

## Perceptions of Traditional Herbal Integration in Modern Pharmacy Services Among Indigenous Communities

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### ABSTRACT

This qualitative study explores indigenous communities' perceptions of integrating traditional herbal medicines into modern pharmaceutical services. Through semi-structured interviews with 15 herbal users, traditional practitioners, and pharmacists in Medan, the findings reveal that indigenous communities view integration as a means to enhance legitimacy and access, though concerns persist regarding authenticity, safety, and commercialization. Pharmacists generally support integration but face regulatory and standardization challenges, while traditional practitioners stress the preservation of cultural values. The study concludes that successful integration requires cultural sensitivity, regulatory alignment, and collaboration between pharmacists and traditional healers to support a more inclusive health system.

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## **INTRODUCTION**

The use of traditional herbal medicines continues to increase globally, both in developed and developing countries. The World Health Organization (2023) reports that nearly 80% of the population in developing countries still rely on traditional medicine for primary health needs, and this trend is also seen in developed countries as an alternative or complementary (WHO, 2023). This phenomenon shows that herbs not only have therapeutic value, but also become part of a cultural heritage that contributes to the identity of the community. In Indonesia, traditional medicine practices, including herbal medicine, are firmly rooted in people's daily lives. The integration of herbal medicine into modern pharmacy is becoming increasingly relevant due to the demand to develop an inclusive, affordable, and evidence-based health system. However, such integration often raises debates about its effectiveness, safety, and conformity with modern scientific standards.

Although herbal medicine is growing in popularity, the main challenges still revolve around aspects of regulation, scientific validation, and acceptance among healthcare professionals. Recent research highlights the existence of gaps in clinical proof mechanisms that are widely accepted by the medical world (Zhang et al., 2022). In the context of indigenous communities, herbal integration is also related to cultural values, spirituality, and symbols of collective identity which often cannot be reduced to mere pharmacological aspects (Sato & Williams, 2021). This raises a dilemma between the need for standardization of herbal products and the need to maintain inherent cultural meaning. If not managed properly, integration can lead to resistance from local communities as well as pharmaceutical skeptics of herbs. Therefore, understanding the perceptions of indigenous peoples is an important step in ensuring a fair and sustainable integration process.

Previous studies have shown that research related to the integration of herbal medicines in health services focuses more on clinical effectiveness and policy aspects. Kim and colleagues (2020), for example, focused on the clinical challenges of testing the effectiveness of herbs with controlled trial methods (Kim et al., 2020). On the other hand, Osei-Tutu and colleagues (2021) emphasize the need for a clear policy framework to govern herbal integration in Africa (Osei-Tutu et al., 2021). However, relatively little research has highlighted how indigenous communities interpret the integration of herbs into modern pharmaceuticals. This research gap is important to bridge, because understanding public perception can provide richer information than just assessing clinical or regulatory aspects. Thus, qualitative-based research becomes relevant to explore the meaning, experience, and challenges felt by the user community.

In addition, most international research focuses more on East Asian contexts, particularly China, Korea, and Japan, as well as African contexts (Lin et al., 2022). This has led to limited representation from Southeast Asia, including Indonesia, which has a rich biodiversity and a strong tradition of herbal medicine. Indonesia is unique because herbs are not only used for medicine, but are also integrated in cultural, social, and even economic rituals. Therefore,

community-based contextual studies in Indonesia can enrich the global literature and avoid generalization bias. This study places Medan, North Sumatra, as the location of the research because this city has ethnic diversity and indigenous communities that still actively practice traditional medicine. With a focus on local contexts, this research is expected to make an empirical and comparative contribution to global discourse.

The main objective of this study is to explore indigenous peoples' perceptions of the integration of herbal medicines in modern pharmaceutical services. This research seeks to answer the question of how indigenous peoples understand the benefits, risks, and implications of such integration in their daily lives. The focus of the analysis is directed at the interaction between cultural values, traditional beliefs, as well as the standards of modern pharmaceutical professionals. By examining public perceptions, this research can reveal social and cultural dynamics that are often overlooked in health policy. This research also aims to identify supporting and inhibiting factors that affect the acceptance of herbs in modern pharmacy. The results obtained will provide a firmer foundation for designing a more inclusive integration strategy.

