, 2024; Miranda et al., 2024).

Taken together, the evidence analyzed in this review suggests that the future of health governance in the Caatinga will depend on the ability of public health institutions to move beyond epistemological hierarchies and embrace more pluralistic frameworks of knowledge. Such transformation requires not only policy reforms but also deeper recognition of the cultural, ecological, and epistemological foundations of community-based systems of care.

6. CONCLUSION

This integrative review examined the intersection between ethnobotanical knowledge, popular health education, and integrative health practices in the Caatinga biome, seeking to understand how these dimensions contribute to broader debates on the decolonization of care. The findings reveal that medicinal plant knowledge in semi-arid communities constitutes far more than a set of therapeutic techniques. Rather, it represents a structured and culturally embedded system of care, developed through long-term interactions between communities and their ecological environment. The remarkable diversity of medicinal species documented in ethnobotanical research demonstrates the depth of these knowledge systems and their continued relevance for community health practices.

At the same time, the literature highlights the crucial role of popular health education as a mediating framework capable of fostering dialogue between traditional knowledge holders and institutional health systems. By recognizing experiential knowledge and promoting participatory learning processes, popular education initiatives create spaces for epistemological negotiation in which different forms of health knowledge can coexist. Such processes challenge hierarchical models of knowledge production and contribute to the recognition of plural therapeutic rationalities.

However, the review also reveals persistent tensions in the relationship between traditional knowledge and biomedical institutions. While integrative health policies have expanded the visibility of alternative therapeutic practices, the conditions under which these practices are institutionalized often remain shaped by biomedical validation criteria. As a result, the recognition of traditional knowledge within formal health systems continues to be negotiated within asymmetrical epistemological frameworks.

The findings of this review carry important implications for health policy in semi-arid territories and other regions characterized by strong traditions of community-based healing practices. First, public health systems should move beyond viewing traditional knowledge merely as a source of pharmacological innovation and instead recognize it as a legitimate system of care embedded in cultural and ecological contexts. In the Brazilian context, this implies strengthening institutional mechanisms that allow traditional practices to coexist with biomedical services within the Unified Health System (SUS).

Second, the integration of traditional knowledge into health governance requires the

development of intercultural training frameworks for health professionals. Educational programs in medicine, nursing, and public health must incorporate perspectives that acknowledge the plurality of therapeutic knowledge systems and encourage dialogue with community-based practices.

The recognition of traditional health knowledge should be accompanied by policies that value and support community actors who sustain these practices, including herbalists, midwives, and other local healers. These actors represent crucial bridges between community knowledge and institutional health services and play an essential role in maintaining culturally grounded systems of care.

The results of this review also point to several promising directions for future research. First, further studies are needed within the field of critical ethnobiology, exploring how ethnobotanical knowledge systems interact with broader sociopolitical processes such as environmental change, rural transformation, and the commercialization of biodiversity.

Second, the development of intercultural health research frameworks may contribute to a deeper understanding of how different knowledge systems coexist within contemporary health governance. Such approaches can help identify institutional arrangements that promote genuine epistemological dialogue rather than the selective incorporation of traditional practices into biomedical frameworks.

Finally, future investigations should explore the concept of territorial health sovereignty, examining how communities in semi-arid regions maintain autonomy in health practices while navigating the expanding influence of biomedical institutions. Understanding these dynamics will be essential for designing health systems that are not only technically effective but also socially responsive and epistemologically plural.

In this sense, the debate on ethnobotanical knowledge in the Caatinga ultimately extends beyond the documentation of medicinal plants. It invites a broader reflection on how societies define legitimate knowledge, organize systems of care, and envision the future of health governance in culturally diverse territories.

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