



Tetemas Ethnomedicine in Pangkalan Kerinci, Indonesia: Reconstruction and Application for Science Education

Zaliva Lara Rozianti¹, Indry Zusniati Pane¹

¹Department of Science Education, Faculty of Education and Teacher Training, Universitas Islam Negeri Sultan Syarif Kasim Riau, Riau, Indonesia

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Corresponding author:

Zaliva Lara Rozianti

11911021439@students.uin-suska.ac.id

ABSTRACT

Ethnomedicine represents a critical component of indigenous knowledge systems, combining botanical, spiritual, and cultural dimensions to address health needs within local communities. In Pangkalan Kerinci, Pelalawan Regency, Riau, the practice of tetemas, which primarily utilises *Curcuma domestica*, serves as a traditional therapeutic approach for mild illnesses such as fever, flu, and dizziness. The study aimed to analyse and reconstruct community-based knowledge of tetemas into a scientifically interpretable framework, highlighting its potential for both health application and educational integration. This research employed a qualitative case study design, including semi-structured interviews, participatory observation, and visual documentation, to capture the procedural, botanical, and socio-cultural aspects of tetemas. Two key informants, including a customary elder and a community member, provided detailed insights into treatment protocols, ritual practices, and perceived outcomes. Data analysis followed the Miles and Huberman interactive model, encompassing data reduction, display, and interpretation, facilitating reconstruction of indigenous knowledge into scientific terms. The results indicate that tetemas combines turmeric-based remedies with ritualised procedures and psychosocial reinforcement, resulting in consistent perceptions of therapeutic efficacy across age groups. Observations revealed structured treatment sequences, culturally codified rules, and adaptive practices in response to resource availability, suggesting that traditional knowledge is empirically grounded and dynamically maintained. The study further demonstrates that tetemas can serve as a contextualised resource for natural science education, enabling learners to understand plant morphology, bioactive compounds, and structure-function relationships in *Plantae* while bridging cultural and scientific literacy. In conclusion, tetemas represents a resilient and scientifically relevant ethnomedicinal system with implications for health practice and pedagogy. The research contributes to the documentation and interpretation of indigenous knowledge, offering a model for integrating traditional medicine into educational frameworks and supporting future investigations on pharmacological validation and cross-cultural application.

Keywords:

Ethnomedicine, Tetemas, *Curcuma domestica*, Traditional Medicine, Indigenous Knowledge

INTRODUCTION

Indonesia is a country characterised by extraordinary cultural and biological diversity across thousands of islands, fostering a rich heritage of traditional knowledge systems embedded in local communities. Among these knowledge systems, ethnoscience has emerged as a significant framework for understanding how indigenous communities interpret natural phenomena and develop practical solutions to health and environmental challenges (Priyani & Nawawi, 2020). Ethnomedicine, as a subset of ethnoscience, represents one of the most enduring forms of indigenous knowledge. It encompasses the traditional use of plants, minerals, and spiritual practices for treating diseases and maintaining well-being. In the province of Riau, particularly in Pangkalan Kerinci, communities have historically relied on ethnomedicinal practices that integrate biological, cultural, and spiritual dimensions, reflecting a complex understanding of health that combines empirical observation with inherited cultural norms (Utami & Harahap, 2019). Such practices, transmitted across generations, remain embedded in local communities' social fabric and are often considered essential in contexts where modern medical facilities are inaccessible (Lesmana et al., 2018).

The significance of studying ethnomedicine extends beyond cultural preservation, as these practices offer an empirical foundation for discovering novel bioactive compounds and understanding community-based health management strategies (Azzahra et al., 2025). *Curcuma domestica*, commonly known as turmeric, is frequently cited in Southeast Asian ethnomedicine for its purported therapeutic effects, particularly in antipyretic, anti-inflammatory, and wound-healing contexts (Wati & Sismoro, 2014). Previous studies indicate that curcumin, a primary active compound in turmeric, inhibits Cyclooxygenase-2 (COX-2), suggesting a scientifically plausible mechanism for its traditional use in fever reduction (Idhamkholid, 2018). Beyond pharmacological effects, ethnomedicine often relies on psychosocial and spiritual components, including ritualised prayers and the use of symbolic objects, to enhance therapeutic outcomes through suggestive mechanisms (Sari et al., 2021). These interconnections underscore the multidimensional nature of traditional healing practices and highlight their potential to serve as integrative educational resources in natural science curricula, fostering contextually relevant learning that bridges empirical science and cultural heritage (Priyani & Nawawi, 2020).