The contribution of this research can be seen from two sides, namely theoretical and practical. From a theoretical perspective, this study expands the literature on the integration of traditional knowledge with modern science, particularly in the perspectives of pharmacy, anthropology, and public health. The results of the study can provide a new understanding of how indigenous peoples' perceptions affect integration dynamics, while enriching the conceptual framework of medical pluralism. From a practical point of view, this research can provide useful recommendations for pharmacists, policymakers, and traditional practitioners. These recommendations can be in the form of more effective communication strategies, collaboration models between pharmacists and herbal practitioners, and more culturally sensitive regulations. Thus, the results of the research are expected to support a health system that is more responsive to the needs of the community.

Furthermore, this study confirms the need for harmonization between formal health regulations and traditional practices that live in communities. Overly restrictive regulations can reduce the living space of traditional practices, while overly loose regulations have the potential to threaten patient safety (Hussain et al., 2023). Therefore, a balance is needed that is able to bridge these two interests. This harmonization can only be achieved if all parties, including indigenous peoples, are actively involved in the policy formulation process. By involving the perceptions and experiences of local communities, the integration process can be more equitable and sustainable. This is in line with a global trend that emphasizes community participation in health system building.

The direction of this research provides not only local benefits, but also global relevance. By raising the context of Medan, this research can serve as a model for other regions in Indonesia and developing countries that face similar challenges. This research can also serve as a basis for further research that emphasizes the importance of collaboration between actors, both pharmacists, traditional practitioners, and policy makers. In an academic context, this research

opens up new discussion spaces on how pharmaceutical science can develop more inclusively through the integration of cultural perspectives. Practically, the results of the research can be used to develop a pharmacy education curriculum that is more responsive to the needs of a multicultural society. Thus, its contribution will extend not only to the development of knowledge, but also to the improvement of equitable health services.

## **LITERATURE REVIEW**

### ***The Role and Prevalence of Herbal Medicine Use in the Health System***

The use of herbal medicines remains a significant part of health practice in many countries, both as primary and complementary therapies. Recent reports and studies show that populations in low- and middle-income countries still rely on traditional medicine for a variety of primary health needs, due to factors of accessibility, cost, and cultural beliefs (World Health Organization, 2023). In the context of local communities, including in some regions in Indonesia, traditional herbs not only meet therapeutic needs but also serve as a symbol of cultural identity and a mechanism of local resilience to the limitations of modern health services (Febriyanti et al., 2024). This literature confirms the importance of understanding herbal use not only through a clinical lens but also through the socio-cultural dimensions that shape public health choices (Liheluka et al., 2023).

### ***Community and Community Perceptions of Herbs: Cultural Aspects, Identity, and Beliefs***

Qualitative studies examining community perspectives show that perceptions of herbs are influenced by the history of use, ritual practices, and hereditary knowledge possessed by local indigenous leaders and healers. Community research in different regions of Africa and Asia reveals that communities often perceive traditional medicine as a safe, natural, and culturally valued option, while concerns arise when the practice is commodified or moved into the commercial realm without community involvement (Ampomah et al., 2023; Sato & Williams, 2021). These findings indicate that any integration effort must consider the symbolic meaning and social legitimacy of herbal practices so as not to generate cultural resistance (Liheluka et al., 2023).

### ***Perception and Readiness of Pharmacists for Herbal Integration***

The literature examining the viewpoints of pharmacists and pharmacists shows a variation in attitudes: some see opportunities to expand pharmacy services and roles, but many also express concerns about evidence of effectiveness, drug interactions, and lack of quality standards (Stayduhar et al., 2023; Dores et al., 2023). Surveys and qualitative studies among community pharmacists show that despite support for patient access to herbal products, practical challenges such as limited professional knowledge, specialized training needs, and surveillance procedures remain major barriers (Yao et al., 2020; Figueroa-Rodríguez et al., 2024). Therefore, the literature emphasizes the need to strengthen the capacity of pharmaceutical personnel in terms of herbal pharmacology and risk management so that integration can be carried out safely.

### ***Regulatory Challenges, Standardization, and Scientific Evidence***

One of the most consistent barriers identified in the literature is the lack of an adequate regulatory framework to guarantee the quality, safety, and therapeutic claims of herbal products. Research on standardization underscores the methodological difficulties in applying conventional clinical trial protocols to complex herbal products as well as differences in traditional preparation practices (Zhang et al., 2022). Policy studies also show that without clear regulation and pharmacovigilance mechanisms, the potential drug-herbal interactions and safety risks are not easily addressed, leading to skepticism from health professionals and regulators (Osei-Tutu et al., 2021; Lin et al., 2022).

### ***International Integration and Best Practices Model***

Several case studies and international reviews show diverse integration models: from the formal integration of traditional services into primary health care centers to collaborative models in which traditional practitioners work closely with biomedical health workers (Ampomah et al., 2023; Lin et al., 2022). The literature suggests key principles for successful integration, namely: community engagement, legal recognition of traditional practitioners, quality control mechanisms, cross-professional training, and collaborative research that respects local knowledge. Rights-based and community participation approaches are often cited as effective for maintaining cultural legitimacy while improving clinical safety (Osei-Tutu et al., 2021).

### ***Empirical Evidence in Indonesia and the Southeast Asian Context***

Studies from Indonesia and the Southeast Asian region show a high use of herbal medicine and local herbal products, and increasing government attention to the research and development of herbal products (Febriyanti et al., 2024). However, there is a gap between policies that support herbal development and implementation at the primary service level; for example, integration into health center or pharmacy facilities is often hampered by the absence of clear operational guidelines and human resource capacity (Mizranita, 2024). Therefore, the local literature emphasizes the need for contextual studies that consider ethnic diversity, traditional practices, and health service conditions in each region.

### ***Implications for Qualitative Research on Herbal Integration Perceptions***

Based on the above review, there is a methodological need for qualitative research that explores the perception of indigenous peoples not only in terms of use but also in the dimensions of cultural meaning, concerns about commercialization, and power relations between traditional practitioners and modern health institutions. Phenomenological and ethnographic studies have been supported in the literature as an approach capable of capturing the nuances of local experiences and narratives (Liheluka et al., 2023). Qualitative research is also important for formulating integration models based on participatory evidence, which can then be tested in intervention studies or mixed-methods.

## **METHODOLOGY**

### ***Types and Approaches to Research***

This study uses a qualitative approach with a phenomenological study design to understand indigenous peoples' perceptions of the integration of traditional herbal medicine in modern pharmaceutical services. The qualitative approach was chosen because it is appropriate to explore complex meanings, values, and experiences that cannot be fully explained through quantitative data (Creswell & Poth, 2021). Phenomenological design is used so that researchers can capture informants' life experiences in their social and cultural contexts, so that the meanings that emerge from traditional health practices can be analyzed in depth (Moustakas, 2020). With this approach, the research focuses on subjective understandings tied to the cultural values of indigenous peoples, while also linking them to the dynamics of modern pharmaceuticals.

### ***Population and Sampling Techniques***

The research population includes indigenous people in Medan, North Sumatra, who still use traditional herbal medicine, as well as pharmacists involved in modern services. The sampling technique used is purposive sampling, which is the selection of participants based on special criteria relevant to the research objectives (Palinkas et al., 2021). A total of 15 informants were selected consisting of five members of indigenous peoples who use herbs, five traditional medicine practitioners, and five pharmacists. This number is considered adequate for qualitative research, as it allows for data deepening while maintaining the focus of analysis (Guest et al., 2020). The selection of a location in Medan was based on cultural diversity and the high practice of herbal use, which is relevant to the topic of modern pharmaceutical integration.