Despite the recognised value of traditional medical knowledge, several challenges persist in understanding, validating, and integrating these practices within contemporary scientific paradigms. Communities often perceive ethnomedicine as superior or complementary to modern medicine, motivated by beliefs in ancestral wisdom and cost-effectiveness (Kurnia, 2018). However, this perception can lead to delayed medical intervention and variability in treatment efficacy due to the absence of standardised procedures and controlled experimental validation (Lesmana et al., 2018). Furthermore, knowledge transmission is predominantly oral and context-specific, limiting its broader applicability and complicating systematic documentation for scientific analysis. In Pangkalan Kerinci, the tetemas practice exemplifies these dynamics, in which turmeric-based treatments are applied through structured rituals led by customary elders, blending medicinal, spiritual, and communal dimensions (Juraidah, 2020). While the social and cultural relevance of tetemas is evident, its mechanistic underpinnings, reproducibility, and potential integration into formal science education remain underexplored.

Common approaches to addressing these challenges in ethnomedicine research have focused on pharmacological validation, bioactivity screening, and ethnobotanical documentation. Experimental studies often isolate bioactive compounds to quantify their physiological effects under laboratory conditions, thereby providing evidence to support traditional claims (Utami & Harahap, 2019). Concurrently, qualitative ethnographic studies emphasise participant observation, semi-structured interviews, and participatory documentation to capture contextual knowledge, ritualised procedures, and socio-cultural meanings associated with treatment practices (Sari et al., 2021). Integrative approaches that combine phytochemical analysis with ethnographic insights have been proposed as robust strategies to translate indigenous knowledge into scientifically grounded frameworks, enabling both cultural preservation and educational application (Priyani & Nawawi, 2020).

Specific research in Southeast Asia has shown that turmeric-based ethnomedicine can be reconstructed into a scientifically interpretable format while maintaining its cultural integrity. For example, the Betemas practice in Jambi province employs herbal mixtures accompanied by recited prayers, which ethnographic studies have mapped onto the pharmacological effects of the constituent plants, providing evidence of antipyretic, anti-inflammatory, and antimicrobial properties (Juraidah,

2020). Similarly, observational and interview-based analyses of turmeric usage in community health reveal consistent morphological and chemical characteristics of *Curcuma domestica* that correlate with traditional therapeutic protocols, reinforcing the plausibility of indigenous classification systems (Wati & Sismoro, 2014). These studies highlight a critical opportunity: by bridging ethnomedicinal practices with empirical scientific evaluation, researchers can reconstruct local wisdom into accessible knowledge frameworks suitable for natural science instruction and broader biomedical exploration.

Despite these advances, a notable gap remains in systematically integrating ethnomedicinal knowledge into formal science curricula while simultaneously validating its therapeutic potential. Most prior studies focus either on pharmacological activity or on ethnographic documentation, but rarely on integrating these domains to generate knowledge that is both educationally and scientifically applicable. Moreover, there is limited exploration of how community-based practices like tetemas can serve as dynamic learning resources for *Plantae* studies, providing students with direct engagement with local flora and facilitating the contextualization of plant morphology, bioactive compounds, and their functional applications in health management ((Priyani & Nawawi, 2020; Wati & Sismoro, 2014). This gap underscores the need for research that not only documents and validates ethnomedicinal practices but also strategically positions them within pedagogical frameworks that connect cultural heritage with scientific literacy.