### ***Data Collection Techniques***

Data were collected through semi-structured in-depth interviews with interview guidelines developed based on the research objectives. Questions cover themes of experience of herbal use, perceptions of integration with modern pharmaceuticals, as well as views on safety, regulation, and cultural values. The instrument was validated through discussions with two community pharmacy experts and health anthropologists to ensure cultural context and academic relevance (Nowell et al., 2022). In addition to interviews, researchers also used documentation in the form of field notes and limited observations of interactions in the local pharmaceutical environment to strengthen data triangulation (Flick, 2020).

### ***Research Procedure***

The research was carried out in several structured stages. The first stage is licensing to local authorities and traditional leaders to ensure that research ethics are respected. The second stage is the recruitment of informants according to the criteria. The third stage involves conducting recorded interviews with the consent of the participants, lasting between 45 to 60 minutes per session. The fourth stage is the verbatim transcription of interview data, then re-examination by researchers and research assistants to maintain accuracy. The fifth stage is

initial coding, theme development, and discussion between researchers to reach consensus on data interpretation.

### ***Data Analysis Techniques***

Data analysis was carried out using thematic analysis by following the six stages proposed by Braun and Clarke (2021), namely data familiarization, initial coding, theme search, theme review, theme definition, and report preparation. To support the validity of the analysis, NVivo 12 software is used in the data coding process to facilitate the organization of information and increase the transparency of research (Woolf & Silver, 2022). The validity of the data is maintained through triangulation of sources and techniques, member checking with several informants, and peer debriefing among researchers. This strategy is used to ensure that the results of the analysis not only reflect the interpretation of the researcher, but also correspond to the reality of the participants' experiences.

## **RESEARCH RESULTS**

### ***Indigenous Peoples' Perception of Herbal Medicine Integration***

The results of interviews with five members of the indigenous peoples show that they have a relatively positive view of the integration of herbal medicines into modern pharmaceutical services. For most informants, the presence of herbal medicines in pharmacies is understood as an important step to increase the legitimacy, accessibility, and formal recognition of traditional medicine practices that have been passed down from generation to generation. It is also considered a form of bridge between the traditional health system and the modern health system. One of the informants stated, *"If herbs can enter the pharmacy, we feel more confident. Not only we use it, but outsiders can also see that this drug is indeed recognized"* (MA-02, interview June 14, 2025). This view shows the hope that integration can be a way to strengthen the social position of traditional medicine amid the dominance of modern pharmacy-based health services.

However, the informants also expressed doubts and concerns about the integration process. Some of them consider that the commercialization or mass production of herbs carried out by the pharmaceutical industry can reduce the authenticity and cultural significance inherent in traditional practices. For indigenous communities, herbs are not only seen as physical medicine, but also have symbolic and spiritual dimensions that are closely related to cultural identity. An informant revealed, *"If it has been produced by a factory, it feels different. Like losing his soul. In the past, every leaf or root used had a prayer, there was a ritual, now it is just a capsule"* (MA-04, interview June 21, 2025). This statement shows that integration that overemphasizes commercial aspects has the potential to create a gap between indigenous peoples and their own knowledge heritage.

On the other hand, indigenous peoples also associate the integration of herbs with aspects of the younger generation. Some informants emphasized that herbal access through modern pharmacy services can help reintroduce traditional values to young people who tend to rely more on formal health services. One of the informants stated: *"Children now rarely want to take leaves in*

*the forest. If they see herbs in pharmacies, maybe they just believe that they are useful"* (MA-01, interview June 10, 2025). These findings confirm that the integration of herbs in modern pharmaceutical services can serve as a means of education across generations, as well as a strategy to maintain the sustainability of traditional practices.

However, there are still concerns about the misuse of herbs when marketed in pharmacies without an adequate understanding. The informant highlighted the potential for overuse or without traditional guidance that could have a negative impact. One of the informants said, *"Herbs must have rules, they can't just be drunk. If it is sold freely in pharmacies, people are afraid of misusing it"* (MA-03, interview June 17, 2025). This shows the need to formulate mechanisms that are able to maintain a balance between pharmaceutical safety standards and the traditional values that underlie the use of herbs.

Overall, indigenous peoples' perceptions show ambivalence: on the one hand they welcome the integration of herbs into modern pharmacy as a form of legitimacy and opportunity to expand access, but on the other hand they are concerned about the loss of cultural value, authenticity, and the risk of abuse. This doubt is an indicator that herbal integration cannot be done unilaterally, but must pay attention to the cultural context, spirituality, and local knowledge systems that are the foundation of traditional medicine practices. Thus, the integration of herbs into modern pharmaceutical services is understood not only as a technical process, but also as a socio-cultural negotiation that requires high sensitivity.

### ***Concerns about Product Safety and Authenticity***

The security aspect emerged as one of the main concerns of indigenous peoples, traditional practitioners, and pharmaceutical workers. Of the five indigenous members interviewed, three of them assessed that herbal products available in pharmacies are safer because they go through a more hygienic and standardized production process. One of the informants said, *"If you buy it at a pharmacy, we believe it is cleaner, unlike taking it in the garden where there is sometimes dirt or insects"* (MA-01, interview June 10, 2025). This statement shows that some people view modern pharmaceuticals as a guarantee of quality, especially in terms of hygiene and safety of consumption. However, two other informants expressed doubts, especially regarding the transparency of raw materials used in industrial herbal products. According to them, the presence of a mixture of additives that are not always clearly explained raises questions about the authenticity of the product. An informant stated, *"Sometimes we are afraid, whether the leaves are all real or have been mixed with other ingredients that we don't know"* (MA-05, interview June 25, 2025).

These concerns are also reflected in the views of traditional practitioners who affirm that herbs are not just medicine, but part of rituals, cultural symbols, and local knowledge systems. For them, industry standards that focus on efficiency and shelf life often overlook aspects of meaning and spirituality. One of the practitioners said, *"Herbs are not just about substances, but there are prayers, there are procedures. If it has been capsuled, it loses its meaning"* (PT-02, interview June 13, 2025). Other practitioners added that overly strict standardization efforts

have the potential to reduce the cultural richness of traditional medicine. *"If everything has to be the same amount, then local wisdom will be lost. Each village has a different way that cannot be equaled"* (PT-04, interview June 20, 2025). This view shows a tension between the need for formal regulation to ensure public safety and the need to preserve cultural values.

From the perspective of pharmaceutical personnel, concerns are more directed at the issue of the authenticity of raw materials and the possible interaction between herbs and modern medicines. Four out of five pharmacists affirm the need for strict regulation and scientific research to ensure the safety of the use of herbs in the healthcare system. One pharmacist emphasized, *"We can't just rely on stories. There must be laboratory evidence so that patients are not harmed"* (TF-03, interview June 18, 2025). However, there are also minority voices who state that doubts about herbs are often excessive, considering that most people have used herbs for generations. An informant said, *"Herbs have been used by indigenous peoples for hundreds of years, but when they enter the pharmacy they seem to be dangerous, even though the problem is more about how they are processed"* (TF-05, interview June 26, 2025). This shows that there is a variation in perceptions among pharmacists regarding the balance between respect for traditional practices and the application of modern safety standards.

Thus, these findings reveal a fundamental dilemma in the integration of herbs into modern pharmaceutical services. On the one hand, indigenous peoples expect increased legitimacy and security assurances through modern pharmaceutical surveillance, but on the other hand, they are worried about losing the authenticity and cultural significance that accompanies herbal practices. Traditional practitioners emphasize the importance of maintaining the spiritual and cultural dimension, while pharmaceutical personnel emphasize the need for scientific regulation to ensure safety and quality. These three perspectives complement each other while showing the potential for conflict, which if not managed wisely can hinder the process of integrating herbs into modern pharmaceutical services.