Consequently, this study situates itself at the intersection of ethnomedicine, natural science education, and community-based health research. It seeks to analyse and reconstruct the knowledge embedded in the tetemas practice into a scientifically coherent framework while preserving its socio-cultural and ritualistic significance. By employing a qualitative case study approach, the research documents the procedural steps, plant-based components, and cultural rationale underpinning tetemas treatments, and interprets them within the context of contemporary scientific understanding. The literature reviewed, spanning ethnobotany, ethnopharmacology, and ethno-STEM education, collectively highlights the transformative potential of integrating validated indigenous practices into educational settings, yet simultaneously emphasises the persistent knowledge gap regarding standardised documentation and pedagogical application (Priyani & Nawawi, 2020; Sari et al., 2021)

The primary objective of this study is to elucidate the processes and principles of tetemas ethnomedicine and reconstruct this indigenous knowledge into scientific constructs that can be reliably interpreted and taught. This research contributes novelty by providing a dual perspective: it contextualises a culturally embedded practice within a scientific framework and offers an empirically informed foundation for curriculum development in natural sciences. The study scope encompasses the ethnomedicinal practices of Pangkalan Kerinci, with a focus on turmeric-based interventions, ritualistic procedures, and community perceptions. In doing so, the research justifies the hypothesis that indigenous knowledge systems, when rigorously analysed and contextualised, can serve as valid and meaningful sources for scientific inquiry and pedagogy, thereby bridging traditional wisdom with contemporary educational and biomedical domains

METHODS

The present study adopts a qualitative case study design to investigate the ethnomedicinal practice of tetemas in Pangkalan Kerinci, Pelalawan Regency, Riau Province, Indonesia. Case study research provides an empirical approach to exploring contemporary phenomena in real-life contexts, particularly when the boundaries between the phenomenon and its context are not clearly evident (Nur'aini, 2020). The choice of this design is motivated by the objective of capturing the complex interplay among traditional knowledge, plant-based interventions, and community perceptions while preserving the integrity of the cultural context. Qualitative methodologies are particularly suited for this purpose, as they enable an in-depth understanding of the meanings, processes, and structures that shape local knowledge systems, which cannot be adequately captured through quantitative methods alone (Sari et al., 2021). In this study, tetemas is examined not only as a medicinal practice but also as a socio-cultural practice, encompassing ritualistic, symbolic, and empirical dimensions that call for a holistic analytical approach.

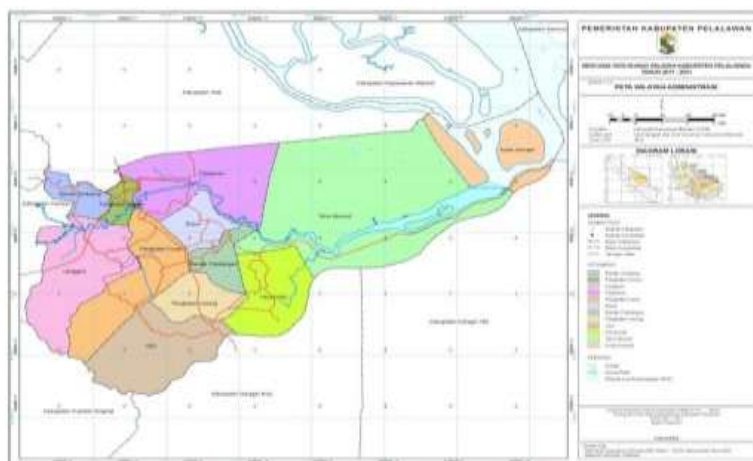


Figure 1. Pelalawan regency map

The study site, Pangkalan Kerinci, is an appropriate context given its historical and cultural association with Malay ethnomedicinal practices. Geographically, Pelalawan Regency is located between 1°25" North Latitude and 0°20" South Latitude and spans 100°42" to 103°28" East Longitude, with Pangkalan Kerinci covering approximately 19,355.53 hectares as the administrative centre of the regency. The local communities have maintained the practice of tetemas across generations, using it as a first-line intervention for common ailments such as fever, flu, and dizziness, particularly in historical contexts where access to modern medical facilities was limited (Idhamkholid, 2018). This study positions tetemas within the broader framework of indigenous science, acknowledging its relevance both for community health and as a potential resource for science education in *Plantae* studies, as previously discussed in the introduction (Priyani & Nawawi, 2020; Wati & Sismoro, 2014).

Participants in the study were purposefully selected using criteria aligned with qualitative research standards, emphasising information richness rather than statistical representativeness (Sari et al., 2021). Two respondents were selected: one customary elder, Hasnah Binti Badrun, who is recognised as a primary practitioner of tetemas, and one community member, Rozita Wati Binti M. Ali, who regularly utilises the practice. Inclusion criteria focused on local residents with direct experiential knowledge of tetemas, ensuring that the collected data captured authentic practices, beliefs, and interpretations. This sampling strategy aligns with the purposive and criterion-based approaches recommended for ethnographic and case study research, allowing for detailed, contextually grounded insights (Irfan et al., 2025; Sugiyono, 2017).