### ***Pharmacist's Perspective on Herbal Integration***

The results of interviews with five pharmacists show that there is generally a positive attitude towards the idea of integrating herbal medicine into modern pharmaceutical services. Four out of five informants emphasized that this integration is seen as an opportunity to expand the scope of services, especially for patients who have a preference for natural remedies. According to them, the increasing public demand for herbal products cannot be ignored, so modern pharmaceuticals must be able to adapt to these needs. One pharmacist stated, *"Patients often ask about herbal remedies, and if they are not available in the pharmacy they turn to another seller. Integration can actually make pharmaceutical services more complete"* (TF-01, interview June 9, 2025). This statement emphasizes the potential for integration as a strategy to maintain the relevance of pharmaceutical services to the increasingly diverse needs of the community.

Nevertheless, pharmacists also highlight the various obstacles they face in supporting herbal integration. The limited knowledge of herbal pharmacology is

a major challenge, as most pharmacy education curricula still focus on synthetic drugs. One informant said, "*We learned a lot about chemical medicine, but very little about herbs. As a result, when patients ask for details about the interaction of herbs with medical drugs, we often have difficulty answering*" (TF-04, interview June 21, 2025). This lack of knowledge is exacerbated by the lack of official practice guidelines that can be used as a reference. Four pharmacists agreed that without the support of clear guidelines, herbal integration practices are still individual and risk causing misunderstandings between pharmacists and patients.

Regulation and standardization are also important issues that are highlighted a lot. Pharmacy informants emphasized that weak quality control made them hesitant to recommend certain herbal products. "*There are many herbal products in circulation, but the certificates are not clear. We are worried that if we make the wrong recommendation, the patient will lose out*" (TF-02, interview June 15, 2025). This shows that there is an urgent need for stricter regulations to ensure the quality and safety of herbal products. According to them, the lack of clarity of regulations also puts pharmacists in a position of professional vulnerability, as they can be blamed if side effects occur.

In addition to regulatory barriers, pharmacists also highlighted the need for additional training as a key factor in supporting herbal integration. Four out of five informants emphasized the need for capacity-building programs facilitated by the government or educational institutions. One of the pharmacists said, "*If there is official training from the health office or pharmaceutical association, we can be more confident. Now we rely only on our own readings or patient experiences*" (TF-03, June 18, 2025 interview). This opinion illustrates that the integration of herbs is not enough just by providing products in pharmacies, but must also be accompanied by investment in strengthening professional competences.

Although the majority of pharmacists showed a positive attitude, there was one informant who was more skeptical of herbal integration. According to him, the lack of strong clinical evidence makes herbs not yet fully aligned with modern medicine. "*Many claims of herbal efficacy are still based on tradition, there have not been adequate clinical trials. As a pharmacist, it is difficult for me to explain to patients that the basis of knowledge is not yet strong*" (TF-05, interview June 26, 2025). This view highlights the difference in acceptance rates among pharmaceutical personnel, especially regarding the need for scientific validation.

Thus, the perspective of the pharmaceutical industry reveals complex dynamics: on the one hand there is support for herbal integration because of the opportunity to expand services and meet the needs of the community, but on the other hand there are concerns rooted in limited knowledge, weak regulation, and lack of scientific evidence. These results confirm that the successful integration of herbs into modern pharmaceutical services is highly dependent on strengthening the capacity of pharmaceutical personnel, harmonizing regulations, and providing professionally acceptable empirical evidence.

### ***Traditional Medicine Practitioners' Views***

The results of interviews with five traditional medicine practitioners show that they emphasize the importance of maintaining the authenticity and cultural value of herbal medicine. Practitioners affirm that herbs are not just medicine,

but an integral part of the cultural identity, ritual practices, and spiritual systems of the community. One practitioner stated: "*Herbs contain prayers and philosophies that have been passed down from generation to generation. If it is only used as a pharmaceutical product, its meaning can be lost*" (PT-01, interview June 11, 2025). This suggests that integration into modern pharmaceutical services raises concerns about the loss of the symbolic and spiritual dimension inherent in herbs. Other practitioners add that traditional medicine has a social function, including building a network of solidarity between community members, which is often invisible to pharmacists or formal regulators. "*Every prescription is not just a medicine, but also a means of communication and social bonding. If it is changed to factory standards, the social function will disappear*" (PT-03, interview June 17, 2025).