Data collection methods employed a triangulated approach to enhance credibility, validity, and depth of understanding. Semi-structured interviews formed the core of data collection, allowing participants to describe the procedural, symbolic, and perceived therapeutic elements of tetemas in their own terms. The interviews were guided by open-ended questions that explored the nature of the ailments addressed, the preparation and administration of turmeric, ritual components, and the outcomes experienced by recipients. This method facilitated rich narrative data while allowing the researcher to probe for clarification and elaboration, consistent with qualitative interviewing principles (Ayua et al., 2025). Interviews were conducted *in situ*, with participants providing both verbal explanations and demonstrations of the procedures, ensuring that contextual subtleties, gestures, and sequences were accurately captured.

Complementing interviews, participatory observation was employed to document the actual practice of tetemas, including the preparation of turmeric, the application process, and the integration of prayers or religious recitations. Observations were conducted with sensitivity to cultural norms and participants' privacy, enabling the researcher to record procedural details without disrupting the ritual or therapeutic context. Field notes captured both objective descriptions of actions and the researcher's interpretive reflections on meanings and interactions. This methodological approach is consistent with ethnographic best practices in qualitative health research, where observation provides critical insights into practice patterns, social interactions, and context-dependent decision-making (Idhamkholid, 2018; Sari et al., 2021).

Documentation of tetemas practices included photographic and videographic evidence to provide supplementary data that could be cross-referenced with interview narratives and observational

notes. This strategy enabled verification of procedural consistency and facilitated later reconstruction of the practices into scientifically interpretable knowledge. The integration of visual data aligns with qualitative standards that recommend multiple sources to enhance data triangulation and analytic depth (Ilyas, 2016). Figure 1 presents the geographical context of Pangkalan Kerinci, providing a visual representation of the study environment and highlighting the spatial distribution of the communities involved in tetemas practice.

Data analysis followed the interactive model proposed by Miles et al., (1992) comprising data collection, data reduction, data display, and conclusion drawing/verification. Data reduction involved iterative review of field notes, interview transcripts, and visual documentation to identify emergent themes, salient procedures, and patterns of belief. Attention was given to classifying information that was contextually significant, culturally meaningful, and relevant to the reconstruction of indigenous knowledge into scientific terminology. Data display employed narrative synthesis, matrices, and conceptual mapping to systematically organise information, highlighting connections among plant morphology, curcumin content, and ritualised procedures. Table 1 exemplifies the reconstruction of indigenous knowledge into scientifically grounded knowledge, demonstrating the translation of beliefs about illness and healing into empirical explanations, including the pharmacological rationale for turmeric's use in fever management.

The analysis emphasized interpretive coherence and methodological rigour. Verification strategies included peer debriefing with local informants, repeated observation of tetemas procedures, and cross-validation of visual documentation against verbal descriptions. This approach aligns with qualitative standards of credibility, ensuring that findings accurately reflect participants' lived experiences and knowledge systems while minimising researcher bias (Miles et al., 1992). The coding process adhered to inductive principles, allowing themes to emerge from the data while maintaining alignment with the study's objectives. Analytic memos were maintained throughout to document interpretive decisions, analytic reasoning, and emergent insights, ensuring transparency and auditability of the research process.

Overall, the methodology integrates multiple qualitative strategies, triangulates data sources, and maintains alignment with both ethnographic and case study conventions. It ensures that the tetemas practice is documented comprehensively, analysed systematically, and interpreted within scientific and educational contexts. By combining interviews, observation, and visual documentation with iterative inductive analysis, the study bridges the gap between traditional knowledge and scientific inquiry, providing a rigorous model for future research on ethnomedicine and community-based health practices.

RESULTS AND DISCUSSION

The ethnomedicinal practice of tetemas in Pangkalan Kerinci demonstrates a deeply integrated system of traditional health knowledge that combines botanical resources, ritualised procedures, and social belief systems. Field observations revealed that turmeric, specifically *Curcuma domestica*, serves as the primary therapeutic agent, often prepared by splitting the rhizome with a knife before topical or oral application. The preparation is accompanied by recitation of sacred verses or prayers, as guided by the customary elder, highlighting the integration of spiritual and biological components in treatment. This combination aligns with the literature on suggestion-based therapy, which holds that verbal and ritual acts enhance therapeutic efficacy through psychosocial influence (Idhamkholid, 2018). Interviews indicated that the practice is applied across all age groups, including infants, adolescents, and the elderly, reflecting community trust in the method as both preventive and curative. Participants emphasized that tetemas is most effective when conducted with focused intention and communal support, suggesting that social reinforcement plays a critical role in perceived healing outcomes. The observed processes reveal a standardized sequence in ritualised practice, which supports the hypothesis that traditional knowledge systems, while orally transmitted, incorporate empirical rules refined through intergenerational experience. These findings confirm that tetemas functions as a culturally embedded health system capable of addressing mild ailments, particularly in regions with limited access to modern medical facilities (Lesmana et al., 2018). The ethnobotanical dimension of tetemas, with turmeric as the central component, is supported by studies showing that curcumin inhibits Cyclooxygenase-2 (COX-2), a key enzyme mediating febrile responses (Wati & Sismoro, 2014). This pharmacological correlation suggests that the practice possesses inherent empirical validity, despite its ritualised and spiritual context, and bridges indigenous knowledge with contemporary scientific interpretation.

Figure 1 presents a geographical representation of Pangkalan Kerinci, highlighting its location within Pelalawan Regency and the spatial distribution of local communities practising tetemas. The map situates the study within a rural landscape characterised by limited healthcare infrastructure, underscoring the relevance of community-based remedies. Observational data indicate that the spatial context influences both accessibility and adaptation of tetemas, as households distant from healthcare facilities rely more heavily on ritualised first-line interventions. The geographic visualisation reinforces the interplay between environment and health practice, demonstrating that indigenous medical knowledge is not static but dynamically adapted to local constraints and resources. Previous studies suggest that the adaptation of ethnomedicinal practices is influenced by the ecological availability of medicinal plants and community structure, supporting the notion that location-specific knowledge is critical for the sustainability of traditional practices (Utami & Harahap, 2019). Moreover, the map contextualises subsequent observations of plant utilisation and procedural adherence, allowing researchers to correlate practice frequency, healer availability, and plant distribution, which, in turn, informs the reconstruction of knowledge for pedagogical or pharmacological purposes. In essence, Figure 1 provides both a descriptive and analytical foundation for understanding how geography mediates the practice, perception, and transmission of tetemas knowledge within Pangkalan Kerinci communities.

Table 1. Reconstruction of Local Indigenous Knowledge into Scientific Knowledge

Local Indigenous Knowledge	Scientific Knowledge
The community believes that illness may originate from supernatural causes or from intentional harm caused by another person.	Illness can be understood as a condition of discomfort or dysfunction in the body or in a specific body part. It may appear as fever, abdominal pain, dizziness, or other symptoms. From a biomedical perspective, illness may be associated with unhealthy lifestyles, poor environmental sanitation, infectious exposure, or decreased body metabolism.
The community believes that traditional medicine is better than modern medicine.	Traditional medicine has practical advantages, particularly affordability and local accessibility. However, its effectiveness and safety require scientific validation because many traditional practices have not undergone standardized clinical testing. In some cases, reliance on traditional medicine may delay access to appropriate biomedical treatment, which can worsen the patient's condition (Lesmana et al., 2018).
The community believes that turmeric and mineral water can help cure illness.	Turmeric, identified in the manuscript as <i>Curcuma domestica</i> , is a medicinal plant with potential antipyretic properties. Its active compound, curcumin, has been reported to inhibit Cyclooxygenase-2, an enzyme involved in the physiological process of fever. This mechanism provides a plausible scientific explanation for the community's use of turmeric in fever-related treatment. The rhizome of turmeric is elongated and cylindrical, usually 1–2 cm in diameter and 3–6 cm in length. The plant can produce new shoots that develop into new individuals. Its flower stalk is hairy and scaly, while the calyx is tubular and approximately 9–13 mm long. This botanical description supports the integration of turmeric into Plantae learning materials (Wati and Sismoro, 2014).