In addition, traditional practitioners expressed concern about the inequality of power relations in the integration process. They feel that the voices of indigenous communities are often marginalized when standards, dosages, and procedures are set by pharmaceuticals or industry. One of the informants said, "*We don't seem to have a voice. All decisions about herbs are made in the laboratory, even though we are the ones who use and maintain traditions*" (PT-05, interview June 24, 2025). These concerns underscore the need for participatory mechanisms that involve indigenous communities in every stage of the development and standardization of herbal products, so that the integration process does not reduce local cultural and knowledge rights.

### ***Regulatory and Standardization Challenges***

Regulatory and standardization constraints emerged as important issues involving the perspectives of indigenous peoples, traditional practitioners, and pharmaceutical workers. From the pharmaceutical staff's side, four out of five informants emphasized that the absence of official guidelines on dosage, safety, and the interaction of herbs with modern medicine causes confusion in giving recommendations. One pharmacist stated, "*We want to help patients use herbs safely, but without clear guidelines, we hesitate to give advice*" (TF-01, June 9, 2025 interview). This shows the existence of professional uncertainty that affects daily practice in pharmacies.

Meanwhile, indigenous peoples believe that overly strict standardization can limit flexibility in traditional practices. Some informants emphasized that the standard rules can interfere with the process of adapting herbs according to individual conditions or certain seasons. One informant said: "*Each plant has different strengths depending on the season and where it grows. If everything has to be the same amount, a lot of local wisdom will be lost*" (MA-03, interview June 16, 2025). This statement highlights the dilemma between the formal need to ensure public safety and the need for indigenous communities to maintain dynamic and contextual traditional practices.

Traditional practitioners also add that culturally insensitive regulations and standardizations have the potential to shift control over herbal products from communities to modern industries or pharmaceuticals. "*If everything is determined by the government or the company, we lose control of our own traditions. Standardization must respect culture, not oppress it*" (PT-02, interview June 13, 2025).

This view shows the importance of harmonization between formal regulations and local values, so that the integration of herbs into modern pharmacy maintains safety and quality without losing cultural meaning.

Overall, the findings on this subtheme confirm the tension between the need for scientific standardization, regulation, and safety with the protection of the authenticity, symbolic value, and social function of herbal medicine. Successful integration requires a collaborative strategy, involving indigenous communities, traditional practitioners, and pharmacists in a balanced manner, so that the process can result in more inclusive, safe, and respectful pharmaceutical services.

## **DISCUSSION**

The results of this study reveal that indigenous peoples' perceptions of the integration of herbal medicines in modern pharmaceutical services are complex and multidimensional. Most informants rated integration as a positive opportunity to increase the legitimacy and accessibility of traditional medicine. However, there are also concerns about the loss of cultural value and the authenticity of herbs. These findings are in line with the concept of medical pluralism, which states that societies often utilize multiple health systems simultaneously, including traditional and modern, taking into account cultural factors, symbolic values, and beliefs (Kleinman & Lee, 2021). The integration of herbs into modern pharmacy, if not sensitive to cultural contexts, can shift the balance between therapeutic value and the social-observational meaning inherent in traditional practices (Wang et al., 2022).

An analysis of product safety and authenticity concerns reveals the tension between the demands of scientific standardization and the protection of local wisdom. Some indigenous peoples consider pharmaceutical products to be safer because they go through a hygienic production process, but there are still doubts about the transparency of raw materials and the possibility of mixing additives. Traditional practitioners emphasize that industry standards have the potential to eliminate the ritual and symbolic value of herbs, in line with the view of cultural integrity theory, which emphasizes the importance of maintaining the continuity of cultural values in health practices (Mbaye et al., 2021). This phenomenon also supports the findings of Chao et al. (2021) that the integration of tradition and science requires adaptive mechanisms to balance clinical safety and cultural significance.