The procedural analysis, illustrated in Table 1, reconstructs indigenous knowledge into scientifically interpretable constructs, highlighting the translation of culturally framed beliefs about illness and healing into empirical terms. The table demonstrates that ailments perceived as caused by supernatural forces are reinterpreted as physiological disruptions, while therapeutic interventions involving turmeric are explained in terms of its pharmacological activity. Interviews and observations revealed that turmeric's antipyretic properties are central to treatment, supported by its bioactive compound, curcumin, which inhibits COX-2-mediated fever mechanisms (Wati & Sismoro, 2014). Participants consistently emphasized ritual adherence, illustrating that efficacy is perceived as a

combination of chemical, psychosocial, and spiritual factors. This integrated framework is supported by the literature, which emphasises the importance of combining ethnobotanical, pharmacological, and socio-cultural analyses to fully understand traditional medicinal systems (Priyani & Nawawi, 2020). Table 1 thereby exemplifies the dual validation of tetemas: empirical pharmacology explains the active role of turmeric, while ethnographic observation contextualises the socio-ritual dimensions, supporting an epistemological synthesis of indigenous and scientific knowledge. The narrative of knowledge reconstruction illustrates how local wisdom can be formalised without undermining its cultural integrity, providing a model for educational integration in natural sciences. By aligning traditional practice with empirical evidence, the study highlights the potential for tetemas to serve as a living laboratory for students to explore plant morphology, bioactive compounds, and their functional application in health management, which has implications for ethno-STEM education and culturally responsive pedagogy (Sari et al., 2021).

Table 2. Potential of Local Wisdom in Science Education

Description of Local Wisdom Potential in Science Education	Relevance to Science Learning	Basic Competency in Natural Science	Learning Material
<p><i>Tetemas</i> is a traditional healing practice that uses turmeric as the main medicinal plant. The treatment includes a suggestive dimension because the customary elder encourages patients and community members to believe in the healing process. The turmeric used in the treatment is prepared through a specific procedure and accompanied by recitations. There are no strict prohibitions in the practice, although trust between the healer and the patient is considered important. The community of Pangkalan Kerinci, Pelalawan Regency accepts <i>Tetemas</i> as a meaningful traditional practice and regards it as part of local healing knowledge.</p>	<p><i>Tetemas</i> can be used as a contextual learning resource in natural science because it connects plant-based local wisdom with scientific concepts. The practice allows students to study medicinal plants, plant morphology, plant structures, and the relationship between plant organs and their functions. It also encourages learners to relate science concepts to real practices in their community, which is consistent with ethnosience-based learning (Priyani and Nawawi, 2020; Sari, Mapuah, and Sunaryo, 2021).</p>	<p>3.4 Analyze the relationship between plant tissue structure and function and examine technologies inspired by plant structures.</p>	<p>Structure and function of roots, stems, leaves, flowers, fruits, and seeds. Structure and function of plant tissues.</p>

Table 2 presents the potential contributions of tetemas to science education, emphasising the link between local wisdom and structured scientific learning. Observational data showed that students and community learners could relate plant structures, such as rhizomes, stems, and leaves, to their pharmacological roles, thereby facilitating understanding of plant morphology and functional biology. The table contextualises how traditional healing practices can be translated into classroom activities that illustrate structure-function relationships and bioactive compound properties, supporting conceptual learning in Plantae topics. Literature supports the educational significance of integrating indigenous knowledge into formal science curricula, suggesting that ethnosience-based instruction improves engagement, promotes critical thinking, and enhances contextual understanding of local ecosystems ((Priyani & Nawawi, 2020; Wati & Sismoro, 2014). The educational framing also acknowledges the socio-cultural dimensions of learning, where students gain awareness of heritage

practices and community-based problem-solving strategies, bridging scientific and cultural literacy (Mahartika et al., 2023). Analysis of Table 2 indicates that the structured process of tetemas, combined with explanatory narratives about turmeric's active compounds, creates opportunities for inquiry-based learning that is simultaneously culturally relevant and scientifically rigorous. This integrative approach exemplifies the potential of ethnomedicine as a pedagogical tool, aligning experiential, observational, and laboratory-based learning with community knowledge systems.