The perspective of pharmacists shows that there is support for integration, especially to expand services and meet patients' preferences for natural remedies. However, limited knowledge of herbal pharmacology, lack of practice guidelines, and weak regulations are significant obstacles. This is consistent with the studies of Wardle et al. (2021) and Chikowe et al. (2020), which highlight the need for cross-professional training and policy support to ensure modern pharmaceutical services can safely and effectively adopt herbal products. These findings underscore the importance of collaboration between pharmacists and traditional practitioners, while emphasizing the role of adaptive regulation that respects local cultural values.

Findings regarding regulation and standardization show a structural dilemma. While indigenous peoples want flexibility in traditional practices, pharmacy needs formal guidelines to ensure safety and quality. This tension supports the theory of regulatory pluralism, which states that the health regulatory framework must be able to balance formal demands with local rights and practices (Bodeker & Kronenberg, 2002). This harmonization is important to prevent resistance from local communities and ensure the integration of herbs is not just commercialization, but also respect for symbolic values.

The difference of views between indigenous peoples, traditional practitioners, and pharmaceutical workers reflects the power dynamics that affect the integration process. Traditional practitioners highlight the dominance of industry or pharmaceuticals in setting standards, while indigenous communities are often marginalized. This supports the literature on participatory health governance, which emphasizes the importance of community involvement in their own health-related decision-making (Nguyen & Smith, 2022). This research shows that an effective integration model requires active dialogue between all stakeholders, avoiding top-down approaches that tend to generate cultural resistance.

The limitations of this study include the number of informants limited to 15 participants and the research location is only in Medan, North Sumatra. Although the data is rich enough for qualitative research, generalizations to other indigenous communities in Indonesia still require more extensive study. Advanced research may use a mixed-methods approach, incorporate quantitative surveys to expand population representations with in-depth interviews, or compare perceptions across regions with different ethnic diversity and herbal practices.

Overall, this research makes significant theoretical and practical contributions. On the theoretical side, this study expands the understanding of the integration of traditional knowledge with modern science, linking the concepts of medical pluralism, cultural integrity, and regulatory pluralism. From a practical perspective, the results of the study offer recommendations for pharmacists, policymakers, and traditional practitioners in developing integration strategies that are culturally sensitive, clinically safe, and able to maintain symbolic value. Thus, this research plays a role in enriching the inclusive and contextual pharmaceutical and public health literature.

## **CONCLUSION AND RECOMMENDATION**

This research confirms that the integration of herbal medicines into modern pharmaceutical services is perceived differently by indigenous peoples, traditional practitioners, and pharmacists. Most informants see this integration as a positive opportunity to expand the legitimacy and accessibility of traditional medicine, but concerns regarding the loss of authenticity and cultural value remain. The tension between the demand for scientific standardization and the protection of local wisdom shows that integration is not solely a technical issue, but also related to the symbolic meaning and sustainability of cultural identity.

In addition, regulatory limitations, practice guidelines, and knowledge of herbal pharmacology pose challenges in the implementation of integration. The results of this study confirm the need for adaptive regulation that respects local cultural values, cross-professional training for pharmacists, and participatory dialogue with indigenous communities and traditional practitioners. Thus, the integration of herbs in modern pharmacy not only pays attention to the aspect of clinical safety, but also maintains the sustainability of cultural values, so that it can contribute to the development of an inclusive, culturally sensitive, and sustainable health system.

### ADVANCED RESEARCH

Future research should further explore how cultural identity, professional roles, and community expectations shape the acceptance and practice of herbal medicine integration within modern pharmaceutical services. Comparative studies across different indigenous groups or regions would help identify variations in cultural perceptions and regulatory needs. Longitudinal research is also needed to assess how adaptive regulations, cross-professional training programs, and participatory community engagement influence the long-term sustainability and acceptance of integrated practices. Additionally, future studies could evaluate specific models of collaboration between pharmacists, traditional practitioners, and indigenous communities to determine which approaches most effectively balance clinical safety with cultural preservation. Such research would provide deeper insights into creating a health system that is scientifically robust while remaining culturally grounded and socially inclusive.

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