Detailed participant narratives revealed that tetemas treatments are applied sequentially, beginning with symptom identification, preparing turmeric, reciting prayers, and applying the herbal remedy. Observations confirmed that procedural fidelity is maintained through intergenerational teaching by customary elders, ensuring consistency in practice while allowing minor adaptations based on available plant resources. The discussion of these sequences underscores the importance of procedural codification in ethnomedicine, supporting claims that indigenous knowledge systems include implicit standardisation despite oral transmission (Lesmana et al., 2018). Participants emphasized that successful outcomes rely on both proper material preparation and adherence to ritualised sequences, reflecting an understanding of cause-and-effect relationships grounded in empirical observation and social reinforcement. The integration of these insights with pharmacological data on curcumin demonstrates that traditional heuristics can correspond with measurable physiological effects, providing a basis for integrating indigenous practice into scientifically validated frameworks (Idhamkholid, 2018; Wati & Sismoro, 2014).

Community perceptions reinforced tetemas' dual role as a therapeutic and educational resource. Respondents highlighted that the practice functions as first aid in remote locations, bridging gaps in access to formal healthcare. The discussion connects these observations to the broader literature on ethnomedicine, which emphasises the pragmatic adaptation of traditional systems to environmental, economic, and infrastructural constraints (Lesmana et al., 2018; Utami & Harahap, 2019). Participants noted that turmeric could be substituted with alternative herbal materials if unavailable, illustrating adaptive resilience within the ethnomedicinal framework. These adaptive strategies, observed alongside ritual adherence, illustrate the dynamic nature of indigenous knowledge, which can remain relevant even as it responds to material constraints. The discussion highlights the implications for public health, suggesting that validated traditional practices can complement modern medical interventions in resource-constrained settings, while also informing the design of science education curricula that emphasise both empirical observation and cultural awareness.

The integration of visual, narrative, and analytical data enabled the study to construct a comprehensive understanding of tetemas. Figure 2 illustrates the Miles and Huberman interactive model applied in this research, capturing the iterative process of data collection, reduction, display, and conclusion drawing. The figure reinforces methodological transparency and analytic rigour by demonstrating how ethnographic observation, interview data, and visual documentation converge to yield trustworthy interpretations. Literature underscores that such integrative analytic approaches are essential in qualitative research, particularly when investigating complex socio-ecological phenomena such as ethnomedicine (Miles et al., 1992). The study confirms that a systematic approach to data analysis, combined with detailed ethnographic documentation, facilitates the translation of culturally embedded practices into scientifically interpretable knowledge, bridging the gap between traditional healing and modern scientific frameworks.

CONCLUSION

The findings of this study demonstrate that tetemas, a traditional ethnomedicinal practice in Pangkalan Kerinci, represents a sophisticated system of community-based health management that integrates botanical, ritualistic, and social dimensions. The practice consistently employs *Curcuma domestica* as a therapeutic agent, supported by structured procedural steps and spiritual recitations, producing perceived health benefits for mild illnesses such as fever, flu, and dizziness. Analysis revealed that the combination of empirical observation, turmeric's phytochemical properties, and psychosocial reinforcement contributes to the practice's efficacy and persistence within the community. This synthesis illustrates that indigenous knowledge systems, though orally transmitted, incorporate implicit standardisation and adaptive strategies that allow them to remain relevant in resource-constrained contexts. The study further demonstrates the potential of tetemas as a contextually rich resource for natural science education, particularly in illustrating plant morphology, bioactive compounds, and structure-function relationships in *Plantae*. By reconstructing indigenous knowledge into scientifically

interpretable frameworks, the research highlights the possibility of bridging traditional practice with contemporary pedagogy, fostering both cultural literacy and scientific reasoning. These findings contribute to the broader understanding of ethnomedicine by providing empirical documentation, theoretical interpretation, and educational application in a single integrated model. Future research could explore systematic pharmacological validation of tetemas, comparative studies with other ethnomedicinal practices in Southeast Asia, and longitudinal assessment of its educational effectiveness. The study underscores the value of culturally embedded practices for both health and science learning, offering a model for integrating indigenous knowledge into contemporary scientific inquiry and curriculum design.

AUTHOR CONTRIBUTIONS

Zaliva Lara Rozianti wrote paper, designed the qualitative case study methodology, and conducted the primary field data collection. Indry Zusniati Pane reviewed, and finalized the manuscript for publication.

DECLARATION OF CONFLICTING INTERESTS

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and publication of this article

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